PREDICTORS OF UPTAKE OF CERVICAL CANCER SCREENING AMONG WOMEN LIVING WITH HIV/AIDS IN KIGALI, RWANDA

LYDIA BUSINGE

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Predictors of uptake of cervical cancer screening among women living with HIV/AIDS in Kigali, Rwanda

Lydia Businge

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DECLARATION

This Thesis is my original work and has not been presented for a degree in any other university.

Signature …………………………………………………Date ……………………

Lydia Businge

This Thesis has been submitted for examination with our approval as the University Supervisors.

Signature …………………………………………………Date ……………………

Dr. Dennis Magu, PhD
JKUAT, Kenya

Signature …………………………………………………Date ……………………

Dr. Alex Kigundu, PhD
JKUAT, Kenya

Signature …………………………………………………Date ……………………

Dr. Peter Wanzala, PhD
KEMRI, Kenya

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LIST OF ABBREVIATIONS AND ACRONYMS

AIDS   Acquired immunodeficiency syndrome

AECOM   Albert Einstein College of Medicine

ARV   Antiretroviral

ASR   Average age standardized rate

CC   Cervical cancer

CD4   Cluster of differentiation 4

CDC   Center for Disease control

CCS   Cervical cancer screening

CHW   Community Health Worker

CIN   Cervical Intraepithelial Neoplasia

COC   Combined oral conceptive

DNA   Deoxyribose Nucleic Acid

FDA   Food and Drug Administration

FGD   Focus group discussion

FIGO (IFGO)   International Federation of Gynecology and Obstetrics

GLOBOCAN   Global Cancer

HBM   Health Belief Model

HIV	Human immunodeficiency virus
HPV	Human papillomavirus
IUDs	Intrauterine device
JKUAT	Jomo Kenyatta University of Agriculture and Technology
KEMRI	Kenya Medical and Research Institute
KII	Key informant interview
LMICs	Low-and middle-income countries
MoH	Ministry of Health
MS word	Microsoft word
NGOs	Non-Governmental Organizations
OCs	Oral contraceptives
RMH	Rwanda Military Hospital
SPSS	Statistical Package for Social Sciences
STD's	sexually transmitted disease
STI's	sexually transmitted infections
UNAIDS	United Nations Programme on HIV and AIDS
USA	United States of America
VIA	Visual inspection with acetic acid

WLHIV   Women Living with HIV.

ABSTRACT

Cervical cancer (CC) remains a significant public health problem worldwide. The likelihood of cervical cancer has been shown to be associated with HPV, and people living with HIV are particularly affected. In Rwanda, the prevalence of HPV was almost four times higher among HIV-positive women (31.8% vs. 8.2%) than among HIV-negative women in Rwanda, indicating a high risk of cervical cancer. It is believed that the increased likelihood of cervical cancer screening (CCS) would have a significant impact on reducing the burden of disease. We therefore conducted this study to determine the predictors of cervical cancer screening uptake among women living with HIV in Kigali, thus providing information for the utilization of cervical cancer screening in Rwanda. This was a cross-sectional study design, evaluating the use of CCS among women living with HIV in the city of Kigali. This city has a high prevalence of HIV among women (6% vs. 2%) compared to other parts of the country. Proportionally, women aged 30-50 years followed in four health centers in the city of Kigali were selected by site. A questionnaire was administered to participants to determine the predictors of CCS use as an outcome. Predictors were socio-demographic and economic factors, factors related to individuals and health care institutions. For data analysis, using SPSS Version 24, frequency and percentage were used to present descriptions of study participants, bivariate and multivariate analysis to determine statistical significance and to highlight the strengths of associations. Variables with a $P < 0.05$ were considered statistically significant. Ethically, the study was approved by the Institutional Review Board of the Jomo Kenyatta University of Agriculture and Technology. Out of 384 participants, the prevalence of CCS uptake was 59%. A bivariate analysis revealed that two individual factors, such as age and religion, were statistically significant. For health-related factors, provider interviews with patients, distance to screening services, cost of services, lack of provider comfort, sources of information such as radio, posters, and television were found to be statistically significant. In the multivariate analysis, marital status, such as being single, and university education were the positive individual predictors of cervical cancer screening. At the health facility level, information sources such as radio were considered a positive predictor of cervical cancer screening uptake. Cervical cancer screening uptake in the city of Kigali was moderately good. There is a need to increase the number of screenings in order to gradually avoid this burden of cancer. Interventions targeting the education of women, especially those who are not yet married, and information disseminated by radio would add value to the use of screening in the city of Kigali.

CHAPTER ONE

INTRODUCTION

1.1 Background information

Globally, cancer irrespective of the type is considered a mortal disease in both developed and developing world (Bray *et.al.,* 2012). According to WHO estimates for 2011, cancer is the cause of more deaths than coronary heart diseases (Stewart & Wild, 2014) and a leading cause of morbidity and mortality worldwide, with approximately 14 million new cases and 8.2 million cancer related deaths in 2012 (Friedman-Rudovsky *et.al.,* 2015). In addition, the incidence and mortality of cancer are expected to rise rapidly worldwide with more than 20 million new cases of cancer in 2025 and approximately 15 million cancer-related deaths per year are forecast in 2035 (Ferlay *et.al.,* 2014). Over 60% of new cancer cases occur in Africa, Asia and Central, South America and these accounts for 70% of the world's cancer death (WHO, 2016).

Cervical cancer is one of the most common female cancer that threats women's lives and a significant public health globally among women aged 30 and older (World Health Organisation, 2016; Torre *et.al.,* 2015). In Africa, over 80000 women are diagnosed of cervical cancer with 75% (60000) of mortality rate annually (Finocchario-Kessler *et.al.,* 2016). This is due to high prevalence of HPV infections (24%) and other risk including HIV infections which are endemic in this region especially Eastern and Western Africa (De Vuyst *et.al.,* 2013). The incidence of cervical cancer in Sub-Sahara Africa is relatively high with an incidence rate of 50 per 100 000 and average age standardized rate (ASR) of 31 per 100 000 women across the whole region (Friedman-Rudovsky *et.al.,* 2015). Most studies have shown that human papillomavirus (HPV) infection is responsible for more than 90% of invasive cervical cancer worldwide especially types 16 and 18 responsible for about 70% and is related to 80% of pre-cancerous changes in the cervix (Modibbo *et.al.,* 2017; World Health Organisation, 2016). According to World Cancer Research Fund International report (2012), 16 countries in SSA especially

from East Africa ranked among the 20 countries with highest rate incidence of cervical cancer such as; Tanzania (6th with 54.0 per 100,000), Burundi (8th with 49.3 per 100,000), Uganda (12th with 44.4 per 100,000), Rwanda (14th with 41.8 per 100,000) and Kenya (16th with 40.1 per 100,000) (Ferlay *et.al.,* 2012).

In Rwanda, according to GLOBOCAN 2012 estimates, 1366 are new cases diagnosed with cervical cancer and 7.9% of female deaths occurred annually (Information Centre on HPV and Cancer, 2017).According to the study done in three districts of Rwanda (Musanze, Rwamagana, and Kayonza district) from October 2010 to June 2013, the prevalence of cervical cancer and pre-cancer lesions among women between 30 and 50 was 1.7% and 5.9% respectively (Makuza *et.al.,* 2015). The number of studies have shown the high prevalence of HPV among HIV-positive women (22.9%) than HIV negative women (5.7%), (31.8%) HIV-positive women compared to 8.2% in HIV-negative women (Jolly, P. E, 2017; Sinayobye *et.al.,* 2014; Veldhuijzen *et.al.,* 2011). Furthermore, in a study conducted among 2508 women in Rwanda, HPV prevalence was 34% the virus for most cause of cervical cancer and was highest among HIV-positive than in HIV-negative women (Ngabo *et.al.,* 2016). The prevalence of HIV infection in Rwanda was 3% and was highly observed among women aged 30 and above (2.6%) mostly found in Kigali city (Nivers, 2015). With increased life expectancies due to the achievement of antiretroviral therapy, HIV-infected women are still at high risk for pre-invasive cervical disease and cervical lesions that require excision therapy or other treatment modalities before becoming invasive cervical cancer (Finocchario-Kessler *et.al.,* 2016; Franceschi & Makuza *et.al.,* 2015; Veldhuijzen *et.al.,* 2011). Other reported risk factors associated with HPV infection and cervical cancer in most countries included having multiple partner, a sexual partner with a history of penile or prostate cancer, multiple births, early age of first sexual intercourse, smoking tobacco, low socioeconomic status, untreated chronic cervicitis, Sexually Transmitted Diseases (STDs) and Contraceptive pills (World HPV Information Center, 2017).

Cervical cancer is a preventable disease if detected and treated early and this is through primary education, screening and vaccination of HPV infections (CDC, 2012).

Screening can help identify precancerous lesions and treat them using a variety of methods based on the seriousness and extent of the lesion. (CDC, 2012). WHO recommended a comprehensive approach that delivers effective programmes to communities that comprises health education including age-appropriate comprehensive sex education, HPV vaccine for adolescent girls, as well as screening all women aged 30 and above using cytology, HPV tests, Visual inspection with Acetic acid (VIA), and Visual inspection with Lugol's iodine (VILI) based on resources for screening available(WHO, 2013). Rwandan government and other stakeholders have made effort in prevention of cervical and the achievement of over 93% of 3 doses of HPV vaccine was made possible through school based clinics and community outreach girls (Binagwaho *et.al.,* 2011). Socio-demographic factors such as age, marital status, education, employment status and income level have been studied by many researchers as being associated with the cervical cancer screening uptake (Al-amro S. Q *et. al.,* 2020; Ebu N. I, 2018). The use of cervical cancer screening is also associated with perceived benefits of screening, perceived barriers to screening, predisposition to cervical cancer, and severity of cervical cancer, all of which motivate individuals to engage in cancer screening practices (Moore de Peralta *et.al.,* 2017; Julinawati S, 2013). In addition to that, with reference to the study done in Nigeria aiming to determine the factors associated with cervical cancer screening uptake among women in Ilorin, North Central Nigeria where most predictors of low uptake of cervical cancer screening women demonstrated among others were poor health facilities and poor knowledge about cervical cancer (Idowu *et.al.,* 2016). However most evidences shows that increased knowledge, awareness and perception towards cervical cancer screening has been effective in improving uptake of services, especially if the intervention is participatory, equitable and takes into consideration (Nwobodo & Maryam, 2017). As have seen in studies from different countries, cervical cancer which is a burden among women has to be prevented or eradicated if the appropriate mechanisms of screening and vaccine programs are well introduced in the countries to enhance the uptake of cervical cancer screening (Modibbo *et.al.,* 2017). Early diagnosis of cervical cancer plays an important role because an earlier stage of the disease carries a better prognosis

(Mapanga *et.al.,* 2017; Denny, L., & Anorlu, R. (2012). It is associated with excellent survival, but most women in developing countries have advanced and often incurable disease (Denny, L., & Anorlu, R. (2012).The main reason for the disparity between developing and high-income countries in cervical cancer diagnosis and related deaths is mainly due to low participation in screening in developing countries (Ezechi *et.al.,* 2013; Nwozor & Oragudosi, 2013; Lyimo & Beran, 2012).

1.2 Statement of the problem

Cervical cancer remains a significant public health concern globally (World Health Organisation, 2016). In Rwanda, 3.7 million of people are female aged 15 years and older who are eligible for cervical cancer screening. It has been proven that likelihood of cervical cancer is associated with HPV, and this is mostly affected by people living with HIV(Information Centre on HPV and Cancer, 2017) . In Rwanda, almost 8% of childbearing age women are living with HIV, those who become infected with HPV are more likely to develop pre-invasive lesions that can, if left untreated, quickly progress to invasive cancer. Previous studies have shown that HPV prevalence was high among HIV-positive women (31.8 percent) compared to 8.2 percent among HIV-negative women in Rwanda (Sinayobye *et.al.,* 2014). When compared with HIV negative women, those living with HIV are four to five times more likely to develop invasive cervical cancer, and this is partly due to HIV's modifying effect on HPV pathogenesis. Cervical cancer is preventable if detected early through cervical cancer screening (Mapanga *et.al.,* 2017). The increased likelihood of uptake of cervical screening is believed to have a great impact in reducing the burden of the disease (Nwobodo& Maryam, 2017). Rwanda conducts cervical cancer screening at primary health care centers, however, the current estimate indicates that among 1,366 women diagnosed with cervical cancer, 804 cases are dying from the disease annually (Information Centre on HPV and Cancer, 2017). Based on the results of other studies in Rwanda and limited studies of cervical cancer screening uptake, the researcher found that there was a need to conduct this study and provide information on the predictors of cervical cancer screening uptake among women living with HIV in Kigali. There both patient and health system factors that

contribute to the use of cervical cancer screening. The main objective of this study is therefore to determine the predictors of cervical cancer screening uptake among women living with HIV in Kigali, thus providing information to the uptake of cervical cancer screening in Rwanda.

1.3 Justification of the study

Cervical cancer is preventable and curable if detected and treated early especially for the women living with HIV/Aids as soon as they know their status (UNAIDS, 2016). HIV-seropositive women are more likely to develop precancerous lesions than HIV-negative women and cervical cancer screening has been proved to reduce its morbidity (Mapanga *et.al.,* 2017). There are many different screening techniques available for screening, depending on resources available, such as cytology, HPV tests, Visual inspection with Acetic acid (VIA), and Visual inspection with Lugol's iodine (VILI). The studies conducted in the following countries like Nigeria, Ghana, Kenya, Uganda, Malawi and Zambia have concluded that high increase of uptake of cervical cancer screening services in Sub-Saharan Africa is the most essential part to reduce the high burden of disease in the region (Morris, 2016; Ndejjo *et.al.,*2016; Nwobodo & Maryam, 2017; Wanyenze *et.al.,* 2017). Different studies have documented factors associated with the use of screening services or not such as age, marital status, parity, HIV, STI's, number children, health facility constraints, knowledge about cervical cancer/screening and perceived risk (Idowu *et.al.,* 2016; Makuza *et.al.,* 2015). Community engagement in many sectors includes local administration, religious, opinion leaders that provide social support also increase the screening uptake not only at individual level but also at community level (Nyanmbe A *et.al.,* 2019). However, lack of the aforementioned community engagement, limited spouse support, stigma in the community may negatively influence the uptake of screening (Ragan KR *et.al.,* 2018). It is also stated that women who perceive well benefits of early detection and consequences of late screening or lack of screening improves screening uptake (Mukama, *et.al.,* 2017). For example, in Tanzania utilization of screening service was increased nine-fold and three-fold among women who had knowledge about cervical cancer screening than their

counterpart without such knowledge respectively (Nwobodo &Maryam, 2017). In Rwanda, women are screened by VIA at the local health center or at district hospitals. Most studies done in Rwanda focused on integration of cervical cancer prevention, care, control and achieving high coverage in Rwanda's national HPV vaccination programs (Binagwaho *et.al.,* 2013). The available information on cervical cancer screening from previous studies shows the limited information regarding the predictors of cervical cancer screening uptake. It is significant that the researcher should conduct such study to determine the predictors of uptake of cervical cancer screening among women living with HIV in Rwanda.

1.4 Research questions

1. What is the uptake of cervical cancer screening among Women Living with HIV (WLHIV) in Kigali?
2. What are the individual level-predictors associated with cervical cancer screening uptake among women living with HIV in Kigali?
3. What are the Facility level-predictors associated with cervical cancer screening uptake among women living with HIV in Kigali?

1.5 General objective

To determine the predictors of uptake of cervical cancer screening among WLHIV in Kigali.

1.5.1 Specific objectives

1. To determine the uptake of cervical cancer screening among WLHIV in Kigali
2. To determine the individual level-predictors that are associated with cervical cancer screening uptake among women living with HIV in Kigali?
3. To determine the Facility level-predictors that are associated with cervical cancer screening uptake among women living with HIV in Kigali?

CHAPTER TWO

LITERATURE REVIEW

2.1 Cervical cancer

Cervix is the lower end of the uterus that protrudes into the upper end of the vagina. It is covered by multiple layers of flattened cells called squamous epithelium next to a lining of simple tall or columnar epithelium along the cervical canal (World Health Organization, 2006).
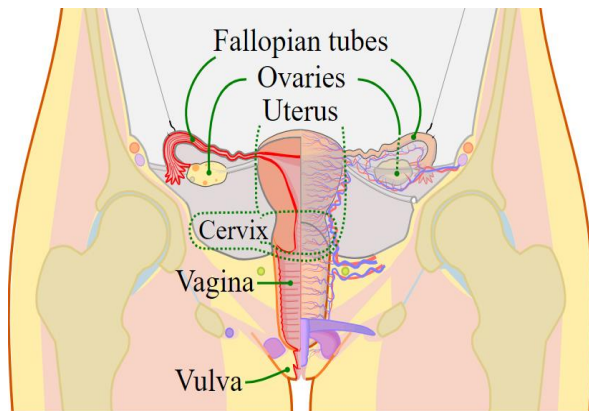
Figure 2.1: Anatomy of the cervix

Cancer of cervix starts when cells in the cervix begin to grow out of control forming lumps or precancerous lesions (dysplasia) if lesions are left undetected and untreated (Prat, J., & Mutch, D. G. (2018)). Many studies have shown that human Papilloma virus (HPV) infection is responsible for 85- 90% of the cases of invasive cervical cancer worldwide, and it is related to 80% of pre-cancerous changes in the cervix. HPV is a DNA virus that infects the epithelium (lining) of skin or mucosa preferentially (Dim, 2012). The cycle of infection starts when HPV infects the cells and viral proteins become replicated and integrated into the cell nucleus where they initiate malignant cell

transformations and proliferation (Doorbar *et.al.,* 2012). Cervical cancer is the fourth leading cause of cancer-related death worldwide among women aged 30 years and older (World Health Organisation, 2016). It affects 490,000 new women annually, with more than 270,000 deaths globally and about 90% of deaths occurred in low and middle income countries (LMICs) (Torre *et.al.,* 2015; World Health Organisation, 2016). Approximately one quarter of cervical cancers and related mortality globally occur in Africa with a high percentage of >90% in Sub-Saharan Africa (Bray *et.al.,* 2012).

2.2 Signs and Symptoms of Cervical Cancer

Women with early cervical cancers and pre-cancers usually have no symptoms. Only symptoms tends to appear after cancer reached at an advanced stage and may include (American society, 2016):

- **Abnormal vaginal bleeding**: this is usually seen after vaginal intercourse, bleeding after menopause, bleeding and spotting between periods, and having (menstrual) periods that are longer or heavier than usual. Bleeding after douching or after a pelvic exam may also occur.
- **An unusual discharge from the vagina**: the discharge may contain some blood and may occur between your periods or after menopause.
- **Pain during intercourse:** These signs and symptoms can also be caused by conditions other than cervical cancer. For example, an infection can cause pain or bleeding. Still, if you have any of these signs or other suspicious symptoms, you should see your health care professional right away. Ignoring symptoms may allow the cancer to progress to a more advanced stage and lower your chance for effective treatment.

2.3 Factors for cervical cancer

Several researches indicate that the most important risk factor for cervical cancer is HPV infection and is mainly acquired through sexual intercourse with someone who has the

infection (World Health Organisation, 2016). There are over 100 different types of HPV, but HPV types 16 and 18 are the two most common of the high-risk causing for about 70% of all cervical cancers (World HPV Information Center, 2017). HIV infection increases virulence and aggressiveness of HPV thereby accelerating the progression to malignant transformation and lead the destruction of the CD4 T cells (Ncube, 2015). In addition to that, the carcinogenic subtypes of HPV in HIV seropositive patients that doesn't diagnosed or treated early has a great influence on course of cervical cancer development (Jolly, P. E, 2017; Veldhuijzen *et.al.,* 2011). HIV infected women are at high risk especially for pre-invasive cervical diseases and lesions due to the effect of antiretroviral therapy with increased life expectance and this cause them not to able to fight the carcinogenic of HPV hence developing of cervical cancer Sinayobye *et.al.,* 2014; Jolly, P. E, 2017). Another study done in three districts of Rwanda showed that the mainly risk factors for high prevalence of cervical cancer among others were earlier age of the first pregnancy, early sexual debut, higher number of children born, STD's, parity, socio-economic factors and inability to access healthcare (Makuza *et.al.,* 2015). For the context of this study, cervical cancer screening uptake are mainly based on health facility and individual level factors.

2.4 Cervical cancer prevention

Cervical cancer is the easiest gynecologic cancer to be prevented while detected and treated early by performing best regular screening tests as well as follow-up (CDC, 2012). Cervical cancer screening is an essential part of a woman's routine health care and has been shown to greatly reduce both precancerous lesions and new cervical cancers diagnosed each year and deaths from the disease (Kress *et.al.,* 2015). Screening can identify precancerous cervical lesions and treat them using a variety of methods, including observation, cryotherapy, loop electrosurgical excision procedure (LEEP), HPV tests, according to the seriousness and magnitude of the lesion. Two prophylactic HPV vaccines namely quadrivalent and bivalent have been developed to prevent infection with HPV-16 and -18 the most known to be etiology of the disease and each one can prevent up to 70% of cervical cancer cases and with high coverage shows

massive reductions in its incidence (Crosbie *et.al.,* 2013). A three to five years screening interval should be considered for VIA negative women between the ages of 25-49 (Labeit & Peinemann, 2017). Women less than 25 years of age should be screened only if they are at high risk for disease, like those who have had early sexual exposure, multiple partners, previous abnormal screening results or HIV positive (WHO, 2013). It was also found that providing a single round of VIA followed by cryotherapy for test positive cases can reduce the lifetime risk of cervical cancer by 30%, if delivered to women between the ages of 35-45 years (WHO, 2013). Food and Drug Administration (FDA) recommended the preferred screening method for women aged 30 and older, is co-testing (with both Pap smear/ VIA and HPV tests) every 5 years; Pap testing every 3 years is an alternative (Felix *et.al.,* 2016). A randomized trial done in South India found a 25% reduction in cervical cancer incidence and a 35% reduction in mortality compared to controls with VIA followed by cryotherapy (Joshi *et.al.,* 2013).VIA is not appropriate for women over 50 years, these women should be screened at five years intervals using cytology or HPV testing but for HIV positive women, annual screening is recommended (WHO, 2013). Worldwide screening for cervical cancer is particularly very importance for sexually active women infected with HIV due to the presence CIN that cause persistent of HPV infection (De Vuyst *et.al.,* 2013). Under a national strategic plan for cervical cancer prevention, Rwanda with the effort of stakeholders made possible the achievement of 93% of 3 HPV Vaccine doses through school girls based clinics and community outreach girls for free and community health workers were responsible to motivate community on health promotion (Binagwaho *et.al.,* 2013). According to FIGO report, vaccination programme is of great importance however the emphasis or attention is more needed to the population who are at risk for cervical cancer from uncovered subtypes or those who are already exposed to virus. At present, the most accessible modality for single visit approach is visual inspection with acetic acid (Denny, 2013).This makes screening an effective means of prevention of cervical cancer even in low resource countries since precancerous lesions can be managed expectantly or treated safely and inexpensively in outpatient setting. According to Crosbie report, with adequate screening and early detection, the progression of

precancerous cervical lesions can be completely disappeared in most cases, and cervical cancers in an early stage are highly treatable (Crosbie *et.al.,* 2013). As a result, high-income countries with good levels of screening uptake have seen dramatic declines in the incidence and mortality of cervical cancer in recent decades (Ncube, 2015; Idowu *et.al.,* 2016; Labeit & Peinemann, 2017; Mukama *et.al.,* 2017; Ntekim, 2012; Nwobodo & Maryam, 2017).

2.5 Facilitators and barriers for cervical cancer screening

2.5.1. Health facility level facilitators and barriers for cervical cancer screening

Provider factors: Evidences have shown that provider factors are in two ways, positive and negative depending on many reasons. It is known that women are more likely to seek care specifically follow up if they trust their healthcare provider (Binka C *et.al.,* 2019). To maximize this trust and respect of patients includes health education that respect patient's culture, religious, values among others (Kassam D *et.al.,* 2017). Any health care procedures or acts should be mutually consented and patients who seek for cervical cancer screening should be given an option to choose who should attend to them since studies have indicated preferences of a female healthcare provider is associated with screening uptake (Bukirwa A *et.al.,* 2015). Poor healthcare provider interactions such as misunderstanding on the procedures, insufficient information, and absence of trust may prevent women to attend screening services (Binka C *et.al.,* 2019).

System factors: Most of health interventions that have been undertaken for cervical cancer screening varied in results, however the successfully health intervention is the one that engage the concerned community from the baseline (Nyanmbe A *et.al.,* 2019). Health education that create an interaction between the provider and clients, a convenient screening environment, engagement of survivors as peer educator, knowledge of the healthcare provider are the basis of a health system to motivate /attract women to seek for screening services (Koneru A *et.al.,* 2017).

Neither less, some of the health facilities infrastructure, scarce resources, lack of system will, inaccessibility, affordability , unavailability of services in some locations, lack of space in facilities for screening services and lack of self-testing kits are considered as health system potential barriers to screening (Hasahya OT *et.al.,* 2016).

2.5.2. Individual-level facilitators and barriers for cervical cancer screening

Evidence indicates that the knowledge on the value or benefit of cervical screening is associated with an individual decision to seek for the service(Compaore S *et.al.,* 2016). The use of cervical cancer screening is also associated with the perceived benefits of screening, perceived barriers to screening, predisposition to cervical cancer, and the severity of cervical cancer, all of which motivate an individual to engage in cancer screening practices (Denny, L., & Anorlu, R. (2012).

Perceived benefits

The perceived benefits of screening refer to women's perception that cervical cancer screening will lead to early detection and treatment (Mapanga *et.al.,* 2017; Denny, L., & Anorlu, R. (2012)). Individual's influence in taking into action regarding health-related behavior if perceived well the value or efficacy to decrease the risk of disease(Nwobodo and Maryam, 2017). For example, in this context if a woman believes that screening of cervical cancer will reduce its seriousness to her life, she will absolutely participate highly in screening practices regardless of the effectiveness of the action and who so ever receive any value or efficacy of the treatment will definitely not have prevention of the disease (Mingo AM *et.al.,* 2012).

Perceived susceptibility

Perceived susceptibility refers the level of individual's perception towards the risk of developing a health problem (Rosenstock, 1974). When women perceived high risk of developing cervical cancer, she will highly engage in screening programs to reduce the risk of developing disease but for those perceived low risk, denies to participate in

screening and this will affect screening uptake (Rosenstock, 1974). The perceived threat (combination of Perceived severity and susceptibility) of disease depends on the knowledge and awareness do people have on the condition eg cervical cancer and cervical screening (Julinawati, S, 2013).Those who perceived to be at susceptible to cervical cancer are more likely to go for screening (Mingo AM *et.al.,* 2012).This may be attributed to for example being HIV infected or previously having and STI's (Bayu H *et.al.,* 2015).

Perceived barriers

This happened when an individual perceives a health condition as a threatening disease and believes that a certain action could reduce the condition effectively but perceived barriers or obstacles in taking into action (Julinawati, S, 2013). Here a woman can receive information on cervical cancer and perceive that can threaten her life but the way she perceived barriers or inconveniences became an obstacle to participate in screening. Examples of such inconveniences do mostly women perceives for cervical screening are expense of the screening, danger which might happen like side effect of screening procedure and discomfort such as pain, emotional upset lack of access to affordable, accessibility and availability of health care disease (Moore de Peralta *et.al.,* 2017) and this may influence screening uptake.

Modifying Factors

These are the things that should be changed time to time but has influence on an individual's engagement in health promotion behaviors. These factors includes; an individual's demographic, psychosocial and structural characteristics that can affect perceptions indirectly to engage their lives in combustion of a particular disease by affecting perceived seriousness, susceptibility, benefits and barriers (Julinawati, S, 2013). For example, in this context, the present study will be determining whether knowledge, age, culture, educational level, marital status, parity, social support and health care component reported in some countries also can affect Rwandan women's

perceptions about cervical cancer susceptibility and severity, cervical cancer screening benefits and barriers.

Cues to action

Cues to action are the external and internal things that can at time not allow individual's engagement in health-promoting behaviors (Julinawati, S, 2013). Examples; Usage of modern contraceptive methods such as coils, implants among others and age group (30-39) of women compared to younger age (21-29) were more likely associated with screening uptake (Bayu H *et.al.,* 2015). Other studies showed that misconceptions in patients' beliefs such as fear of pain or think their uterus would be removed due to procedures taken, clear the womb and not be able to bare children again, fear of death when diagnosed cervical cancer and thinking that cervical cancer is incurable disease were also found to be the major barriers for screening uptake (Bayu H *et.al.,* 2016). The intensity of cues to action varies between individuals by perceived susceptibility, seriousness, benefits, and barriers stimulate readiness for cervical cancer screening uptake (Moore de Peralta *et.al.,* 2017).With regards to the below conceptual framework, it will help the researcher to determine the predictors of women's engagement in cervical cancer screening behaviors among women living with HIV in Kigali city.

2.6 Conceptual framework of the study

Conceptual framework is defined as a network, or "a plane," of interlinked concepts that together provide a comprehensive understanding of a phenomenon or phenomena (Tamene, E. H, 2016). In the present study, the conceptual framework is developed with a context in mind for the purpose of facilitating discussion and analysis on women's engagement in cervical cancer screening behaviors derived from HBM to determine the predictors of uptake of cervical cancer screening among HIV +women in Kigali city. The conceptual framework of this study consisted of modified HBM namely individual's perceptions about cervical cancer and cervical cancer screening and cues to action. It

also gives more details on the influence of modifiable factors on individual's perceptions towards cervical cancer screening as described in the figure below.
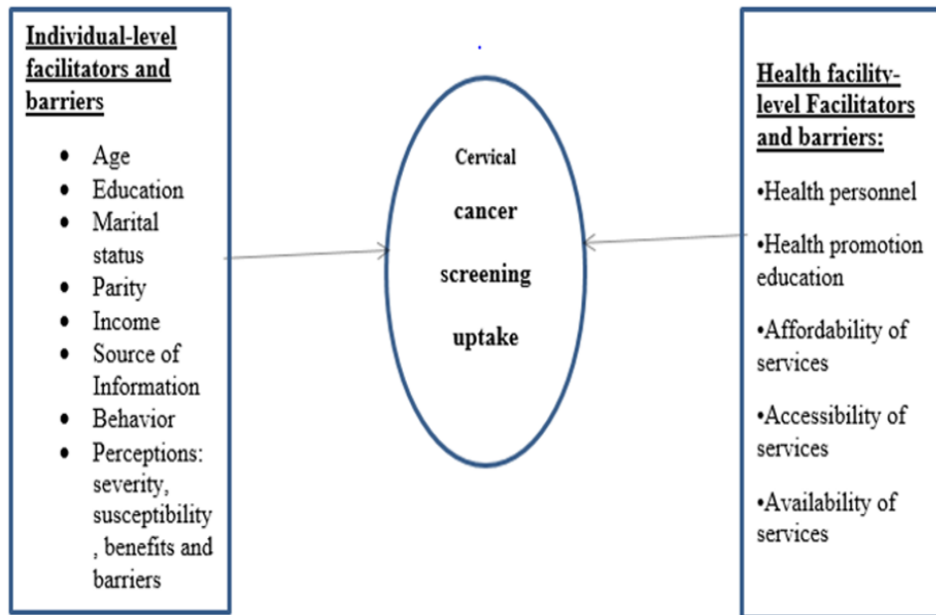
Figure 2.2: Conceptual frame work adopted from Health Belief Model (Rosenstock, 1974)

Source: (Rosenstock, 1974)

Figure 2.2: Conceptual framework adopted from Health Belief Model

2.7 Empirical literature

Worldwide women's engagement in screening for cervical cancer or not is influenced by the way how perceived (seriousness, severity, susceptibility, benefits barriers and cues to action) the threat of disease or lack of information, problems on healthcare component and social economic factors (Siddiqui *et.al.,* 2016).Cervical cancer screening uptake helps to know the number of eligible women to be screened within a population that actually got screened (Naing *et.al.,* 2012).With reference to Nigeria, among the determinants reported to influence low uptake of cervical screening among women were low knowledge about the disease and inadequate information, cues for cervical cancer screening side effects, Limited cervical cancer prevention service in terms of

accessibility, affordability and quality operating from the supply side (Nwobodo & Maryam, 2017). According to the National Cancer Institute's 2005- Health Information National Trends Survey in the United States, 40% of American women aged 18–75 years were heard about HPV, and of those women, only 20% were aware that it can cause cervical cancer (Modibbo, F. I *et.al.,* 2016). Another study done in Nigeria reported that most women had heard of cervical cancer, but were not aware of how it could be prevented and had perceived cervical cancer as a threat disease with absolutely no cure because they were relating with the experiences of their friends or family members who had cervical cancer and had died from the disease and few of them were aware that early detection and treatment saves lives (Modibbo, F. I *et.al.,* 2016). Furthermore, researchers have documented major reasons for low uptake of cervical cancer screening among women who include; not deeming the test necessary, not knowing where it could be done, not being at risk, fear of pain, and cost of the service (Ezechi *et.al.,* 2013; Nwozor & Oragudosi, 2013; Lyimo & Beran, 2012). In a qualitative study exploring reasons for the low uptake of cervical cancer screening in Nigeria, participants reported embarrassment and shy when male health-worker collect Pap smear for cervical cancer screening, long waiting time, overcrowding in facilities and time taken before test results are released were discouraging and unacceptable to women (Bukirwa A *et.al.,*, 2015). The study done in Nairobi also reported that among 384 respondents only 39% knew HPV infection to be a risk factor for the development of cervical cancer and this also presented a low uptake of screening due to lack of knowledge on the risk factors of the disease (Nthiga, 2014; Ombech, Muigai, 2012). Increased awareness of cervical cancer and Pap smear screening test is reported to promote the utilization of cervical cancer screening services in developed countries at 63% where as in developing countries, the reported Pap smear coverage is 19%, and this was due to some of challenges in implementing screening programs like lack of supplies, trained personnel, equipment, quality control, health care infrastructures and ineffective follow-up procedures in these countries (Nwobodo & Maryam, 2017). The incidence of cervical cancer in many developed countries, is decreasing because of prevention measures of vaccination, early screening and treatment taken, however, the

high incidence and lower rates of screening plus poor attendance at follow-up and low uptake of cervical screening leads to higher than average mortality rates from this preventable disease (Nwobodo & Maryam, 2017; Ezechi *et.al.,* 2013; Nwozor & Oragudosi, 2013; Lyimo & Beran, 2012).

2.9 Critical Review and Research gap Identification

Literatures that have been reviewed by the researcher give the relevant information about how the perceived awareness and knowledge about cervical cancer and cervical cancer screening can influence the uptake of women to participate in cervical cancer screening hence becomes a barrier for the prevention and increment of cervical cancer survival. The literatures also highlight an overview on some studies done in developed and developing countries like UK and USA, Nigeria, Kenya, Tanzania and Uganda on assessing the determinants of uptake of cervical cancer screening among women but did not tell us about the situation of Rwandan women in matter of uptake of cervical cancer screening. The reason behind this is because there is limited number of studies done in Rwanda specifically on the uptake of cervical cancer screening and therefore, the present study aims to provide information on the predictors of the use of cervical cancer screening among HIV-infected women in the city of Kigali, which was previously lacking and which plays a key role in the prevention and eradication of the disease.

2.10 Summary

This chapter of literature review is summarized by the theoretical literature whereby authors' gives details on what is cervical cancer, risk factors of cervical cancer, prevention of cervical cancer, signs and symptoms. The conceptual framework highlights possible determinants of cervical cancer screening uptake and the empirical literature which explains how the mentioned determinants such as lack of awareness and knowledge on cervical cancer and screening, inadequate cervical cancer service delivery influence women's perception to participate in screening programs hence low uptake of cervical cancer screening and the raise of the disease in the country. Researcher after an

overview of different studies done   on predictors of uptake of cervical cancer screening among women in other countries and found that there is need to have the same study in Rwanda in order to determine what predicts women to attend cervical cancer screening programs or not.

CHAPTER THREE

MATERIALS AND METHODS

3.1 Study design

This is a cross- sectional study design using quantitative approach, this was chosen based on the fact to measure the outcome at the same time with the predictors.

3.2 Study sites

The study was conducted in the city of Kigali, a large population with high HIV prevalence compared to rural areas of the country (6%) and (2%) (RDHS, 2014-15) in August, 2018 to Feb, 2019. Specifically, it was conducted in four health centers: Remera, Kicukiro, Kacyiru, and Gikondo (Figure 3) that offer cervical cancer screening services among others in the city of Kigali as part of the Einstein study (Murenzi G et.al.,.2018).
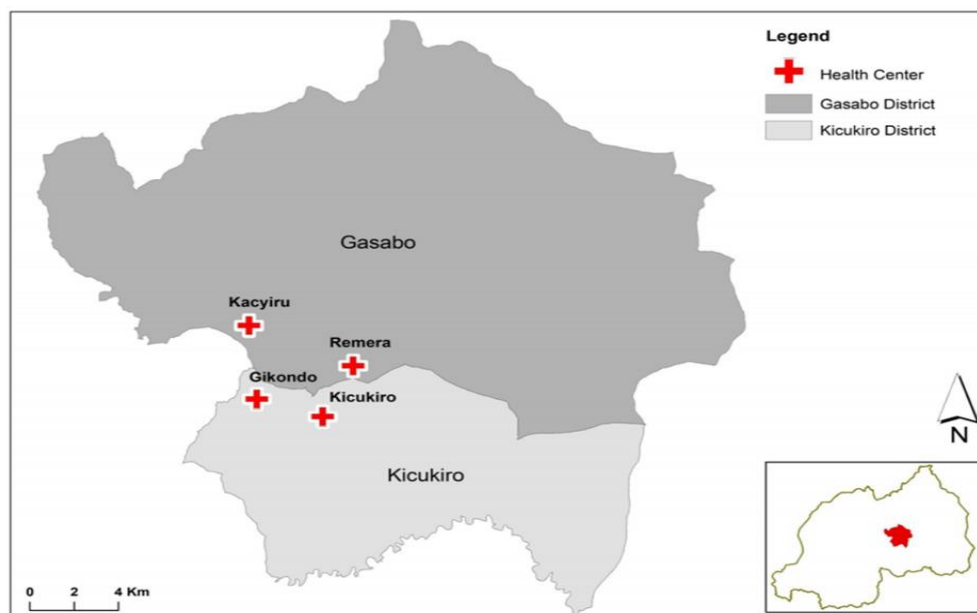
Figure 3.1: Map showing the four health facilities used in the study

Figure 3.1: Map showing the four health facilities used in the study

3.3 Study population

Screening programs are relatively new in Rwanda. The program targets women between the ages of 30 and 50 years old, which appears to be at risk of developing cervical cancer (World Health Organization, 2013)). As some studies indicate, cervical cancer screening in women aged 20-24 years has little or no impact on invasive cervical cancer rates up to age 30 ((Ghebreyesus, T. A., & World Health Organization, 2018) . HPV infection which common to individuals living with HIV, is considered as a leading factor to cervical cancer (Murenzi G *et.al.,*.2018). Therefore women living with HIV are at higher risk of developing cervical cancer.

The study population for this study was HIV-infected women seeking HIV care services at the above-mentioned health centers.

3.3.1 Inclusion Criteria

1. All women living with HIV aged 30-50years
2. All women living with HIV willing to give consent and participate.

3.3.2 Exclusion Criteria

1. Very sick(that are admitted or referred to next level of treatment) women living with HIV
2. All women living with HIV who are not willing to give consent and participate in the study.

3.4 Sampling

3.4.1 Sample size determination

Cochran's formula (Cochran, 1977) was used to determine the sample size for this study (Bartlett, J. E., Kotrlik, J. W., & Higgins, C. C, 2001) . Since there were limited previous studies to determine the proportion of cervical cancer screening uptake in Rwanda, the sample size was determined as follows;

$$n = \frac{Z^2 * P(1-P)}{D^2}$$

Whereby;

- n =Sample size
- Z = Normal distribution value corresponding to 95% of confidence interval (1.96)
- P = Success probability (0.5 because of limited study to refer from).
- D = Precision level = 0.05
- Q(1-P) (failure probability)=0.5

Based on the above assumption, the desired sample size was calculated as;

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

$$n= \frac{(3.8416 \, {}^*0.25)}{0.0025}$$

n= 384.16 (384-the sample size for the current study).

3.4.2 Sampling procedure

A total of 6,111 women living with HIV were enrolled in the care services of Remera (2,127), Kicukiro (1,754), Gikondo (1,205), and Kacyiru (1,025) at the time of data collection, and 384 participants were drawn from this population using systematic random sampling method in 15.91 sampling intervals. The sampling interval was computed using the following formula;

$$K = \frac{N}{n}$$

Where K represents the sampling interval= ?,

N represents the population= 6,111,

and n representing the sample size = 384

Therefore, K= 6,111/384

K =15.91.

Table 3.1: Sampling procedure

Health center	Total WLHIV (N)	Sample size per site (N/K)
Gikondo	1,205	75.74
Kacyiru	1,025	64.42
Kicukiro	1754	110.25
Remera	2,127	133.69
Total	6111	384.10

3. 5 Data management

3.5.1 Data Collection tools and procedures

Semi-structured questionnaires were administered, managed by the researcher and the two nurse assistants. Questions included: socio-demographic and economic factors, access to health care, knowledge and perception on cervical cancer, screening practices, exposure to risk factors and factors related to cervical cancer screening. All questions were administered in Kinyarwanda the language that every participant was free to respond to questions. To ensure the validity of the tool, a pre-test was conducted with 10 participants and found the tool to be understandable.

3.5.2 Data entry

A data base was designed in Microsoft Access and exported to SPSS Version 24.0

3.5.3 Data Analysis

The conceptual framework adopted from a modified Theory of Health Belief Model was used to guide the analysis of the study. The filled questionnaires were collected, entered into a designed Microsoft access, validated and analyzed using statistical package for social sciences (SPSS) version 24.0. Chi Square tests for proportions were used for bivariate analysis. The multivariate logistic regression was used to determine the potential predictors of cervical cancer screening uptake among women living with HIV in Kigali. Variables were considered statistically significant with a P-values < 0.05.

3.5.4 Dissemination of findings

Findings were presented in the international review board of Jomo Kenyatta University of Agriculture and Technology, Nairobi (JKUAT-JUJA) and published in the International Journal of Science and Research (IJSR) (https://www.ijsr.net/archive/v8i5/ART20198099.pdf).

3.6 Ethical Considerations

Ethically, approval to conduct the study was obtained from Jomo Kenyatta University of Agriculture and Technology (JKUAT) Institutional Review Board Ref: JKU/2/4/8/96A with the consensus of Rwanda National Ethical Committee Ref: N° 837/RNEC/2016. Permission for data collection was obtained from the head of health centers at study sites. The researcher also used the Collaborative Institutional Training Initiative (CITI) program certificate in accordance with the requirements set by the Albert Einstein College of Medicine on Good Clinical Practice for Clinical Trials Involving Drugs (ICH focus) as equivalent to the NACOSTI permit to conduct the study in the appendix (g) https://www.citiprogram.org. Participants were requested to give their consent prior to the administration of the questionnaire. The informed consent used was adapted from the World Health Organization's informed consent model for clinical research. It consists of two parts: (1) an information sheet that outlines the objectives of the study and the reasons why the study is being conducted, and (2) a consent certificate, in which the participant voluntarily signs the form to indicate that he or she agrees to participate in the study. (https://www.who.int/ethics_InformedConsent_clinicalstudies_doc)

3.6.1 Confidentiality

Participants' identification data were identified and assigned a code number for data processing purposes. All the study data was stored in an area that had limited access. The hard copies data was stored in a locked cabinet that cannot be accessed by anybody except the researcher.

CHAPTER FOUR

RESULTS

4.1 Social demographic, economics and behavior of study participants

Women living with HIV who participated in this study were mostly aged 35-39 years (32.4%), Christian (95.5%), with primary level of education (57%), casual worker (36.5%) and married (49.7%) with more than one sexual partner (75.3%)

Table 4.1: Social demographic, economics and behavior of study participants

Characteristics	Frequency	%
Age category		
30-34 Years	89	23.2
35-39 Years	126	32.8
40-44 Years	89	23.2
45-49 Years	62	16.1
50 Years	18	4.7
Religion		
Christian	366	95.3
Muslim	14	3.6
other	4	1
Education		
No formal education	67	17.4
Primary	219	57
Secondary	55	14.3
College/Technical_School	32	8.3
University	11	2.9
Job status		
Self employed	127	33.1
Casual Worker	140	36.5
Housewife	30	7.8
Formal employed	10	2.6
Unemployed	77	20.1
Marital status		
Married	191	49.7

Single	**44**	**11.5**
Separated	**89**	**23.2**
Widow	**60**	**15.6**
Number of sex partners		
One partner	**71**	**18.5**
More than one partner	**289**	**75.3**
Don't know	**24**	**6.3**

4.2 Uptake of cervical cancer screening among respondents

The outcome variable for this study was cervical cancer screening uptake among women living with HIV. On a total of 384 women; almost 226 (59%) have been ever screened
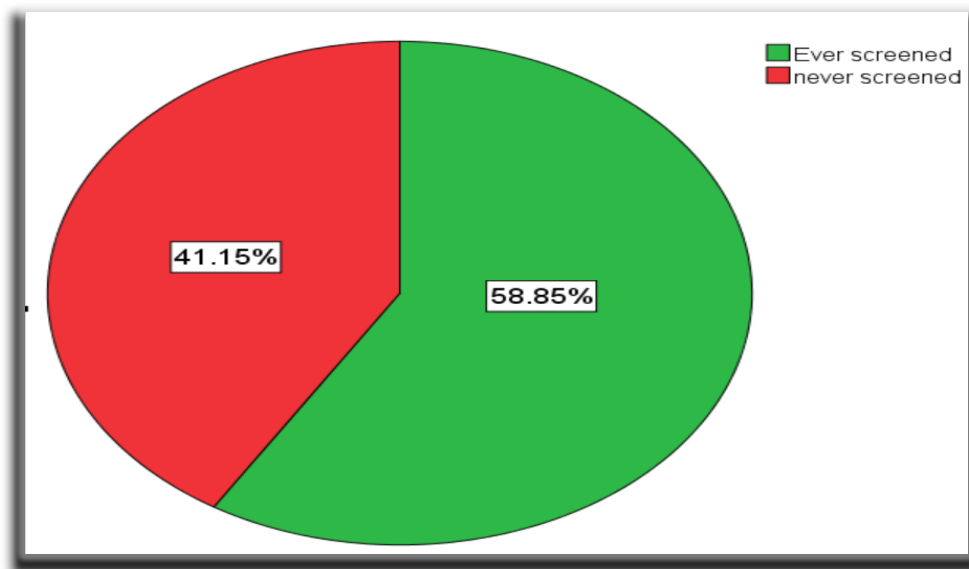
compared to 158 (41%) never screened for cervical cancer in the figure below.

Figure 4.1: Cervical cancer screening status

4.2 Individual –level factors and screening status

Table 2 indicates that age category (p-value=0.000) and religion of participants (p= 0.042) were statistically associated with screening status of women.

Table 4.2: Bivariate analysis of Individual level factors and screening status

Characteristics	Screening status		P-value
	Ever screened	Never screened	
Age category			
30-34 Years	36 (40.4%)	53(59.6%)	
35-39 Years	79(62.7%)	47(37.3%)	
40-44 Years	63(70.8%)	26(29.2%)	**0.000***
45-49 Years	40(64.5%)	22(35.5%)	
50 Years	8(44.4%)	10(55.6%)	
Marital status			
Married	123(64.4%)	68(35.6%)	
Single	22(50%)	22(50%)	
Separated	49(55.1%)	40(44.9%)	**0.162**
Widow	32(53.3%)	28(46.7%)	
Religion of the participant			
Christian	219(59.8%)	147(40.2%)	
Muslim	7(50%)	7(50%)	**0.042***
other	0(0%)	4(100%)	
Job status			
Self-employed	69(54.3%)	58(45.7%)	
Casual worker	87(62.1%)	5337.9%)	
Housewife	22(73.3%)	8(26.7%)	**0.299**
Formal employed	6(60%)	4(40%)	
Unemployed	42(54.5%)	35(45.5%)	
Education level of participant			
No formal education	40(59.7%)	27(40.3%)	
Primary	132(60.3%)	87(39.7%)	
Secondary	32(58.2%)	23(41.8%)	**0.314**
College/Technical_School	19(59.4%)	13(40.6%)	
University	3(27.3%)	8(72.7%)	
Number of male sex partners			
One partner	37(52.1%)	34(47.9%)	
More than one partner	177(61.2%)	112(38.8%)	**0.248**
Don't know	12(50%)	12(50%)	

4.3 Health facility –level factors and screening status

The below table 3 indicates that health care provider talks (p=0.000), health facilities that have screening services far from participants residence (p=0.004), cost of screening services (p=0.001), not comfortable with health care provider offering screening services (p= 0.000), radio as source of information (p= 0.000), Healthy facilities fliers/posters and message by attending clinician (p= 0.000) were found to be significantly associated with cervical cancer screening status.

Table 4.3: Bivariate analysis of health facility level factors and screening status

| Variable | Screening status | | P-value |
	Ever screened	Never screened	
Health talks by health care providers			
No	25	83	0.000
Yes	201	75	
Availability of screening services			
No	80	66	0.123
Yes	146	92	
Screening services are far			
No	114	102	0.004
Yes	112	56	
Screening services are very expensive			
No	127	114	0.001
Yes	99	44	
Un comfortable with the health workers offering screening			
No	148	131	0.000
Yes	78	27	
Source of information: Radio			
No	178	98	0.000
Yes	48	60	
Source of information_: Healthy facilities fliers/posters			
No	105	133	0.000
Yes	121	25	
Source of information: Message by attending clinician			
No	152	134	0.000
Yes	74	24	

4.2.1 Multivariable-individual predictors associated with cervical cancer screening uptake

Table 4 below indicates that study participants who were single compared to those who were married (OR: 2.251.95% CI: 1.048-4.834) at the time of the survey were almost twice as likely to be screened. Participants with education, especially those with a university education compared to those without education (OR: 7,474.95% CI: 1,411-

39,601) were seven times more likely to be screened for cervical cancer. While the age group of 35-39 year olds (OR: 0.449, 95% CI: 0.246-0.821), 40-44 year olds (OR: 0.259, 95% CI: 0.129-0.519) and 45-49 year olds (OR: 0.384, 95% CI: 0.180-0. 822) compared to study participants aged 30-34 years and casual workers (OR: 0.568, 95% CI: 0.322-1.001), housewives (OR: 0.329, 95% CI: 0.122-0.888) compared to the self-employed were less likely to be associated with cervical cancer screening.

Table 4.4: Individual level predictors associated with uptake of cervical cancer screening among WLHIV

| Chacteristics | Screening status | | P-value | OR | 95% C.I. | |
	Ever screened	Never screened			Lower	Upper
Age category						
30-34 Years	36 (40.4%)	53(59.6%)	**Ref**			
35-39 Years	79(62.7%)	47(37.3%)	**0.009**	**0.449**	**0.246**	**0.821***
40-44 Years	63(70.8%)	26(29.2%)	**0**	**0.259**	**0.129**	**0.519***
45-49 Years	40(64.5%)	22(35.5%)	0.014	0.384	0.18	0.822
50 Years	8(44.4%)	10(55.6%)	0.614	0.738	0.227	2.402
Marital status						
Married	123(64.4%)	68(35.6%)	**Ref**			
Single	22(50%)	22(50%)	**0.038**	**2.251**	**1.048**	**4.834***
Separated	49(55.1%)	40(44.9%)	0.276	1.374	0.776	2.434
Widow	32(53.3%)	28(46.7%)	0.114	1.718	0.878	3.362
Job status						
Self-employed	69(54.3%)	58(45.7%)	**Ref**			
Casual worker	87(62.1%)	5337.9%)	0.051	0.568	0.322	1.001
Housewife	22(73.3%)	8(26.7%)	**0.028**	**0.329**	**0.122**	**0.886***
Formal employed	6(60%)	4(40%)	0.826	0.841	0.179	3.944
Unemployed	42(54.5%)	35(45.5%)	0.999	0	0	
Religion of the participant						
Christian	219(59.8%)	147(40.2%)				
Muslim	7(50%)	7(50%)		NA[b]		
other	0(0%)	4(100%)				
Education level of participant						
No formal education	40(59.7%)	27(40.3%)	**Ref**			
Primary	132(60.3%)	87(39.7%)	0.392	1.311	0.705	2.437
Secondary	32(58.2%)	23(41.8%)	0.663	1.197	0.534	2.682
College/Technical_School	19(59.4%)	13(40.6%)	0.963	1.023	0.387	2.707
University	3(27.3%)	8(72.7%)	**0.018**	**7.474**	**1.411**	**39.601***
Number of male sex partners						
One partner	37(52.1%)	34(47.9%)	**Ref**			
More than one partner	177(61.2%)	112(38.8%)	0.185	0.673	0.375	1.209
Don't know	12(50%)	12(50%)	0.561	0.73	0.252	2.109

NA[b]: Sample size is too small to enable calculate the 95% confidence interval.

4.3.1 Multivariable analysis of health facility level factors associated with cervical cancer screening status.

Concerning health facility level factors, table 5 indicates that Radio as source of information is a predictor of cervical cancer screening (OR:2.099,95% CI: 1.199-3.675) whereas health care provider talks with patients (OR: 0.178,95% CI: 0.98-0.326), cost of

screening services (OR:0.45, 95% CI: 0.181-0.982) and use health poster /fliers (OR:0.295, 95% CI: 0.165-0.530) were not associated with screening uptake.

Table 4.5: Health facility-level predictors associated with uptake of cervical cancer screening among WLHIV

Characteristics	Screening status		P-value	OR	95% C.I.	
	Ever screened	Never screened			Lower	Upper
Health talks by health care providers						
No	25	83	Ref			
Yes	201	75	0.0000	0.178	0.098	0.326*
Availability of screening services						
No	80	66	Ref			
Yes	146	92	0.9570	1.017	0.54	1.916
Screening services are far						
No	114	102	Ref			
Yes	112	56	0.4690	1.349	0.6	3.035
Screening services are very expensive						
No	127	114	Ref			
Yes	99	44	0.0450	0.422	0.181	0.982*
Un comfortable with the health workers offering screening						
No	148	131	Ref			
Yes	78	27	0.2320	0.616	0.278	1.364
Source of information: Radio						
No	178	98	Ref			
Yes	48	60	0.0090	2.099	1.199	3.675*
Source of information_: Healthy facilities fliers/posters						
No	105	133	Ref			
Yes	121	25	0.0000	0.295	0.165	0.53*
Source of information: Message by attending clinician						
No	152	134	Ref			
Yes	74	24	0.9750	1.01	0.543	1.879

CHAPTER FIVE

DISCUSSION, CONCLUSION AND RECOMMENDATION

5.1 Discussion

5.1.1 Social demographic and socioeconomic of study participants

In this study focusing on predictors of cervical cancer screening uptake among WLHIV in Kigali City, results indicated that most of the study participants were married (49.7%) and Christians (95.5%). The same results were found in Ghana where majority of participants(53.2%) were married and, almost all participants (89.7%) were Christians (Ebu N. I, 2018). These results also indicated that in our sample, a good number of participants were mostly aged between 35-39 years (32.4%). This indicate that cervical cancer screening uptake increase as the age increases. Similarly, a study conducted in some East Africa countries (Ethiopia, Kenya, Uganda and Rwanda) reported cervical cancer screening uptake to be higher among women aged 40 years (Wanyenze *et.al.,.* 2017, Mbatia, 2016, Nyangasi *et.al.,.* 2018 and Nega *et.al.,.* 2018).

5.1.2 Uptake of cervical cancer screening among respondents

The study findings, indicated that cervical screening uptake was moderately (59%) good among participants, similarly to Boris Tchounga *et.al.,.* 2019 findings in west Africa. In contrast, reports from neighboring countries , Uganda, Kenya, and Ethiopia indicated a low cervical cancer screening uptake ,30.3% in Uganda (the whole country in 2017), 15.4% in Kenya Naivasha, 2016 and 16.4% the whole country, 2018., 10%in Ethiopia (Nothern Ethiopia in 2018) (Wanyenze *et.al.,.* 2017, Mbatia, 2016, Nyangasi *et.al.,.* 2018 and Nega *et.al.,.* 2018). Most of the participants (95% or 213 women) in the current study were screened at a health center, which would explain the increase in the rate of cervical cancer screening due to the availability of screening programs.

5.1.3 Individual level predictors associated with cervical cancer screening uptake

Our findings indicated that individual factors that predict cervical cancer screening were mostly dominated by level of education, like university degree, and marital status like being single. Similarly, (Ebu N. I Boris Tchounga *et.al.,*2019, 2018) in West Africa and Ghana, reported that a university level would be the most predictor for cervical cancer screening uptake (Boris Tchounga *et.al.,*. 2019, Ebu N. I, 2018).   However, a study conducted in Ghana reported marital status as none determinant of cervical cancer screening (Ebu N. I, 2018)

A higher age category and being a housewife were considered less likely factors for cervical cancer screening uptake. The same results were found in the north west of Ethiopia whereby age category was likely to decrease the odds of cervical cancer screening (Nega *et.al.,*. 2018). In contrast, Silver *et.al.,*. (2018) reported that age category would increase cervical cancer screening in Toronto, USA, the same report was found in Uganda and Tanzania (Wanyenze *et.al.,*. 2017, Nwobodo &Maryam, 2017). Current results indicate an effect of age on the uptake of cervical cancer screening, despite inconclusive results from various studies. There may be other factors, in addition to age, that were not explored in our study that may influence the screening of cervical cancer in WLHIV. Among them, we believe that the number of pregnancies, the mode of delivery of each child, past medical history, etc. would all have an influence on the screening of cervical cancer.

5.1.4 Health facility level predictors associated with cervical cancer screening uptake

Findings on Facility level-factors in relation to cervical cancer screening uptake among women living with HIV indicated that mass media such as Radio as source of information was the most predictor for this screening. Similar results were found in Kenya (Morris, R. M. (2016).Whereby most respondents in his study revealed that obtaining of information from media especially radio and television would increase the

odds of screening uptake. Our results also showed that health care provider talks with patients, the cost of screening services, and the use of health posters or brochures were negatively associated with participation in screening. This could be due to the lack of basic health education between providers and patients about cervical cancer and the absence of posters or brochures at the health center indicating the benefits of cervical cancer screening. Whereas, reports from West Africa indicated that being informed on cervical cancer at the health facility and being proposed cervical cancer screening by a healthcare provider were associated with cervical cancer screening uptake (Ebu N. I Boris Tchounga *et.al.,* 2019, 2018).

Similar reports were found in Nigeria, whereby lack of information about cervical cancer screening having no idea of where to go for screening ,inaccessibility of screening cervices were reported to be the most influencing factor for the low uptake of cervical cancer screening (Nwobodo & Maryam, 2017).

Our study is one of the few researches done in Rwanda about cervical cancer screening uptake and the first to our knowledge among women living with HIV determining uptake of cervical cancer screening.

The use of these findings, particularly in schools and non-formal community education at all reproductive ages, the inclusion of cervical cancer screening in most health education plans as well as in the media, would increase the observed rate of cervical cancer screening and thus prevent the onset of the disease. Interpretation of these results should only be made for women living with HIV residing in the city of Kigali and would shed light on thoughts from other parts of Rwanda.

Our findings indicate that there is a need to raise awareness through the development of basic health education on cervical cancer screening as well as the improvement of existing health services dedicated to cervical cancer screening.

5.2 Conclusion

1. The cervical cancer screening rate among HIV-positive women in Kigali, Rwanda has been quite good.
2. Individual factors such as marital status and education level were the strongest predictors of cervical cancer screening among women living with HIV in Kigali, Rwanda.
3. Dissemination of cervical cancer screening information by health facilities was found to be the best practice for increasing screening uptake. Outreach services focusing on community awareness and integration of screening practice at all levels of the health system would add value to the uptake of screening. Cervical cancer screening is an appropriate practice for the early detection of cervical cancer and thus an effective public health intervention for its prevention.

5.3 Recommendations

1. The results of this study highlighted a number of challenges related to cervical cancer screening among women living with HIV in Rwanda. Overall, the integration of cervical cancer screening as a health intervention into educational curricula is critical to the uptake of cervical cancer screening. We have therefore made the following recommendations:

2. **Women living with HIV**

   Individually, improving education would be a better way to increase access and frequency of cervical cancer screening for people living with HIV.

3. **Healthcare facility**

   Health care providers should include and provide information on cervical cancer screening through health education and specific health talks.

   Improve the provision of cervical cancer screening information to the community and integrate it into annual health education plans.

Work with local leaders to provide this information, if possible, for example through meetings or community services. Work with local media to disseminate information about cervical cancer screening.

5.3.1 Fields for Further Research

It is important to note that due to time and financial constraints, this research did not cover all aspects of cervical cancer screening. Additional research and studies are needed to cover the areas that were left out of the scope of this study, particularly the qualitative part. With this in mind, the following areas have been proposed for further research:

1. Policy and guidelines for community health education regarding cervical cancer control and prevention
2. Knowledge, attitudes and behaviors for and against cervical cancer screening in Rwanda
3. Further research is needed to assess the effect of age group and being a housewife as a type of employment and the use of cervical cancer screening.

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APPENDICES

Appendix I: Cross-sectional Questionnaire - English

Thanks a lot for your time to participate in this study. My name is Lydia BUSINGE a Master's candidate in Public Health from JKUAT. I am intended to know what predicts the uptake of cervical cancer screening among HIV+ women in Kigali city. Here is a list of some inquiries I have gathered to help me achieving my objective and would like your inputs. The findings of this study will confidentially be treated and only used for academic research purpose. Your participation is voluntary and your name will not be appeared in this study. All information given will be treated confidentially. It is not necessary to mention your name on this questionnaire.

Participant [   ] **number**

Interviewer_____

Date of Interview: _ _ /_ _ / _ _ _ _ (dd/mm/yyyy)

You will use sign (√) to every correct answer.

1. What is your age?

_____

2. What is your Religion?

 Christian _____ Muslim, _____Other (specify) _____

3. What is the highest level of education that you have attained?

No education_____Primary _____Secondary education _____

College/Technical school _____   University_____

4. What is your job status?

Self —employed____Casual worker_____Housewife_____Employed _____Unemployed_____

5. What is your personal monthly Income (RFW)?

Less than 5000_____Between 5,001-10,000_____Between 10,001-15,000_____Over 15000____

6. What is your current marital status?

Married_____ Single _____ Separated_____ Widow_____

7. How many sex partners have you had in your life? One_____More than one_____

8. Are you currently in a relationship? Yes_____ No_____

9. If yes, is your current sex partner circumcised? Yes_____ No_____

10. Have you ever had a baby? Yes_____ No_____

11. If yes how many number of children do you gave birth to? < 4 kids_____> 4 kids_____

12. At what age did you get your first child or first sexual intercourse?

>18 years_____18-21 years_____<21 years_____

13. Have you ever used any family planning method? Yes_____ No_____

14. If Yes, which family planning method did you use?

COC___IUD____Injections___Implant____Male/Female condom _____ (Other (Specify) ____

15. Have you ever lost any pregnancies? Yes _____No _____

16. If yes, how was the pregnancy lost? Through miscarriages_____Abortions _____

17. Do you smoke tobacco or ever smoke? Yes_____No_____

18. If yes for how long? >1 year_____1 year _____>1year _____ life time_____

19. Have you ever heard of cervical cancer/HPV screening? Yes_____No_____

20. If yes, where have you got information about cervical cancer and cervical cancer screening?

Radio_____Television_____Magazines_____Newspapers_____Healthyfacilitiesfliers/po sters___Health talks by health care providers____Message by attending clinician_____

21. Which of the following do you know could influence the development of cervical cancer?

Multiple sex partners_____unprotected sex_____Early sex_____smoking_____

HIV/Aids, STDs_____HPV infection_____Family history of cervical cancer_____

Family planning methods_____

22. Which of the following do you know could be the sign and symptoms of cervical cancer?

- Vaginal bleeding between periods_____

- Persistent lower back pain _____
- Persistent vaginal discharge that smells unpleasant_____
- Discomfort or pain during sex_____
- Menstrual periods that are heavier or longer than usual_____
- Persistent diarrhea_____
- Vaginal bleeding after menopause_____
- Persistent pelvic pain_____
- Vaginal bleeding during or after sex_____
- Blood in the stool or urine_____

23. What cervical cancer screening procedures do you know?

Pap smear_____VIA/VILLI_____HPV/DNA testing_____Colposcopy biopsy_____

24. Have you ever undergone cervical cancer screening?
Yes_____No_____

25. If yes where did you got screened?

At this health center_____From another health center_____

26. If yes what motivated you to go for screening?

- Cervical cancer is preventable and curable if detected and treated early_____
- It helps a woman know if she has a problem with her cervix_____
- A woman should be screened even if she feels healthy_____
- Recommended by Doctor/ health worker_____
- Feel at risk of developing cervical cancer_____
- It is done to all tested HIV[+] women at this health center_____
- Advised by counselors at health clinic_____
- Other specify_____
- Refused to answer_____

27. How many times have you ever screened since you were diagnosed with HIV/AIDS?

One time_____Two times_____More than two times_____Refused to answer_____

28. In general, what would be the reason for women to do not go for screening?

- Lack of information on cervical cancer and cervical cancer screening_____
- Lack of information on where to go for the first test_____
- No screening services available at this health center_____
- Health facilities that has screening cervices are far_____
- Screening services are very expensive_____
- Not comfortable with the health workers offering screening_____
- Fear of pain and discomfort due to procedures taken_____
- Fear to have diagnosed of cervical cancer yet HIV-infected_____
- Fear of death after diagnosed cervical cancer. _____
- Our family, religion culture doesn't accept screening activities_____
- Feel ok, no need to be screened_____
- Don't have time_____
- Other (specify)_____
- Refused to answer_____

29. How could you rate the importance of cervical cancer screening?

- Very important_____
- Quite important_____
- Not important_____
- I don't know_____

30. Could you advice women in your family and friends to be screened? Yes _____No_____

31. What ways among the following you would wish to receive information about general health issues eg cervical cancer?

Radio_____Television_____Magazines_____Newspapers____Healthyfacilitiesfliers/posters___Health talks by health care providers____Message by attending clinician_____

32. What measures do you think the government of Rwanda should put in place to help women living with HIV take up cervical cancer screening? (Tick all that apply.)

- Health education_____
- Training staffs on service provision_____
- Available and accessible screening services_____
- Funding cervical cancer related services_____
- Awareness raising through media, conferences, women talks, churches or mosques etc_____

_____END_____

Appendix II: Cross-sectional Questionnaire – Kinyarwanda version

Urakoze cyane kumpa umwanya wawe witabira ububushakashatsi. Nitwa Lydia BUSINGE umunyeshuli urangiza icyiciro cya cyagatatu mubijyanye n'Ubuzima rusange muri kaminuza ya JKUAT. Nkaba ngamije kumenya, impanvu zituma abagore babana n'ubwandu bw'agakoko gatera sida mumugi wa Kigali bitabira cyangwa batitabira gusuzumwa kanseri y'inkondo y'umura. Ahangaha har'urutonde rw'ibibazo nashyize hamwe kugirango binfashe gusubiza intego yubu bushakashatsi nkaba nifuza ko wabigiramo uruhare. Imyanzuro y'ububushakashatsi izabikwa muburyo bwibanga rikomeye kandi ikoreshwe kumpanvu z'ubumeny mumashuri. Kwitabira kwawe n'ubushake, izina ryawe ntirizigera rigaragara mur'ububushakashatsi. Amakuru aributangwe yose azabikwa muburyo bwibanga. Ntabwo arigombwa kuvuga izina ryawe kurupapuro rubaza.

Inomero   yuwitabiriye ubushakashatsi

Ubaza_____

Italiki y'ikiganiro: _ _ / _ _ / _ _ _ _ (umunsi/ukwezi/umwaka)

Uraza gusubiza ukoresheje ikimenyetso (√) ku gisubizo cyawe nyakuri.

1. Ufite imyaka ingahe?_____

2. Usengera murihe dini?

 Abemera kirisitu ____Umw'Isilamu, _____irindi (rivuge) _____

3. Ufite ikihe cyiciro cyamashuli? Sinigeze niga _____Amashuli abanza _____Amasuri yisumbuye _____Amashuli y'imyuga _____ Kaminuza_____

4. Ukora iki??

Ndikoresha_____Nyakabyizi_____Imirimo yo murugo_____nkorera leta_____ntakazi ngira_____

5. Winjiza amafaranga angahe ku kwezi (RFW)?

Munsi ya 5000_____hagati ya 5,001-10,000_____hagati ya 10,001-15,000_____hejuru ya 15000____

6. Iranga mimerere yawe?

Narashatse_____ ingaragu _____ natandukanye numugabo byemewe namategeko_____ umupfakazi_____ natandukanye numugabo bitemewe namategeko_____

7. Wakoranye n' abagabo bangahe imibonano mpuzabitsina mubuzima bwawe? Umwe_____hejuru y'umwe_____sinabamenya_____

8. Waba ubana n'umugabo? Yego_____ oya_____

9. Niba ari yego umugabo murikumwe arasiramuye? yego_____ oya_____

10. Warabyaye? yego_____ oya_____

11. Niba ari yego wabyaye abana bangahe? Munsi yaba 4_____Hejuru yaba 4_____

12. Wabyaye umwana wambere ufite imyaka ingahe ?

Munsi yimyaka 18_____hagati ya 18-21 _____Hejuru y'imyaka 21 _____

13. Wakoze imibonano mpuzabitsina bwambere ufite imyaka ingahe?

Munsi yimyaka 18_____hagati ya 18-21 _____hejuru y'imyaka 21 _____Sinibuka_____

14. Wigeze ukoresha uburyo bukoreshwa mukuboneza urubyaro? Yego_____ oya_____

14. Niba ari yego, nubuhe buryo wakoresheje cyangwa ukoresha?

Ibinini ___Agapira ko mumura____Urushinge___Agapira ko mukaboko____Agakingirizo ____ibindi bivuge ____simbizi_____

15. Wigeze ukuramo inda? Yego _____oya _____

16.Niba ari yego wakuyemo inda zingahe? _____Tanga impanvu?

Yakuwemo nuburwayi_____nayikuyemo kubushake _____ Impanuka_____

17. Unywa itabi, cyangwa wararinyoye? Yego_____oya_____

18.Niba ari yego wabikoze mugihe kingana iki? Munsi y'umwaka 1_____umwaka 1 _____hejuru y'umwaka 1 _____ mubuzima bwange bwose_____Sinibuka_____

19. Wigeze wunva amakuru kubijyanye nogusuzuma kanseri y'inkondo y'umura? Yego_____oya_____

20. Niba ari yego ayo makuru ajyanye nogusuzuma kanseri y'inkondo y'umura wayabonye mubuhe buryo?

Radiyo_____Televisiyo_____Ibinyamakuru_____Invaho____Kubigondreabuzima___ Abajyanama bubuzima____Abaganga_____inshuti/umuvandimwe_____

21. Muribi bikurikira, nibihe bishobora gutuma amahirwe yokwandura kanseri y'inkondo y'umura kumugore yiyongera? **Subiza ahashoboka hose**

Abagabo benshi_____imibonano idakingiye _____gukora imibonano ufite imyaka micye_____kunywa itabi_____ kubana n'ubwandu bwagakoko gatera sida cyangwa izindi ndwara zandurira mumibonano mpuzabitsina_____ubwandu bwa HPV ____amateka ya kanseri y'inkondo y'umura mumuryango _____ibikoresho biboneza urubyaro_____simbizi_____

22. Nibihe bimenyetso bya kanseri y'inkondo y'umura waba uzi muribi bikirikira?
Subiza ahashoboka hose

- Kuva mugitina nta mihango_____
- Kuribwa umugongo wohasi bihoraho _____
- Uruzi rusohoka mugitsina runuka nabi_____
- Kunva ubabara mugitsina mugihe cy'imibonano mpuzabitsina_____
- Imihango idashira kandi myinshi_____
- Guhitwa bihoraho_____
- Kuva mugitsina waragiye muri menopoze_____
- Uburibwe budashira bwo mumatako_____
- Kuva mugitsina mbere na nyuma y'imibonano_____
- Amaraso mumabyi cyangwa mu nkari_____

23. Nubuhe buryo uzi bukoreshwa mugusuzuma kanseri y'inkondo y'umura?

Gusuzumisha ijisho_____ Gusuzumwa hafashwe ibindi bizami mugitsina_____simbizi____

24. Wigeze wisuzumisha kanseri y'inkondo y'umura?
Yego_____oya_____

25. Niba ari yego nihe wabikoreye?

Kuriki kigo nderabuzima_____Ahandi_____

26. Niba ari yego niki cyaguteye kwitabira kujya kwisuzumisha kanseri y'inkondo y'umura? **Subiza ahashoboka hose**

- Namenyeko Kanseri y'inkondo y'umura iyo isuzumwe , ikavurwa hakirikare irakira_____
- Kwisuzumisha bifasha umugore kumenya inkondo y'umuraye ko nta kibazo ifite_____
- Umugore ningombwa kwisuzumisha inkondo y'umura n'ubwo ntakibazo afite _____
- Nabyandikiwe n'umuganga_____
- Nfite   amahirwe   menshi   yo   kuba   nakwandura   kanseri   y'inkondo y'umura_____
- Abagore   bose   basanganye   ubwandu   barabikorerwa   kuri   ikigo nderabuzima_____
- Inama za bajyanama b'ubuzima kuri kigo nderabuzima_____
- Ikindi (kivuge)_____
- Ntagisubizo_____

27. Nikangahe wisuzumishije inkondo y'umura umaze kumenya ko ubana nu bwandu?

Inshuroimwe_____inshuroebyiri_____hejuruy'inshuroebyiri_____ntagisubizo__ _____

simbyibuka_____

28. Nizihe mpanvu muribibikurikira zishobora gutuma abagore batitabira gusuzumwa kanseri y'inkodo y'umura? (**Subiza ahashoboka hose**)

- Amakuru adahagije cyangwa ibihuha kuri kanseri y'inkondo y'umura_____
- Amakuru yaho bisuzumishiriza bwa mbere_____

- Nta serivisi zo gusuzuma kanseri y'inkondo y'umura Kuriki kigo nderabuzima _____

- Ibigo bitanga izi serivisi biba kure_____

- Izi serivisi zirahenda_____

- Kutabohokerwa nabakozi batanga izi serivisi_____

- Gutinya Kubababara cyangwa gukomereka bitewe nibikoresho bakoresha_____

- Gutinya ko wasanga uyirwaye kandi usanzwe ubana n'ubwandu_____

- Gutinya ko wa hita upfa baramutse bayigusuzumye._____

- Mumiryango, umuco wacu, ni dini ryacu ntibitwemerera _____

- Kunva ntampanvu yokwisuzumisha/ntakibazo ufite_____

- Kubura umwanya_____

- Ikindi (kivuge)_____

- Ntagisubizo_____

29. Gereranya akamaro ko kwisuzumisha kanseri y'inkondo y'umura bifite.

- Bifite akamaro cyane_____

- Nibyiza_____

- Ntabwo aringombwa_____

- Simbizi_____

30. Wunva ushobora kugira inama bagenzi bawe kujya kwisuzumisha kanseri y'inkondo y'umura? Yego _____oya_____

31. Nubuhe buryo murubu bukurikira wifuzako bwajya bukoresha mugutanga amakuru kubijyange nibereho myiza y'umugore cyane cyane kukibazo cya kanseri y'inkondo y'umura.

Radiyo_____Televisiyo_____Ibinyamakuru_____Invaho_____Kubigondreabuzima_____

_____Abajyanama bubuzima_____Abaganga_____mubiganiro byabagore_____(**subiza hose hashoboka**)

32 Tubwire muribi bikurikira nihe leta y'uRwanda yashyira imbaraga kugirango umugore ubana n'ubwandu bwagakoko gatera SIDA abashe kwitabira kwisuzumisha kanseri y'inkondo y'umura? (subiza hose hashoboka)

- Inyigisho   zihagije   kubijyanye   na   kanseri   yinkondo y'umura_____ _____
- Amahugurwa menshi kubatanga izi serivisi_____
- Izi Serivisi kuboneka muburyo buhagije kandi byoroshye_____
- Kwishyurira abaturage izi serivisi_____
- Kumenyekanisha ibya kanseri y'inkondo y'umura binyuze kuri za murandasi, amatelevisio, Amaradio, inama ngari, mubiganiro byabagore, amatorero cyangwa imizigiti nibindi_____.

_____umusozo_____

Appendix III: Consent form (English)

Title: Predictors of uptake of cervical cancer screening among HIV-infected women in Kigali city.

Introduction

Hello. My name is Lydia BUSINGE. I am an MPH student from JKUAT. I am inviting you to participate in this research study titled "***predictors of uptake of cervical cancer screening among hiv-infected women in kigali city".*** Before you decide whether or not to take part, it is important for you to understand why the research is being done and what it will involve. Please take time to read the following information carefully.

Study objective

The aim of this study to determine the predictors of uptake of cervical cancer screening among HIV infected women in Kigali city. You are one of the 384 participants chosen to be involved in this study. You can take part in this study if you are between 21and 65 years of age and have been receiving HIV care or screening services at this health facility.

Participation in the study

We requesting for your participation in this study such that we can able to address the objectives of this study. You are free to refuse participating and to withdraw from the study at any time without penalty or loss of benefits to which you are otherwise entitled.

Voluntarism

Your participation in this study is voluntary. You are allowed not talk about anything you do not want and you can end the interview at any time.

Procedures

This is what will happen if you decide to participate in this study. You will be asked or interviewed with several questions whose answers will be noted down on the questionnaire paper/ recorded for (FGD and Key informants). The expected time taken for the questionnaire will be around 20 minutes and 60minutes for interviews.

Risk and benefits in participation

You may become embarrassed, worried or anxious because of some of the questions asked. Participation in the study will require you commit your time; however, you will be served as quickly as possible. This study will be of benefit by determining the uptake of cervical cancer screening and identifying the challenges faced by HIV infected women in accessing cervical cancer screening services so that they can be addressed to improve health care.

Confidentiality

Your identity as a subject will be kept confidential. Only the investigator, JKUAT ethical review committee and other regulators in academia. The information about you will be identified only by the study number and will not be linked to your name in any records. Data collected will be kept under lock.

Costs and reimbursement

You will not be charged to be involved in this study. You will also not receive any money for participating in this study

If you have agreed to participate in this study kindly fill the following form.

Consent form

I have read and understood the project information

I have been given the opportunity to ask questions about the project.

I agree to take part in the project. Taking part in the project will include completing a survey/being Interviewed.

I understand that my taking part is voluntary; I can withdraw from the study at any time and I will not be asked any questions about why I no longer want to take part.

I understand my personal details such as phone number and address will not be revealed to people outside the project.

I understand that my words may be quoted in publications, reports, web pages, and other research outputs but my name will not be used unless I requested it above.

I understand that other researchers will have access to this data only if they agree to preserve the confidentiality of that data and if they agree to the terms I have specified in this form.

I understand that other researchers may use my words in publications, reports, web pages, and other research outputs according to the terms I have specified in this form.

I agree to assign the copyright I hold in any materials related to this project to Lydia BUSINGE

_____   _____   _____

Name of Participant   Signature   Date

_____   _____   _____

Researcher Name   Signature   Date

Contacts for further information:

Lydia BUSINGE

+250 784129908

lydiabusinge1@gmail.com

Appendix IV: Consent form (Kinyarwanda version)

INYEMEZABUSHAKE MU KUGIRA URUHARE MU BUSHAKASHATSI

Umutwe: Ibintu bishobora guttuma abagore babana n'ubwandu bwa gakoko gatera Sida mu mujyi wa Kigali bitabira cyangwa batitabira kwisuzumisha kanseri y'inkondo y'umura.

Iriburiro: Muraho. Nitwa Lydia BUSINGE, nd'umunyeshuli urangiza icyiciro cya gatatu mwishami ry'ubuzima muri kaminuza ya JKUAT iNairobi. Nkaba ngutumira ngusaba kugira uruhare mur'ubushakashatsi bufite umutwe nasobanuye haruguru uvuga '*Ibintu bishobora gutuma abagore babana n'ubwandu bwa gakoko gatera Sida mu mujyi wa Kigali bitabira cyangwa batitabira kwisuzumisha kanseri y'inkondo y'umura*'. Muraza gufata akanya musome cyangwa mutege amatwi mugihe barimo kubasomera mubaza n'ibibazo aho mutasobanukiwe mbere yo kwemeza kwitabira ubu bushakashatsi

Intego y'ubushakashatsi

intego y'ububushakashatsi nukurebera hambwe *Ibintu bishobora gutuma abagore babana n'ubwandu bwa gakoko gatera Sida mu mujyi wa Kigali bitabira cyangwa batitabira kwisuzumisha kanseri y'inkondo y'umura.* Ukaba urumwe mubagore 384 batoranyijwe kwitabira ikigikorwa. Wemerewe kwitabira ububushakashatsi kuva kumyaka 30-50 yamavuko kandi usanzwe ufatira hano serivise zijyanye no kwisuzumisha agakoko gatera sida cyangwa inkondo y'umura.

Kugira uruhare muri ububushakashatsi ni ubushake.

Kwitabira nubushake, Ushobora guhitamo kutagira uruhare mu gusubiza cyangwa guhagarika kwitabira ndetse ntanuwakubaza impavu ubihagaritse.

Izina ryawe rizagirwa ibanga.

Aha ndashaka kuvuga ko izina ryawe ntaho rizatangazwa muri ubu bushakashatsi.Mu gihe cy'ubushakashatsi inyemezabushake yawe ibikwa ahatandukanye n'ibisubizo byawe. Ni ukuvuga ko nta buryo bwo kumenya uwasubije.

Uburyo biribukorwe:

Numara kutwemerera kwitabira ububushakashatsi, uraza kubazwa ibibazo bitandukanye biribugende bisubirizwa kumpapuro zabugenewe ndetse no gufatwa a majwi kubari bubazwe muburyo bwibiganiro hakoreshejwe akuma gafata amajwi (recorder). Ibibazo byo kumpapuro biratwara igihe kingana nimitota 20 hanyuma ikiganiro gitware iminota 60

Impungenge cyangwa Inyungu

Ushobora kuza kunva ubangamiwe nibibazo uribube ubazwa ariko turagusaba ko uza kudufasha gusubiza byose kandi byihuse. Inyungu z'ubu bushakashatsi nuko buzatanga amakuru yizewe kuri kanseri y'inkondo y'umura nisuzumwa ryayo bijyanye n'intego y'ubushakashatsi ;kandi amakuru y'ubushakashatsi azafasha abantu benshi mu kongera ubumenyi ku ndwara ya kanseri y'inkondo y'umura murwego rwo kuyirandura burundu.

Ibanga

Amakuru uri butange arabikwa muburyo bwibanga bukomeye. Uretse abagize itsinda ry'abagenzuzi b'ubushakashaki muri Kenya (KEMRI ethical review) no mubijyanye ko kwiga. Ntahandi ayamakuru azakoreshwa. Amakuru yose azagaragara mumibare gusa, ntazina ryawe rizigera rigaragara ahantu nahamwe. Amakuru yose azaba yakusanyijwe azafungirwa ahantu harumutekano uhagije.

Ikiguzi kuwitabiriye ubushakashatsi

Ntakiguzi uribwishyuzwe kugirango witabire ubu bushakashatsi ntani kiguzi gihari cyishyura ubushakashatsi. Niba wemeye kugira uruhare muri ubu bushakashatsi urashyira umukono wawe mu mwanya wabugenewe hano munsi.

kwemeza ko wemeye kugira uruhare mu bushakashatsi

Nasomye/ nasobanukiwe neza amakuru ajyanye nububushakashatsi

Nahawe amahirwe yo kubaza ibibazo kurububushakashatsi.

Nemeye kugira uruhare murububushakashatsit. Bisobanura gusubiza ibibazo byose ndibubazwe

Nasobanukiwe ko ngoma kubikora kubushake; kandi nkaba nabihagarika mugihe nshatse ntanikibazo nabazwa cyuko mpagaritse kwitabira ubushakashatsi

Namenye neza ko umwirondoro wange utazagaragarira abantu nyuma yububushakashatsi.

Namenyeko ibitekerezo byange aribyo bizakoreshwa mugihe batangaza ibyavuye mubushakashatsi, amzina yange atazagarahgaramo

Nemeye ko abashakashatsi bazakoresha ayamakuru mugihe bubahirije neza ibyo nashyiriyeho umukono nasobanuye neza muriyi nyandiko.

Nemeye kugira uruhare murubu bushakashatsi bwa Lydia BUSINGE nsubiza ibibazo ndibubazwe kubushake

_____   _____   _____

Amazina y'uwitabiriye   Sinyature   italiki

_____   _____   _____

Amazina y'umushakashatsi   Sinyature   italiki

Ugize icyibazo kijyanye n'ubu bushakashatsi wambariza kuri telephone igendanwa

+250 784129908, Email: lydiabusinge1@gmail.com

Appendix V: Ethical approval

JOMO KENYATTA UNIVERSITY
OF
AGRICULTURE AND TECHNOLOGY
P. O. Box 62000-00200 Nairobi, Kenya Tel 0675870225 OR Extn 3209
Institutional Ethics Review Committee

3rd July 2018   REF: JKU/2/4/896A

Ms. Lydia Businge
JKUAT Kigali Campus
Department of Public Health

Dear Ms. Businge,

SUBJECT: <u>APPROVAL OF STUDY – 'PREDICTORS OF UPTAKE OF CERVICAL</u>
<u>CANCER SCREENING AMONG HIV-INFECTED WOMEN IN KIGALI CITY'.</u>

The JKUAT Institutional Ethics committee has reviewed your responses to the issues raised regarding your application to conduct the above mentioned study with you as the Principal Investigator.

We approve the research to be conducted in the presented form for a period of one (1) year from the date of this letter. The Institutional Ethics committee expects to be informed about the progress of the study for every year of approval, any SAE or complaints occurring in the course of the study that may warrant review of the ethical approval of the project, any revision in the protocol and patient information/informed consent and ask to be provided a copy of the final report.

Yours Sincerely,

Dr. Patrick Mbindyo
SECRETARY, JKUAT IERC

CC.   Dr. Kenneth Ngure, Chairman, JKUAT IERC

J.K.U.A.T
DIRECTOR,
RESEARCH DEPARTMENT (RPE)
P O Box 62000-00200
NAIROBI

JKUAT is ISO 9001:2008 and 14001:2004 Certified
Setting Trends in Higher Education, Research and Innovation

Appendix VI: Approval from Health facilities

Lydia Businge
JKUAT –KIGALI CAMPUS
PUBLIC HEALTH DEPARTMENT
Tel: 0784129908, 0788551676
Email: lydiabusinge1@gmail.com

5/7/2018

TO: Heads of GIKONDO, KACYIRU, KICUKIRO, REMERA Health centers

Dear sir/Madam

Re: **Request for authorization for dissertation data collection.**

I am requesting your authorization to collect data from your institution to complete my dissertation as a master program student in public health from Jomo Kenyatta University of Agriculture and Technology (JKUAT), to fulfill the requirement of the program. I will be using these data for a study entitled " *Predictors of Cervical cancer screening uptake among HIV-Infected women in Kigali City*". This study intends to determine the factors influences women go for screening and which factors among those predicts cervical cancer screening uptake. This study will be done from Remera, Kicukiro, Kacyiru and Gikondo Health centers and it is not funded.

This request includes access to enroller of 384 study participants from HIV clinic in the above mentioned heath centers and able to conduct a focus group discussion using electronic recorders together with questionnaire to the study participants and 2 key informants (Nurses) from your institution.

Attached are other supporting document and the ethical consideration clearances.

Thank you.

Sincerely,

Lydia Businge

Appendix VII: Permit of study equivalent to NACOTIC