Factors Associated with Uptake of Cervical Cancer Screening Among Reproductive Aged Women attending the Gynecology Outpatient Clinic at Kampala International University Teaching Hospital

By

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DECLARATION

I, John Chidanga declare that this dissertation titled **"Factors Associated with Uptake of Cervical Cancer Screening Among Reproductive Aged Women attending the Gynecology Outpatient Clinic at Kampala International University Teaching Hospital"** is my own original work and that it has not been presented and will not be presented to any other University for a similar or any other degree award.

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DEDICATION

I dedicate this work to my dear wife Dr. Lily Wairimu (BPharm, UoN), my parents Jacob, Mary, Bernard and Helen, my two sons Zecha and Nyiro.

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LIST OF ABBREVIATIONS

CDC	Centers for Disease Control and Presentation
KIU-TH	Kampala International University Teaching Hospital
LMICs	Low- and Middle-Income countries
MOH	Ministry of Health
SDG	Sustainable Development Goals
UBOS	Uganda Bureau of Statistics
ICF	International Classification of Functioning, Disability and Health
HPV	Human Papilloma Virus
UCI	Uganda Cancer Institute

KEY DEFINITIONS

Uptake is the number of people who want to do something such as use a particular service or study a particular subject (Macmillan Dictionary). In this study it refers to the participants accepting to have a pap smear done on them.

Socio-demographic factors: In this study they will refer to a participant's age, are of residence, marital status, education and employment status.

Health facility factors: In the study these will be captured as any recommendation by a health worker for screening, availability and access to screening services as well as the number of visits to a health facility.

Family history of cervical cancer: In this study it will refer to any female 1st degree relatives with a prior or current documented diagnosis of cervical cancer.

ABSTRACT

Background. Cervical cancer remains one of leading causes of maternal morbidity and mortality. It contributes to about 7.9% of all women related cancers and is the ranked 4th among all women cancers. In the fight against cervical cancer, its prodromal and asymptomatic stage has been found to be detectable and curable. Several screening modalities like Visual Inspection with acetic acid and Lugol's Iodine, Human Papilloma Virus DNA, Pap smear have largely been instrumental to the reduction of cervical cancer prevalence. However, the uptake to these lifesaving methods remains inexplicably low and several barriers exist towards this. These hindering factors include lack of knowledge about causes of cervical cancer, lack of knowledge on when to screen and when to start screening, personal factors like fear of pain, fear of a positive diagnosis and fear of embarrassment. The result is 80% of women who present to Uganda Cancer Institute, do so in late stage of disease and it poses a detrimental challenge to the patients, their families and the health infrastructure.

Objective. To determine the factors associated with uptake of cervical cancer screening in women of reproductive age attending Gynecological OPD clinic at Kampala International University Teaching Hospital.

Methodology. This was a hospital-based descriptive and analytical cross-sectional study conducted at the antenatal clinic and maternity ward of KIU-TH between August and October 2021. A sample of 309 women were recruited, open-ended questionnaires were administered and pap-smear tests were carried out for those who took up screening. Slides were analysed and results of patterns of cytological findings were documented. The datat was then analysed using logistic regression.

Results. The uptake to cervical cancer screening was found to be 18.8% (95% CI, 14.8%-23.5%). In multivariable analysis, being from a rural residence, HIV positive and have 2 or more sexual partners was found to be statistically significant. Further analysis on pap smear results revealed 37.93% being normal pap smears not having any intra epithelial lesion or malignancy, 29.31% had inflammatory findings, 27.59% were LSIL, 3.45% were ASCUS, and 1.72%HSIL.

Conclusion. The uptake of cervical cancer screening falls within the global range despite it being low. The patterns on pap smear dictate the majority being normal followed by inflammatory changes then low grade changes then other findings. Being of a rural residence, HIV positive and having two or more sexual partners confers a higher chance of screening for cervical cancer.

CHAPTER ONE: INTRODUCTION

1.1 Background

1.1.1 Historical background

Cervical cancer is one of leading causes of death and disability worldwide (Vos et al., 2015). Despite the birth of the pap smear in 1928 by George Papanicolau (Ginsburg et al., 2017) it still causes about 7.9% of all female cancers globally, making it the 4th most common cause of cancer in women (JSEM Ferlay et al., 2013). Following the publication of Dr Papanicolau regarding the use of the pap smear as a cytologically based screening method to detect cancerous cells in 1943, the cervical cancer rate in the United States of America dropped by half. Between 1976 and 1995 the shift of screening focused on Human papilloma virus as being the causative agent of cervical cancer and in 1995 the International Agency for Research on cancer determined that HPV-16 and HPV-18 are certainly carcinogenic. In 1996, the US Preventive Services Task Force recommended screening to be done every 3 years. From 1996 to 1999 there was the advent of two new liquid-based cytology screening methods which also changed the focus of screening methods.

Since these developments, guidelines have been devised to cater for newer and more efficient methods of screening for cervical cancer and more efforts on revisiting these guidelines continue to be implemented (npr.org).

1.1.2 Theoretical background

In order to understand cervical cancer screening in a local context, this study will be based on the Health Belief Model (HBM) developed in the 1950s by social psychologists Hoch Baum, Rosenstock and others (Rosenstock, 1974) as a systematic method to explain and predict preventive health behavior (Cheraghi, Poorolajal, Hazavehi, & Rezapur-Shahkolai, 2014) Health Belief Model (HBM) suggests that a person's belief in a personal threat of an illness or disease together with a person's belief in the effectiveness of the recommended health behavior or action will predict the likelihood the person will adopt the behavior (Siraj, Radzijohari, Bakar, & Sahazudin, 2019) It means that consultation is triggered by the perceived threat to health, like severity; the degree to which the patient believes a consultation will be effective in decreasing the threat. Thus, knowledge and belief in dangers posed by cervical cancer will inform the uptake to early and timely screening by women of reproductive age. The factors that prevent or promote these women to seek cervical cancer screening will be determined and the burden of normal and abnormal cervical cytology in the region of Bushenyi will the identified and once results are disseminated, it will serve as the perceived threat in the Health Belief Model.

1.1.3 Conceptual background

Cervical cancer is usually asymptomatic in its pre-clinical stage and its evolution is slow though detectable and curable in this stage (Salmerón et al., 2016). The period of precursor lesions for cervical cancer, designated as asymptomatic and curable, is known as cervical intraepithelial neoplasia (CIN) (Salmerón et al., 2016). Since cervical cancer can be detected and cured in most of developed countries, cervical cancer has become a largely preventable disease (Chidyaonga-Maseko, Chirwa, & Muula, 2015).

Screening has been shown as one extremely effective way of preventing and controlling cervical cancer contributing to early diagnosis (WHO, 2011) and the success of it depends on high participation of the target population, the latter is largely influenced by individual and/or related factors especially demographic factors like age, are of residence, marital status, education and employment status (Nakisige, Schwartz, & Ndira, 2017). In addition, it has been revealed that the uptake of cervical cancer screening was lower in the age categories 18-25 and 26-34 years, and those who were married, unemployed, of primary level of education and below, the HIV negative individuals and those from a distance five kilometers and above (Samuel & Ruth). Therefore, focusing on tackling the influence of demographic factors can increase uptake of cervical cancer screening by over 25% (WHO, 2014).

However, uptake of cervical cancer screening is not only influenced by demographic factors. In a study among HIV-positive women in low- and middle-income countries showed that the most common influential factors include knowledge and attitude toward cervical cancer or its screening, embarrassment, fear of cervical cancer screening and test results, patient- healthcare provider relationship, social support, screening costs and time constraints (Kasraeian et al., 2020). In this study, these factors will include sociodemographic factors such as age of the participant, her area of residence, level of education, marital status, employment status and HIV status. The woman's history of cervical cancer, her history of treatment for sexually transmitted diseases, knowledge and attitude to screening will also be assessed. Health facility factors like distance from the health facility, number of visits to the health facility and recommendation by health worker to screening services will also be studied.

1.1.4 Contextual background

In low and middle-income countries (LMIC) where approximately 85% of women diagnosed from cervical cancer live (Jacques Ferlay et al., 2015), 87% of cervical cancer deaths are seen (JSEM Ferlay et al., 2013). In Africa, 23 out of every 100,000 women die from cervical cancer every year

(Bansil et al., 2015) and in sub-Saharan Africa 265,672 deaths were due to cervical cancer in 2012 (JSEM Ferlay et al., 2013). The highest incidence (34.5 per 100,000) and mortality rates (25.3 per 100,000) of cervical cancer was in Eastern Africa (Ntekim, 2012).

Uganda is an east African country and in this country 6413 women are diagnosed with cervical cancer and 4301 died annually (Tsu, Njama-Meya, Lim, Murray, & de Sanjose, 2018).

In addition, Uganda has one of the higher incidence rate (54.8 per 100,000 women) for cervical cancer in the world (Tsu et al., 2018). The US Preventive Services Task Force (USPSTF) recommends screening for cervical cancer every 3 years with cervical cytology alone in women aged 21 to 69 years (Curry et al., 2018). While WHO recommends screening women aged 30-49 years due to their higher risk of cervical cancer (WHO, 2013). In Uganda, Guidelines for cervical cancer screening (CCS) advocate for a 'see-and-treat' approach (Ministry of Health, 2010) and recommend annual screening for HIV-positive women, and 3- yearly for all others (Nakisige et al., 2017).

However, a study conducted in Kanungu district showed that only 24% of respondents had ever been screened for cervical cancer (Samuel & Ruth) and 80% of the patients at the Uganda Cancer Institute present late (Tsu et al., 2018) which also makes treatment outcomes unsatisfactory (Kiguli-Malwadde, Mubuuke, Bugeza, & Mutungi, 2014). Yet in Uganda, the prevalence cervical cancer among Ugandan women has been estimated at 33.6% (Nakisige et al., 2017), highlighting the importance of secondary prevention among Uganda population thus, there is need to increase screening of women who have never been screened since it has better cancer risk reductions (Campos et al., 2017). This makes a study to assess the uptake and factors associated with cervical cancer screening in women of reproductive age attending Gynecological OPD clinic at Kampala International University Teaching Hospital vital. Taking into account the availability of cervical cancer screening services in the institution, the factors that hinder or promote uptake to these services would be important.

1.2 Problem statement

Early detection of cervical lesions can reduce the risk of cervical cancer development (Mahalli, 2015). However, lack of screening services for the prevention and early detection of cervical cancer has contributed to more than 85% of women's death in countries of low and middle-income (Jamal et al., 2018). Most African countries have limited cervical cancer screening and treatment programs (Sherris et al., 2009) and it is especially saddening that the baseline screening rate of cervical cancer is between 4.8% and 30% in Uganda (Nakisige et al., 2017).

At KIU-TH, many women attend outpatient department clinic and screening services for cervical cancer are offered but unfortunately very few women take up this screening services. From August to November 2020 a total of 127 women attended to Gynecology outpatient clinic yet only 12 (9.4%) took up a pap smear (unpublished clinic and histopathology lab records). Therefore, since factors that influence cervical cancer screening uptake globally do not necessarily reflect the situation in Uganda particularly at KIU-TH (Al-Amro, Gharaibeh, & Oweis, 2020), this study seeks to assess the uptake and factors associated with cervical cancer screening in women of reproductive age attending Gynecological OPD clinic at Kampala International University Teaching Hospital.

1.3 Broad objectives

To determine the factors associated with uptake of cervical cancer screening in women of reproductive age attending Gynecological OPD clinic at Kampala International University Teaching Hospital

1.4 Specific objectives

i. To determine the uptake of cervical cancer screening in women of reproductive age attending Gynecological OPD clinic at Kampala International University Teaching Hospital
ii. To determine the proportion of cervical lesions in women of reproductive age attending Gynecological OPD clinic at Kampala International University Teaching Hospital who take up cervical cancer screening.
iii. To determine the factors associated with uptake of cervical cancer screening in women of reproductive age attending Gynecological OPD clinic at Kampala International University Teaching Hospital.

1.5 Research questions

i. What is the uptake cervical cancer screening in women of reproductive age attending Gynecological OPD clinic at Kampala International University Teaching Hospital?
ii. What is the proportion of cervical lesions in women of reproductive age attending Gynecological OPD clinic at Kampala International University Teaching Hospital who take up cervical cancer screening?
iii. What are the factors associated with cervical cancer screening in women of reproductive age attending Gynecological OPD clinic at Kampala International University Teaching Hospital?

1.6 Justification of the study

Detecting cervical cancer early through its precursor lesions is the cornerstone of control of this disease (Mwesigwa et al., 2020). However, there is paucity of data with regards to screening for cervical lesions among women attending the gynecology outpatient clinic at Kampala International University Teaching Hospital.

This prompted the researcher to determine factors associated with the uptake of screening for cervical cancer among women attending gynecology outpatient clinic at Kampala International University Teaching Hospital. The determination of these factors would help in potentially encouraging women in the region to take up early detection and eradication of cervical cancer. Also the information provided by this study on factors associated with uptake of screening for cervical cancer could be useful in guiding public awareness campaigns and critical in planning secondary and tertiary prevention alongside informing legal proceedings.

1.7 Significance of the study

The findings of this study are expected to be of benefit to the following,

1.7.1 Policy Makers

The study will aid policy makers to draft and implement local policies governing provision of public education about cervical cancer screening in health facilities in the region as well as implementation of the screening cervices themselves in these health facilities.

1.7.2 Obstetricians and other healthcare workers.

The findings are expected to guide Obstetrician/Gynecologists and other healthcare workers to sensitize women to take up cervical cancer screening and to deter hindering associated factors among reproductive age women in Bushenyi. It will also give the prevalence of cervical lesions among these women.

1.7.3 Women of reproductive age

The findings will be used to promote screening of cervical cancer among women of reproductive age which in turn will reduce both morbidity and mortality burden associated with late presentation of patients with cervical cancer.

1.7.4 Other Researchers

The outcome of this study will provide a reference or benchmark for other researchers interested in screening for cervical cancer in Bushenyi District and beyond. In addition, the outcomes are

expected to stimulate more research on cervical cancer in the District, other parts of Uganda and beyond.

1.7.5 Kampala International University Teaching Hospital.

The study outcomes are expected to guide KIU-TH regarding local standard operating procedures and protocols for early detection through screening of cervical cancer and prevention of late presentation of women who attend outpatient gynecological clinic in the facility.

1.7.6 Science.

The study outcome will add to the existing body of knowledge on cervical cancer screening in Uganda, Africa and the world at large

1.8 Scope of the study

1.8.1 Content scope

The study will look at the uptake of cervical cancer screening and the factors associated with it among women of reproductive age attending gynecological outpatient department at Kampala International University Teaching Hospital from September 2021 to November 2021.

1.8.2 Geographical scope

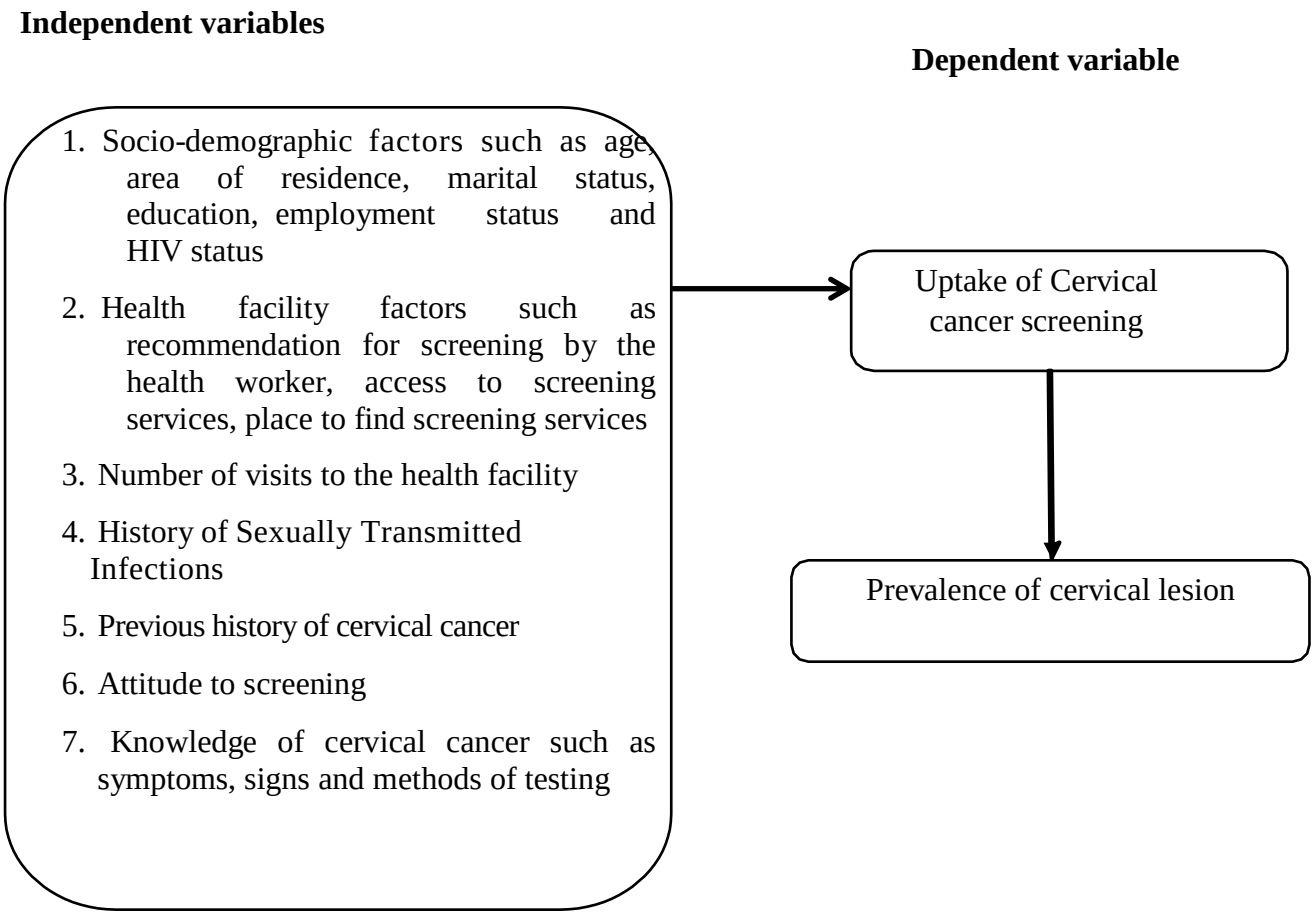
The study was carried out at Kampala International University Teaching Hospital. It is located in south-western Uganda, in Bushenyi-Ishaka municipality, Bushenyi district, about 370 km from Kampala city along Mbarara-Kasese high way.

1.8.3 Time scope

The study covered a period of three months from 1st September, 2021 to 30th November, 2021. This was an adequate duration to achieve the study sample size.

1.9 Conceptual Frame work

Figure 1:Conceptual Framework



Source: self-generated

1.9.1 Description of the Conceptual frame work

The conceptual frame work depicted above shows that cervical cancer screening (dependent variable) is likely to depend on (independent variable) such as Socio-demographic factors (age, area of residence, marital status, education, occupation and level of income), health facility factors (recommendation for screening by the health worker, access to screening services, place to find screening services), family history of cervical cancer screening, number of visits to the health facility, attitude to screening, history of STIs, knowledge of cervical cancer such as signs and symptoms and methods of testing. The conceptual frame work further shows that these multiple factors could be associated with uptake of cervical cancer screening. For those who agree to be screened, a pap smear will be done to map out the cervical lesions in the study population.

CHAPTER TWO: LITERATURE REVIEW

2.1 Uptake rate of cervical cancer screening in women of reproductive age

A cross-sectional study conducted among 500 Jordanian married women aged 21 to 65 years revealed that only 31.20% of the study participants had actually undergone cervical cancer screening (Al Nsour, W Brown, Tarawneh, Haddadin, & Walk, 2012).

A community-based, cross-sectional study was conducted in Debre Markos town, Northwest Ethiopia among 517 women of reproductive age revealed that only 108 women (20.9%) had been screened for pre-cervical cancer (Bante, Getie, Getu, Mulatu, & Fenta, 2019). Another community based cross- sectional study among 115 women aged 30-49 year in Finote Selam northwest Ethiopia showed that uptake of pre cervical cancer screening was 34(3%) (Geremew, Gelagay, & Azale, 2018).

A community-based, descriptive cross sectional study conducted among 900 women in Bugiri and Mayuge districts in eastern Uganda showed that only 43 women (4.8%) had ever been screened for cervical cancer (Ndejjo, Mukama, Musabyimana, & Musoke, 2016). Thus the uptake of cervical cancer screening still remains too low and the local factors why this is the case should be determined.

2.2 Factors associated with uptake of cervical cancer screening in women of reproductive age

2.2.1 Socio-demographic factors

The socio-demographic factors associated with cervical cancer screening uptake are age, education level, marital status, employment status, and income level. These factors influence women's cervical cancer screening practices and they have been investigated by many researchers interested in the promotion of cancer screening (Burchell et al., 2018). The socio-demographic factors in this region in particular need to be determined for better understanding of the low uptake to screening.

Age

Maternal age >35 years is associated with increasing cervical cancer screening than women of lower age groups. Studies in Jordan, Ethiopia and Uganda showed cervical cancer screening uptake at 35.8%, 41% and 23.5% respectively of women who were >35 years of age (Al Nsour et al., 2012), (Bante et al., 2019) and (Samuel & Ruth).

Education

Women with higher education level stood a higher chance to have been screened for cervical cancer than women with lower educational status. This finding was found in a study in Jordan and Uganda were majority of women of higher education had screened for cervical cancer (Al Nsour et al., 2012) and (Samuel & Ruth) respectively. This can be attributed to women with higher level of education have more knowledge and this promotes health seeking behavior most especially when it comes to gynecological procedures like screening for cervical cancer (Samuel & Ruth).

Marital status

Women who are married are more likely to be screened for cervical cancer than women who are not married. This finding was found in a study in Jordan and Uganda were been married increased the incidence of cervical cancer screening (Al Nsour et al., 2012) and (Samuel & Ruth).

Area of residence

Living in urban area increases uptake of cervical cancer screening than living in rural area.Studies done in eastern Uganda showed that women who urban areas were more likely to undergo cervical cancer screening than those who lived in rural areas by around 2.54 times(Ndejjo et al., 2016). Similarly, in another study done in Kanungu district in Uganda uptake was lower in those from rural areas) (Okello & Nahabwe, 2018).

Employed status

Women who are employed were more likely to be screened for cervical cancer than women who were not employed. This finding was found in a Ugandan study where uptake was lower in the unemployed (22%) (Okello & Nahabwe, 2018).

HIV status

Women who were known HIV negative were less amenable to be screened for cervical cancer than women who were HIV positive. This finding was found in a study in Uganda where uptake to cervical cancer screening was low in the HIV negative individuals (20%) (Okello & Nahabwe., 2018).

2.2.2 Health facility factors

Recommendation for cervical cancer screening by a health worker

Been informed about cervical cancer screening by a health worker increased cervical cancer screening uptake. These findings were shown in study in Jordan were the odds of cervical cancer screening increased when health care provider gave the information (Al Nsour et al., 2012). Similarly, in Ethiopia women information by health professionals about cervical cancer conferred this women a 6.65 times more likely chance to take cervical cancer screening compared to those who were not informed (Bante et al., 2019). Also, in Uganda 48.8% had screened because they had been requested by a health worker (Ndejjo et al., 2016).

Access to screening services

Women who had easy access to cervical cancer screening services were more likely to be screened for cervical cancer than their counterparts who had no access to the same screening services. In eastern Uganda women who had ease of access to screening services were 2.88 times more likely to have undergone cervical cancer screening as compared to those who did not easily access screening services (Ndejjo et al., 2016).

Place to find screening services

Knowledge on where to find the cervical cancer screening services increased the cervical cancer uptake on women. This finding was found in Uganda were women who knew a place where screening was offered were 2.88 times more likely to have undergone screening as compared to those who did not have knowledge of a place where screening was offered (Ndejjo et al., 2016).

Number of visits to the health facility

Women who visited health facility frequently were more likely to be screened for cervical cancer than women who never visited health facility. This finding was in a study in Ethiopia were women who visited health institution once or more in a year were 6.72 times more likely to be screened for cervical cancer than those who never visited health facility (Bante et al., 2019).

Attitude to screening

Women with positive attitude towards cervical cancer screening tended towards a higher likelihood to be screened for cervical cancer than women with negative attitude. This finding

was found in study in Ethiopia where women with positive attitude were 3.38 times more likely to take cervical cancer screening than those with a negative attitude (Bante et al., 2019). Similarly, in a study in Uganda, majority of women who had positive attitude were screened for cervical cancer (Ndejjo et al., 2016). In another study in Northern Ethiopia assessing attitude to cervical cancer screening, showed 54.5% of women having positive attitude based on the Likart scale of scoring attitude screened for cervical cancer (Tadesse et al., 2021).

History of sexually transmitted infections

Women with history of STI were more likely to have been screened for cervical cancer than women with no history of STI. This finding was found in Eastern Ethiopia where women with sexual transmitted infections were 2.37 times more likely to take pre - cervical cancer screening than those who had no history of STI (Bante et al., 2019). Similar findings in northwest Ethiopia showed that, women with history of sexually transmitted infections were 12 times more likely to be screened as compared with who and no history of sexually transmitted disease (Geremew et al., 2018). Also, in Uganda women who had prior tested for HIV were four times more likely to have undergone cervical cancer screening compared to those who had never been tested before (Ndejjo et al., 2016).

Family history of cervical cancer

Family history of cervical cancer increased uptake of cervical cancer screening. This was shown in a study in Ethiopia where women who had first degree family history of cervical cancer were 4.95 times higher to use pre-cervical cancer screening services compared to those who had no family history of cervical cancer (Bante et al., 2019).

Knowledge on cervical cancer

Women who had knowledge on cervical cancer were more likely to be screened than women who didn't have any knowledge on cervical cancer. This was shown in study in Uganda were majority of women who were screened had certain symptoms and signs they associated with cervical cancer. This study also showed that knowing at least one screening method for cervical cancer was positively associated with having screened for the disease than women who didn't. Also, women who knew at least one test method for cervical cancer were 2.88 times more likely to undergo cervical cancer screening in comparison to the ones who did not know (Ndejjo et al., 2016). Similarly, in Ethiopia women who had awareness on pre cervical

cancer screening was 16 times more likely to uptake screening service as compared to those who were not aware (Geremew et al., 2018).

2.3 Prevalence of cervical lesions among women

In the United States, about 2-3 million abnormal Pap smears are diagnosed each year and 5%-13% of these are detected in pregnant women (Bakari, Abdul, & Ahmed, 2017). In a study in South America 6.8% of women had cervical cancer lesions, of which 75% were atypical squamous cells of unknown significance (ASCUS), 19% low-grade squamous intraepithelial lesion (LGSIL), and 6% high-grade squamous intraepithelial lesion (HGSIL) (Seda et al., 2011). In Brazil, abnormal cytopathological detected HPV contamination in 49.7% of women and high-grade cytological lesions in 18.2% (De Melo, et al., 2017) (Melo, Pelloso, Alvarenga, & Carvalho, 2017). In Thailand, the prevalence of cervical lesions was 7% with 0.7% high-grade cervical intraepithelial neoplasia (Khaengkhor et al., 2011). While in India epithelial cell abnormalities were in 5% of smears, squamous intraepithelial lesion (SIL) in 3.4% that included low grade squamous intraepithelial lesion (LSIL) (2.7%) and high grade squamous intraepithelial lesion (HSIL) 0.7% and atypical squamous cells of undetermined significance (ASCUS) in 0.3%. Invasive carcinoma was seen in 1.3% smears (Bal, et al., 2012).

In Africa, a Southeast Nigerian study conducted in a Missionary Hospital in Abakaliki among a total of 110 consecutive pregnant women showed that a prevalence rate of 6.3% of these 71.4% were low-grade squamous intraepithelial lesion (LGSIL) while 28.6% were high-grade squamous intraepithelial lesion (HGSIL) (Ekwedigwe et al., 2018) Another study carried out at an Antenatal Clinic of ABUTH Zaria, Nigeria among a total of 250 consecutive pregnant women who had cervical cytology by Pap smear found a prevalence rate of preinvasive cervical lesion to be 6%. Of these 87% were low-grade squamous intraepithelial lesion (LGSIL) while 13% were high-grade squamous intraepithelial lesion (HGSIL) (Bakari et al., 2017)

In East Africa, a study in Rwanda, HPV prevalence was 34% (Ngabo et al., 2016), in Eastern Uganda prevalence of CIN among women was 38.6%. Specifically, 19.9% had severe CIN3, (16.7%) had moderate CIN2, and 2.0% had mild CIN1 (Eilu et al., 2020). While in a study in central Uganda, cervical intraepithelial lesions were 6.9% cases which included low-grade squamous intraepithelial lesion [LSIL] in 2.9 smears, atypical squamous cells of undetermined significance [ASCUS] in 2.3% smears, atypical squamous cells cannot exclude

high grade squamous intraepithelial lesions [ASCH] in 0.6% smears, high - grade squamous intraepithelial lesion [HSIL] in 0.6% smears and atypical glandular cells [AGC] in 0.6% smears (Boaz, 2020).

In western Uganda, a at Kampala International University Teaching Hospital found the prevalence of cervical premalignant lesions was 22% and high grade squamous intra epithelial lesions (HSIL) comprised 13% (Mulumba, Lule, Atuhaire, Bonet, & Diaz).

CHAPTER THREE: METHODOLOGY

3.1 Study Design

This was a hospital based-cross sectional study.

3.2 Study area

The study was conducted at Kampala International University Teaching Hospital which is a private not for profit teaching hospital for Kampala International University offering free antenatal services, family planning services, young child clinic, post-natal services, ophthalmology, ear nose and throat as well as dental services. It also offers in-patient care, laboratory and radiological services. It is located in south-western Uganda, in Bushenyi-Ishaka municipality, Bushenyi district, about 370 km from Kampala city along Mbarara-Kasese high way.

3.3 Study site.

The study site was the gynecological outpatient department (OPD) clinic, at Kampala International University Teaching Hospital. The clinic is run by qualified registered health workers amongst which are obstetrics and gynecology specialist, residents in obstetrics and gynecology as well as trained qualified registered nurses and it offers care services to an average of 15 women on the daily basis. This clinic is located in the outpatient section together with other clinics.

3.3.1 Target Population

All women attending Gynecological OPD clinic.

3.3.2 Study population.

All women attending the Gynecological OPD clinic of KIU-TH.

3.4 Sample Size Estimation

3.4.1 Sample size determination for objective 1:

To determine the sample size associated with uptake of cervical cancer screening, Daniels formula was used;

$$n = \frac{(z_{\alpha+}z_{\beta})^2 p\,(1-p)}{d^2}$$

Where;

n = desired sample size

Zα = z-statistic at α= 1.96; 95% level of confidence

Zβ = z-statistic at β= 0.84

p= was the uptake of cervical cancer screening in Uganda based on a study done by (Ndejjo, et al., 2016) = 4.8%.

d= Level of precision= 0.05

Therefore,

$$n = \frac{(1.96 + 0.84)^2 \times\ 0.048\ (1 - 0.048)}{(0.05)^2}$$

n=143

3.4.2 Sample size determination for objective 2:

To determine the sample size associated with factors influencing uptake of cervical cancer screening the fisher's formula (1990) formula was used as shown below:

$$\mathbf{N=}\ \frac{Z^2PQ}{e^2}$$

Where:

Where N is the sample size,

$\mathbf{Z^2}$ is the abscissa of the normal curve that cuts off an area α at the tails; (1 – α) equals the desired confidence level, e.g., 95%);

e is the desired level of precision (0.05),

p is the estimated proportion of an attribute that is present in the population (25% influence of demographic factors showed by WHO (2014)), and q is 1-p.

$$N = \frac{0.95^2 * 0.25(1 - 0.25)}{0.05^2}$$

N=65

3.4.3 Sample size determination for objective 3:

Gynecological OPD clinic of KIU-TH receives on average 15 women on daily basis, approximating 450 women in 3 months. This research used Kish and Leslie formula (1965) that was simplified by Yamane (1967) to determine the sample size. This is illustrated as shown below.

From $N = \frac{(PQ)Z^2}{D^2}$ to $N = \frac{n^2}{1+nD^2}$

Where:

n is the estimated population for 3 months (450)

N is the sample size required

$\mathbf{Z^2}$ is the abscissa of the normal curve that cuts off an area at the tails (1– α equals the desired confidence level, e.g., 95%),

P is the estimated proportion of an attribute that is present in the population

D is the desired level of precision (0.05)

Q is 1-P

$$N = \frac{450^2}{1+(450)0.05^2} \quad = \mathbf{308.571 \neq 309 \text{ participants}}$$

Therefore, the study used a sample size **309 participants**

3.5 Sampling technique

The consecutive recruitment method was used on eligible participants until the required sample size was achieved.

3.6 Eligibility Criteria

3.6.1 Inclusion criteria

- All women of reproductive age attending Gynecological OPD clinic of KIU-TH upon giving an informed consent were be included in this study.

3.6.2 Exclusion Criteria

- All pregnant women were excluded from this study.
- Mothers in puerperium
- Visible cervical masses that bleed on contact.

3.7 Data Collection

3.7.1 Training of research Assistants

The data collection was conducted by the principal investigator under consultant supervision with the help of fellow students that were trained as research assistants. The team comprising of nurses in outpatient department were sensitized on how to collect data with the data collection tools.

3.7.2 Data collecting tools

Data from this study was from the questionnaires with close ended questions as well as pap smear kits containing a glass slide, wooden spatula and an endocervical brush.

3.7.3 Pre-testing

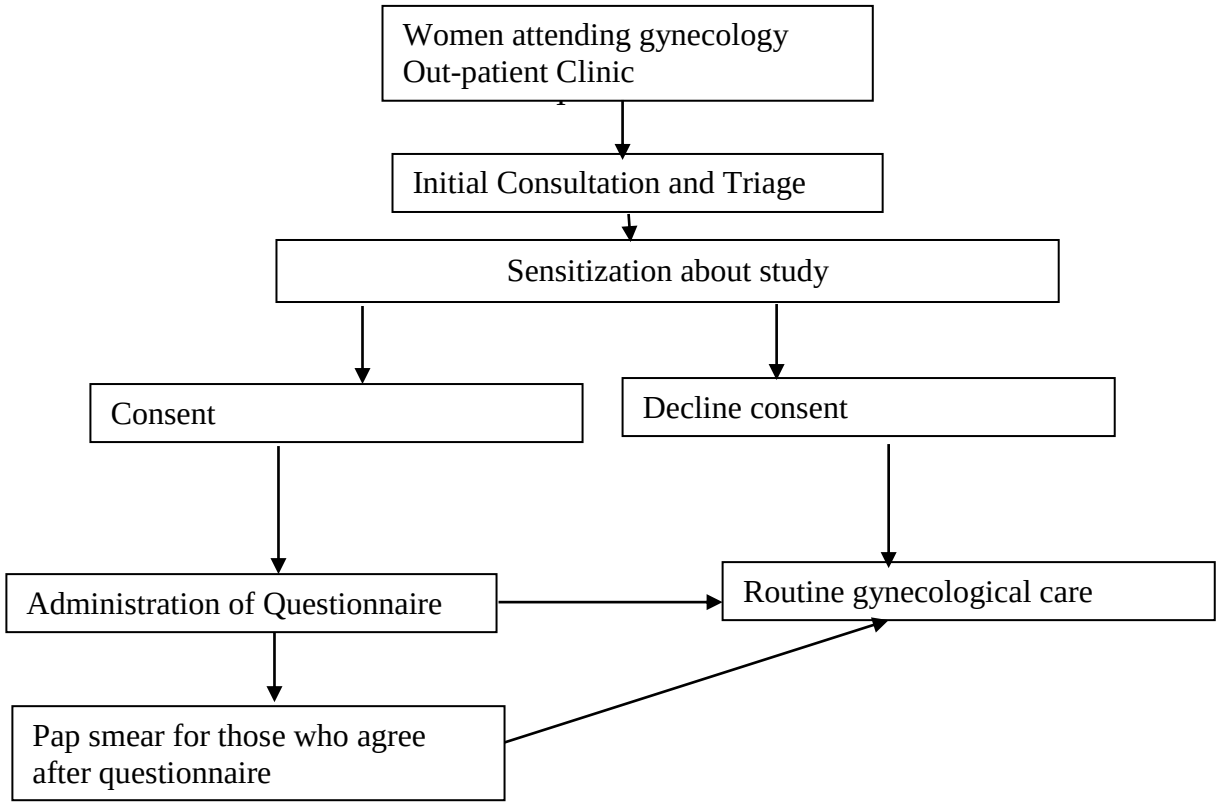
The questionnaire and other data collection tools were pretested in the KIU-TH in a similar study population for a period of 2 weeks and necessary adjustments made before it was used to collect the final data.

3.8 Study procedure

Every respondent or legalized representative was explained the purpose of the study in order to endorse an informed consent document with a signature or thumb finger print. The pretested questionnaires of parameters of interest specially designed for this purpose were then administered by the researcher and then filled with the help of research assistants. Data collected was entered into Redcap and exported to STATA Version 15 for data analysis.

Data collection procedure flow chart

Figure 2:Patient flow chart



3.9 Quality Control

The questionnaire was pretested to check whether it could extract the desired information. The investigator and a trained research assistant collected the data. Data completeness was

checked before the participants were discharged from the study by sampling of 10 percent of the forms and checking for completeness every week during the period of the study. The data was cleaned and analyzed with the help of a bio-statistician.

3.10 Data Management

Data was checked for completeness, entered in REDCAP, cleaned and exported to STATA for analysis. The data was backed up in a portable hard disc to ensure data safety. Hard copies were destroyed whereas softcopies were archived following termination of data collection and entry period.

3.11 Data Analysis

3.11.1 To assess the uptake of cervical cancer screening among reproductive aged women attending Gynecological OPD clinic at Kampala International University Teaching Hospital

- This was calculated as a fraction of women who had cervical cancer screening uptake out of all enrolled women in the study and expressed as a percentage with its corresponding 95% confidence interval (CI).

3.11.2 To determine prevalence of cervical lesions in reproductive aged women attending Gynecological OPD clinic at Kampala International University Teaching Hospital who take up screening services

- This was calculated as a fraction of different cervical lesions out of all women in the study who take up cervical cancer screening and expressed as a percentage with its corresponding 95% confidence interval (CI).

3.11.3 To determine the factors associated with uptake cervical cancer screening among reproductive aged women attending Gynecological OPD clinic at KIUTH.

- A binary variable of uptake of cervical cancer screening was generated and used as the dependent variable. All factors were used as independent variables in this analysis. In Bivariate analysis, repeated analysis comparing socio-demographics and maternal factors with uptake was done based on both Chi-square test and Logistic regression. Reporting of unadjusted odds ratios with their corresponding 95% CI was done.

- All the factors with p-value <0.2 and those which were found to be biologically plausible were then considered in the multivariate analysis which was performed to control for confounding. Assumptions for use of multiple logistic regression, e.g. the absence of multicollinearity among the independent variables, was explored. A p-value less or equal to 0.05 was used to consider a variable being statistically significant in this analysis.
- A manual back-ward stepwise selection method was used in establishing the final multivariate analysis model with factors that bared an independent significant association with abnormal cervical cytology. Using this method, the researcher excluded variables that lost their meaningful association with uptake of cervical cancer screening after controlling for the effect of other variables in the model. The goodness-of-fit test was performed on the final model to assess its quality.
- The factors, together with their adjusted odds ratios and 95% confidence intervals were then reported in the final multivariate model. A variable was considered statistically significant in this analysis if it had a p-value less or equal to 0.05.

3.12 Feasibility of the study.

The study was feasible since the Gynecological OPD clinic receives more than 450 women per month (KIU-TH Gynecological OPD clinic received more than 15 women daily). The hospital was also equipped with a functional histopathology laboratory that employs two full time pathologists as well as several laboratory assistants.

3.13 Ethical Consideration

Approval was provided by the department of Obstetrics and Gynecology, the directorate post graduate and research studies, the independent research and ethics committee of Kampala international university (IREC), Uganda national council for science and technology (UNCST). After approval, permission was sought and granted from the office of the district health officer Bushenyi –Ishaka municipality Bushenyi District, allowing the study to be carried out in the district. At the health facility level, permission was sought and granted from the offices of KIU-TH Director of Clinical services allowing the study team to access patients.

Every respondent was given an equal opportunity to participate in the study and all participants were asked for written voluntary consent as evidenced by the participants' signature or thumb finger prints before being enrolled in the study. Consecutive sampling

technique was used to select the participants to ensure that all respondents had an equal chance of being selected for the study. Those who abstained from participation were not denied any of the OPD services and any other benefits or services rendered by the hospital. Privacy was guaranteed by interviewing each participant separately and ensuring that information collected did not contain individual identity so as to avoid a breach of confidentiality. Filled questionnaires were coded, and the information collected was kept under lock and key, only accessible to the principal investigator.

3.14 Dissemination of results

After approval of the final report, the study findings were presented to the department of Obstetrics and Gynecology, the Faculty Clinical Medicine and Dentistry as well as the Directorate of Post-graduate Studies and Research of Kampala International University. Results will also be published in peer review journals upon approval by the same journals. Bound copies of the findings will be submitted to the University Library, Post-graduate Directorate, the Executive Director of Kampala International University Teaching Hospital and the office of the District Health Officer of Bushenyi District.

CHAPTER 4: RESULTS

4.0 Participant enrollment

Figure 3: Participant enrolment

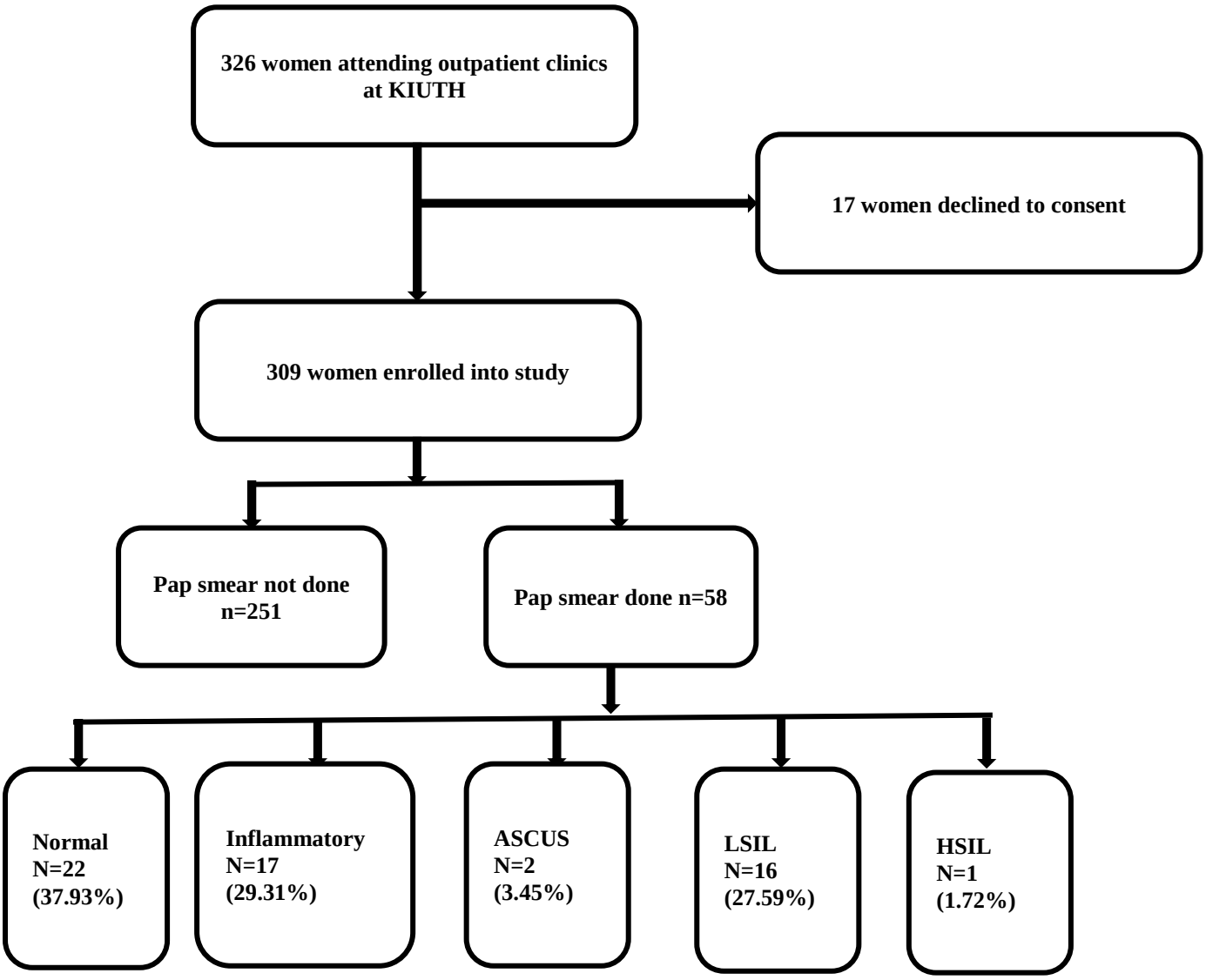


Table 1:Socio-demographic characteristics of reproductive age women attending the gynaecological outpatient clinic at KIU-TH

Variable	Total (N=309) n%	Uptake of cervical cancer screening	
		Yes(N=58), n%	No(N=251) n%
Age (±SD) years			
Age (Years)			
<20	7(2.3)	2(3.5)	5(2.0)
20-34	205 (66.3)	41(70.7)	164(65.3)
>34	97(31.4)	15(26.0)	82(32.7)
Residence			
Urban	150(48.5)	19(32.8)	131(52.2)
Rural	159(51.5)	39(67.2)	120(47.8)
Marital status			
Married	176(57.0)	35(60.3)	141(56.2)
Single	125(40.5)	20(34.5)	105(41.8)
Others	8(2.5)	3(5.2)	5(2.0)
Level of Education			
Tertiary	143(46.3)	24(41.4)	119(47.4)
Secondary	63(20.4)	8(13.8)	55(21.9)
Primary	73(23.6)	13(22.4)	60(23.9)
No formal education	30(9.7)	13(22.4)	17(6.8)
HIV status			
Negative	252(81.6)	39(67.2)	213(84.9)
Positive	57(18.4)	19(32.8)	38(15.1)
Employment status			
Employed	104(33.7)	18(31.0)	86(34.3)
Unemployed	205(66.3)	40(70.0)	165(65.7)

KIU-TH= Kampala International University Teaching Hospital, **HIV=** Human Immunodeficiency Virus

Most women were between the ages of 20-34 years, were married, had a tertiary education, were HIV negative and were unemployed.

Table 2: Gynaecologic characteristics of reproductive age women attending the gynaecological outpatient clinic at KIU-TH

Variable	Total (N=309) n%	Uptake of cervical cancer screening Yes(N=58), n%	No (N=251), n%
Parity			
Grand multipara (>5)	21(6.8)	4(6.9)	17(6.8)
Primipara	97(31.4)	15(25.9)	82(32.7)
Multipara (2-4)	191(61.8)	39(67.2)	152(60.6)
Menarche			
13-16 years	279(90.3)	51(87.9)	228(90.8)
<13 years	30(9.7)	7(12.1)	23(9.2)
Coitarche			
≥18yrs	253(81.9)	50(86.2)	203(80.9)
<18yrs	56(18.1)	8(13.8)	48(19.1)
Oral Contraceptive use			
No	235(76.1)	43(74.1)	192(76.5)
Yes	74(23.9)	15(25.9)	59(23.5)
Lifetime Screening			
Yes	97(31.4)	17(29.3)	80(31.9)
No	212(68.6)	41(70.7)	171(68.1)
Early Detection of cervical cancer			
Yes	254(82.2)	47(81.03)	207(82.5)
No	55(17.8)	11(19.0)	44(17.5)
Prevention of cervical cancer			
Yes	237(76.7)	45(77.6)	192(76.5)
No	72(23.3)	13(22.4)	59(23.5)
Health worker Suggestion			
Yes	162(52.4)	34(58.6)	128(51.0)
No	147(47.6)	24(41.4)	123(49.0)
Easy Access to cervical cancer screening			
Yes	210(68.0)	40(69.0)	170(67.7)
No	99(32.0)	18(31.0)	81(32.3)
Have you heard about cervical cancer screening?			
Yes	96(31.1)	21(36.2)	75(29.9)
No	213(68.9)	37(63.8)	176(70.1)
Knowledge of cervical cancer cause			
Yes	80(25.9)	14(24.1)	66(26.3)
No	229(74.1)	44(75.9)	185(73.7)
When to start Screening			
Yes	77(24.9)	12(20.7)	65(25.9)
No	232(75.1)	46(79.3)	186(74.1)
Where to go for Screening			
Yes	276(89.3)	32(55.2)	244(97.2)
No	33(10.7)	269(44.8)	7(2.8)
Belief of cervical cancer risk			

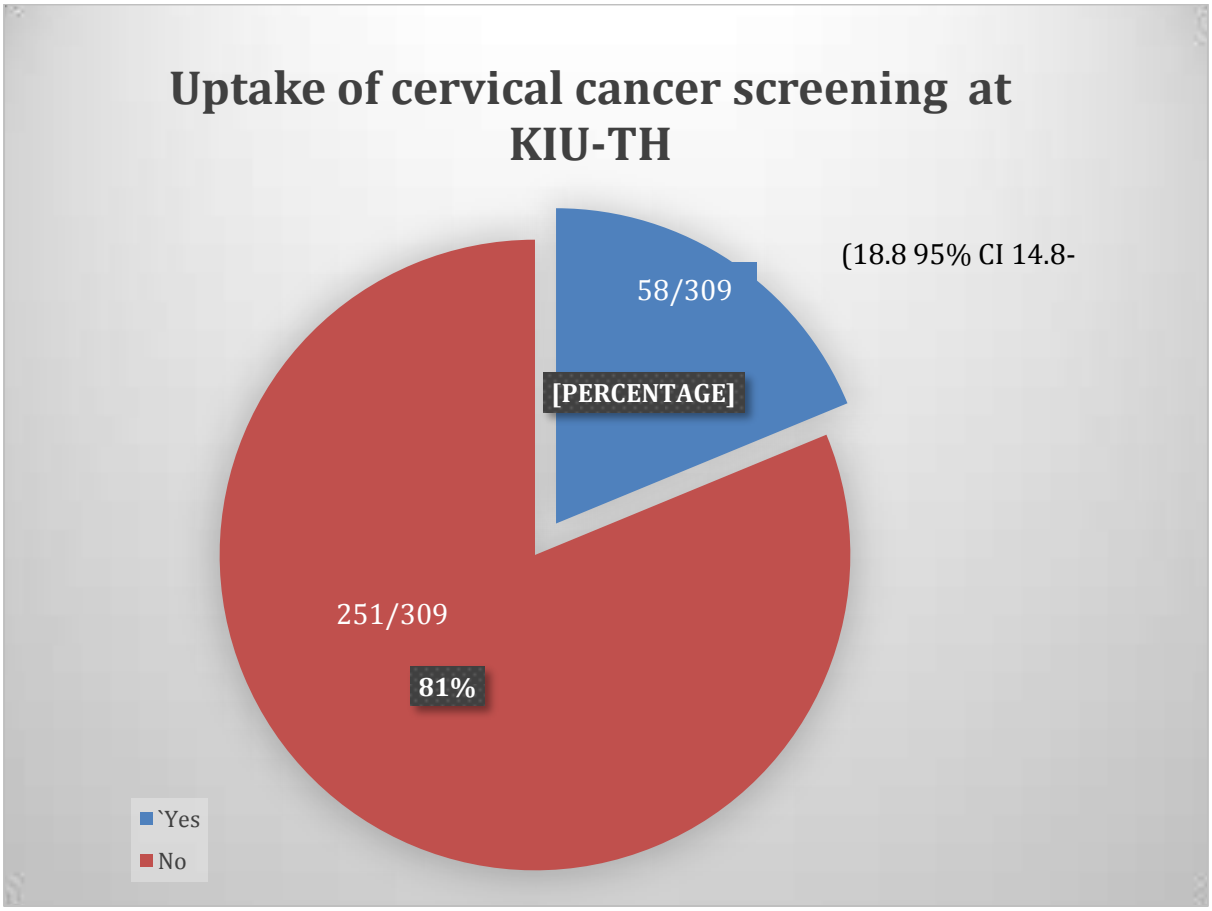
Yes	48(15.5)	10(17.2)	38(15.1)
No	261(84.5)	48(82.8)	213(84.9)
Fear of Cervical cancer diagnosis			
Yes	287(92.9)	54(93.1)	233(92.9)
No	22(7.12)	4(6.9)	18(7.2)

KIUTH=Kampala International University Teaching Hospital

Most women were multiparas, had menarche between 13 and 16 years of age, knew about prevention and detection of cervical cancer and had easy access to screening facilities. However, most did not believe they were at risk of cervical cancer and feared the pain associated with cervical cancer screening

4.2: Objective 1: Uptake of cervical cancer screening among women attending the gynecological outpatient clinic at Kampala International University Teaching Hospital

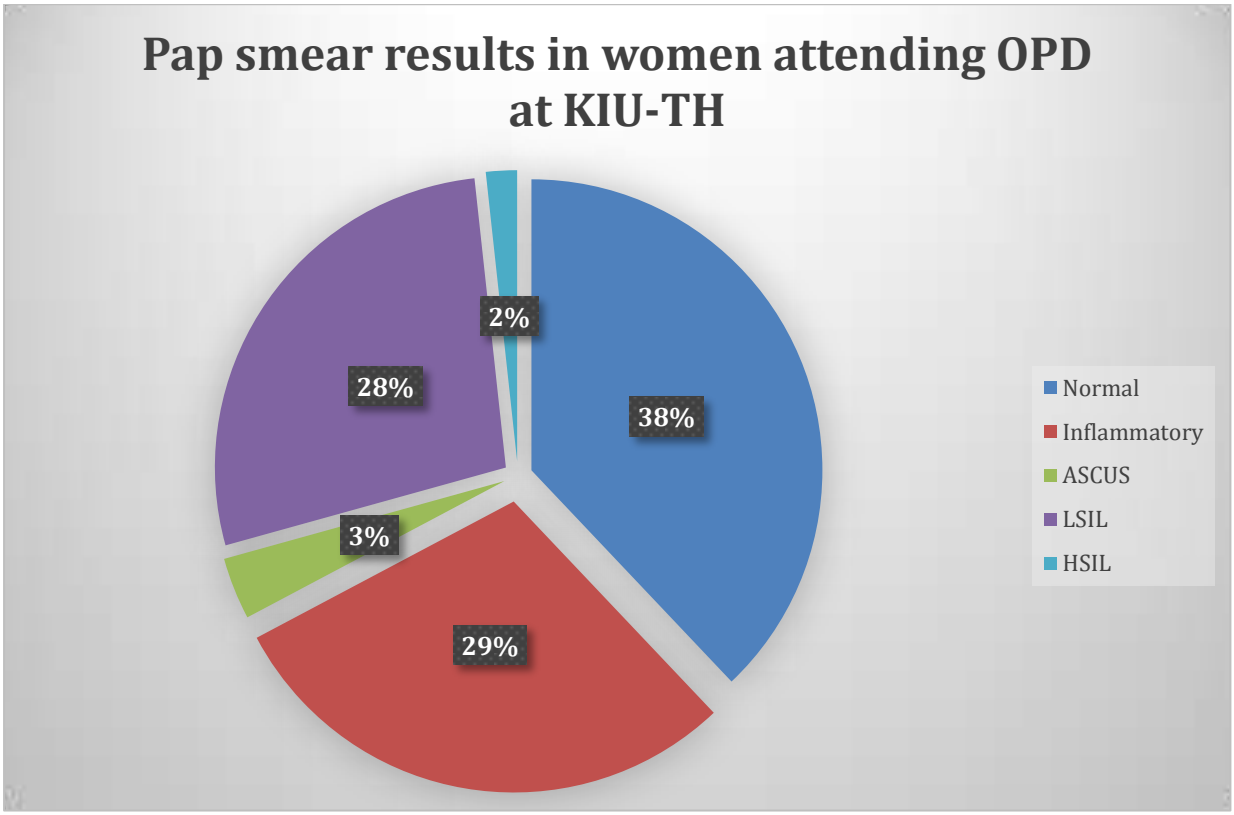
Figure 4: Pie chart showing the uptake of cervical cancer screening among reproductive aged women attending the gynecological outpatient clinic at KIU-TH



The uptake of cervical cancer screening using Pap-smear among reproductive age women at the gynecological outpatient clinic was 18.8% (95% CI 14.8-23.5%).

4.3: Objective 2: To determine the proportion of cervical lesions among reproductive age women attending the gynecologic outpatient clinic at Kampala International University Teaching Hospital

Figure 5: Pie chart showing the proportion of cervical lesions among reproductive age women attending the gynecologic outpatient clinic at KIUTH



The proportions of cervical lesions among reproductive age women attending the gynecologic outpatient clinic at KIU-TH were as follows: Out of 58 women, 22(37.93%) had normal smears, 17(29.31%) had inflammatory changes, 2(3.45%) had atypical squamous cells of undetermined significance (ASCUS), 16 (27.59%) had low grade squamous intraepithelial lesion and 1(1.72%) had high grade squamous intraepithelial lesion.

4.4: Objective 3: To determine factors associated with uptake of cervical cancer screening among women of reproductive age attending the gynecologic clinic at Kampala International University Teaching Hospital

Table 3: Bivariate analysis of socio-demographic factors associated with Cervical Cancer screening uptake at KIU-TH

Variable	Screening uptake		Univariable analysis	p-value
	Yes	No	cOR (95%CI)	
Age (Years)				
<20	2(3.5)	5(2.0)	Ref	
20-34	41(70.7)	164(65.3)	0.63 (0.12-3.38)	0.582
>34	15(26.0)	82(32.7)	0.46(0.08-2.58)	0.375
Residence				
Urban	19(32.8)	131(52.2)	Ref	
Rural	39(67.2)	120(47.8)	2.26(1.24-4.14)	0.008*
Marital status				
Single	20(34.5)	105(41.8)	Ref.	
Married	35(60.3)	141(56.2)	1.30(0.71-2.39)	0.391
Others	3(5.2)	5(2.0)	3.93(0.82-19.00)	0.087
Education level				
Tertiary	24(41.4)	119(47.4)	Ref.	
Secondary	8(13.8)	55(21.9)	0.63(0.26-1.55)	0.316
Primary	13(22.4)	60(23.9)	1.09(0.52-2.30)	0.816
No formal education	13(22.4)	17(6.8)	4.03(1.72-9.46)	0.001*
Employment status				
Employed	18(31.0)	86(34.3)	Ref.	
Unemployed	40(70.0)	165(65.7)	0.86(0.47-1.60)	0.639
HIV status				
Negative	39(67.2)	213(84.9)	Ref.	
Positive	19(32.8)	38(15.1)	2.57(1.34-4.96)	0.005*

p* ≤ 0.05**, KIUTH**=Kampala International University Teaching Hospital, **cOR=** crude odds ratio, **Ref=** reference value

In bivariate analysis of sociodemographic factors associated with cervical cancer screening among reproductive age women at KIU-TH, residing in a rural area (cOR 2.26 95%CI 1.24-4.14, p=0.008), having no formal education (cOR 4.03 95%CI 1.72-9.46, p=0.001), and being HIV positive (cOR 2.57 95%CI 1.34-4.96, p=0.005) were found to be statistically significant.

Table 4: Bivariate analysis of factors associated with Cervical Cancer screening uptake at KIU-TH

Variable	Screening uptake		Univariable analysis	p-value
	Yes	No	cOR (95%CI)	
Parity				
Nulliparity	15(25.9)	82(32.7)	Ref.	
Multiparity	39(67.2)	152(60.6)	1.40(0.73-2.70)	0.310
Grandmultiparity	4(6.9)	17(6.8)	1.29(0.8-4.36)	0.686
Menarche				
13-16 years	51(87.9)	228(90.8)	Ref.	
<13 years	7(12.1)	23(9.2)	1.35(0.55-3.33)	0.508
Coitarche				
≥18 years	50(86.2)	203(80.9)	Ref.	
<18 years	8(13.8)	48(19.1)	0.68(0.30-1.52)	0.345
Sexual partners				
≤ 1	11(19.0)	51(20.3)	Ref.	
≥2	47(81.0)	200(79.7)	2.05(1.11-3.77)	0.021*
History of oral contraceptive use				
No	43(74.1)	192(76.5)	Ref.	
Yes	15(25.9)	59(23.5)	1.14(0.59-2.20)	0.691
History of ca cx screening				
Yes	17(29.3)	80(31.9)	Ref.	
No	41(70.7)	171(68.1)	0.89(0.47-1.66)	0.705
Can cervical cancer be detected early?				
Yes	47(81.3)	207(82.5)	Ref.	
No	11(19.0)	44(17.5)	8.71(0.42-1.82)	0.713
Can cervical cancer be prevented?				
Yes	45(77.6)	192(76.5)	Ref.	
No	13(22.4)	59(23.5)	1.05(0.53-2.08)	0.886
Who prompted you to screen?				
Self	24(41.4)	128(51.0)	Ref.	
Health worker	34(58.6)	123(49.0)	1.36(0.76-2.43)	0.296
Easy access to screening services?				
Yes	40(69.0)	170(67.7)	Ref.	
No	18(31.0)	81(32.3)	1.15(0.61-2.15)	0.666
Knowledge on cervical cancer screening				
Yes	14(24.1)	66(26.3)	Ref.	
No	44(75.9)	185(73.7)	0.90(0.46-1.73)	0.735

p* ≤ 0.05**, KIUTH**=Kampala International University Teaching Hospital, **cOR=** crude odds ratio, **Ref=** reference value

In bivariate analysis of gynaecologic factors associated with cervical cancer screening among reproductive age women at KIUTH, having 2 or more sexual partners (cOR 2.05 95%CI 1.11-3.77, p= 0.021) was found to be significant.

Table 5: Multivariate analysis of factors associated with Cervical Cancer screening uptake at KIU-TH

Variable	Bivariate analysis cOR (95%CI)	p-value	Multivariate analysis aOR(95%CI)	p-value
Age (Years)				
<20	Ref		Ref.	
20-34	0.63 (0.12-3.38)	0.582	0.34(0.05-2.27)	0.265
>34	0.46(0.08-2.58)	0.375	0.15(0.02-1.15)	0.067
Residence				
Urban	Ref		Ref.	
Rural	2.26(1.24-4.14)	0.008*	2.48(1.13-5.43)	0.023*
Marital status				
Single	Ref.		Ref.	
Married	1.30(0.71-2.39)	0.391	1.23(0.57-2.64)	0.599
Others	3.93(0.82-19.00)	0.087	3.31(0.45-24.65)	0.242
Education level				
Tertiary	Ref.		Ref.	
Secondary	0.63(0.26-1.55)	0.316	0.55(0.20-1.52)	0.248
Primary	1.09(0.52-2.30)	0.816	0.63(0.23-1.72)	0.367
No formal education	4.03(1.72-9.46)	0.001*	2.53(0.73-8.82)	0.144
HIV status				
Negative	Ref.		Ref.	
Positive	2.57(1.34-4.96)	0.005*	2.76(1.16-6.54)	0.021*
Parity				
Nulliparity	Ref.		Ref.	
Multiparity	1.40(0.73-2.70)	0.310	1.84(0.81-4.18)	0.148
Grandmultiparity	1.29(0.8-4.36)	0.686	0.54(0.12-2.52)	0.433
Sexual partners				
≤ 1	Ref.		Ref.	
≥2	2.05(1.11-3.77)	0.021*	2.55(1.27-5.15)	0.009*

p* ≤ 0.05**, KIUTH**=Kampala International University Teaching Hospital, **cOR=** crude odds ratio, **Ref=** reference value, **aOR=**adjusted odds ratio

In multivariate analysis of socio- demographic and gynaecologic factors associated with cervical cancer screening among reproductive age women at KIUTH, rural residence (aOR 2.48 95%CI 1.13-5.43, p=0.023), being HIV positive (aOR 2.76 95% CI 1.16-6.54, p=0.021) and having 2 or more sexual partners (aOR2.55 95%CI 1.27-5.15, p=0.009) were found to be independently significant.

CHAPTER 5: DISCUSSION

The uptake of cervical cancer screening among women of reproductive age at KIU-TH was found to be 18.8%. This is comparable to an Ethiopian study that had an uptake of 20.9% (Bante, Getie, Getu, Mulatu, & Fenta, 2019).This could be because the study was carried out in a rural setting in women of similar socio-demographic characteristics to those in our study. Higher uptakes were found in Saudi Arabia at 26% (Aldohaian, Alshammari, & Arafah, 2019) and Indonesia at 28%(Sumarmi, Hsu, Cheng, & Lee, 2021). The higher screening rate could be attributed to better cervical cancer screening programs in these two countries.

In Uganda, the baseline lifetime cervical cancer screening rate was reported to be between 4.8 to 30%, within which our study falls. Further, the study found an uptake of 4.8% in Eastern Uganda. This could be due to specific knowledge about screening being low. Also participants had undesirable perceptions and beliefs about cervical cancer screening (Ndejjo, Mukama, Musabyimana, & Musoke, 2016).

In this study, proportions of cervical lesions among reproductive age women attending the gynecologic outpatient clinic at KIU-TH were as follows: Out of 58 women, 22(37.93%) had normal smears, 17(29.31%) had inflammatory changes, 2(3.45%) had atypical squamous cells of undetermined significance (ASCUS), 16 (27.59%) had low grade squamous intraepithelial lesion and 1(1.72%) had high grade squamous intraepithelial lesion.

A Nigeria study was similar in terms of the regularity of lesions, with normal smears being the most(45.5%) followed inflammatory(45.5%) then LSIL(4.5%) and HSIL(1.8%) (Ekwedigwe et al., 2018). At Nsambya Hospital, Uganda normal smears were 93.1% LSIL (2.9%), ASCUS 2.3% and HSIL 0.6% (Boaz, 2020). The reason for this similarity could be due to similar sociodemographic characteristics of the populations studied.

Much lower rates of abnormal cervical lesions were found in an Indian study where 99.8% of samples were negative for intraepithelial lesions and malignancies. Of these, 12.4% had inflammatory changes. Only 0.2% had abnormal cervical cytology (Ghosh et al., 2021).

We found that living in a rural area, having two or more sexual partners and being HIV positive to be independently significant.

In our study, rural women were more likely to screen than urban women. This contrasts with many studies. In a polish study, rural women had less knowledge of cervical cancer and less likely to screen compared to those living in urban areas(Lesińska-Sawicka & Medicine,

2021) In an Ethiopian study, rural women were less likely to take up cervical screening services compared to those from urban areas (Woldetsadik et al., 2020)Studies done in Eastern Uganda showed that women living in rural areas less likely to screen than their urban counterparts (Ndejjo et al., 2016). Rural women were found to be less knowledgeable, cited a lack of time to attend screening because they were involved in informal employment, had a self-assertion of being healthy and feared screening(Gizaw et al., 2020).

In our study, women were more likely to screen if they were more likely to screen if they were HIV positive. This agrees with a Ugandan study that showed women were more likely to screen for cervical cancer if they HIV positive. this was attributed to improved knowledge of cervical cancer screening schedules in HIV positive women. This addressed fears and risk perception which increased uptake in this vulnerable population (Wanyenze et al., 2017)This contradicts a study in Ethiopia that found that women were less likely to screen if they were HIV positive (Nega, Woldetsadik, & Gelagay, 2018).

In our study, having two or more sexual partners increased uptake of screening. This agrees with an Ethiopian study that suggests increased screening in those with more than two sexual partners. Multiple sexual partners are associated with poor sexual health and change in vaginal microbiome, leading to symptoms and a higher chance of seeking medical attention. This will lead to higher chances of screening (Huang et al., 2020).

CHAPTER 6: CONCLUSIONS

CONCLUSIONS

The uptake of cervical cancer screening among women of reproductive age at KIU-TH falls within the global average.

Most of the pap smear results are normal. Among the abnormal ones, the most common is Inflammatory changes followed by ASCUS, LSIL and HSIL in that order.

A woman is more likely to take up screening for cervical cancer if she is from a rural area, is HIV positive or has 2 or more sexual partners

RECOMMENDATIONS

Intense health education on the importance of cervical cancer screening in women of reproductive age needs to be done to increase on the uptake.

Efforts to increase cervical cancer screening uptake should focus on those who are HIV negative, those from urban areas and those who have only one sexual partner.

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APPENDICES

APPENDIX I: Informed consent



KAMPALA INTERNATIONAL UNIVERSITY (KIU) WESTERN CAMPUS (WC) RESEARCH ETHICS COMMITTEE (REC)

PO Box 71, Bushenyi, Uganda; Tel: +256 758 096 775

E-mail: kiurec2017@kiu.ac.ug; Website: www.kiu.ac.ug

INFORMED CONSENT DOCUMENT

Study Title:
Factors associated with uptake of cervical cancer screening in women of reproductive age attending Gynecological OPD clinic at Kampala International University Teaching Hospital

Principal Investigator: Dr. Chidanga John

INTRODUCTION

What you should know about this study

- You are being asked to join this research study voluntarily;
- This consent form explains the research study and your part in the study;
- Please read it carefully; and take as much time as you need to understand it well;
- You can choose not to take part; and if you join, you may quit at any time. There will be no penalty if you decide to leave the study.

Brief background to the study

Cervical cancer is one of leading cause of premature death and disability worldwide and 7.9% of all female cancers world-wide are caused by cervical cancer making it the 4th most common cause of cancer in women. Considerably, Uganda has one of the higher incidence rates (54.8 in 100,000 women) for cervical cancer globally.

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NAME OF REC CHAIR: Dr. Chidanga John TELEPHONE: ***+256 752584025*** KIU REC STAMP:	APPROVAL DATE: APPROVED CONSENT REC VERSION NUMBER: PI's NAME: REC NO: ***UG-REC- 023***

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Purpose of the research project.

This study is intended to determine factors associated with uptake of cervical cancer screening in women of reproductive age attending Gynecological OPD clinic at Kampala International University Teaching Hospital.

Why you are being asked to participate?

We are selecting a total of 538 participants from this health facility to take part in the study in order to provide information. Your participation will be of great importance to KIU-TH community, Bushenyi community and Uganda at large.

Procedures.

If you agree to participate, you will answer some questions about your pregnancy. After a Pap smear test will be performed on the participants.

Risks/Discomforts.

There are no major foreseeable risks to the participants except the risk of social harm if there is breach of confidentiality. However, this will be mitigated by ensuring that most confidentiality is upheld.

Benefits.

There will be no material benefits for participating in the study apart from the medications that will be prescribed for those who will be found to have infections. It is also anticipated that the results of the study will help the management of the facilities and other stakeholders to develop treatment protocols for managing conditions in prospective mothers.

Incentives/Rewards for Participating.

There will be no cash rewards or any other incentives for participating in this study although some reimbursements and refreshments may be given when warranted. Only indirect benefit in form of treatment to the participants will be given to those who will have been diagnosed with abnormal cervical cytology.

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Protecting data privacy and confidentiality.

Privacy during the interviewing process and confidentiality of the information are guaranteed. The interview will be conducted separately from other participants and in case you know one of the researchers, you can be interviewed by someone else or withdraw from the study. Confidentiality of your identity will be guaranteed through coding thus no names are to be provided. The information collected will only be accessible to the P.I. and research assistants.

Right to refuse/withdraw.

Participation in this study will not in any way be compulsory. Detailed information about the study will be explained to the participants and after demonstrating understanding of all the details of the study, informed consent forms will be issued and signed by the participants before the interviews and clinical examination. Any participant who will feel uncomfortable to continue with the study will be allowed to withdraw without any penalty.

Who do I ask/call if I have questions or a problem?

In the event of something abnormal happening, the participant is expected to contact or call the chairperson Dr. Mbyemeire Patrick of KIU-REC on this address: P.O Box 71, Bushenyi Mobile: +256-772601482; Office Tel: +256- 758 096 775; Email: kiurec@kiu.ac.ug(Duration of the interview: three months).

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What does your signature (or thumb print/mark) on this consent form mean?

Your signature on this form means that you have:

- Been informed about this study's purpose, procedures, and possible benefits and risks;
- Been given the chance to ask questions before you sign; and
- Voluntarily agreed to be in this study.

_____	_____		_____
Name of participant	Signature of participant/ Legally authorized	Thumb print	Date

_____	_____	_____
Name of person obtaining Consent	Signature	Date

_____	_____		_____
Name of the witness	Signature of witness	Thumb print	Date

Leave blank (for REC Office only):	**For REC Office use only:**
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Informed Consent (Runyankole Version)

AKAKIIKO AKARIKUREEBERERA ENTWAZA Y'EBYOKUCONDOOZA AH'EITENDEKYERO ERIKURU ERYA KAMPALA INTANASHONORO,

EITAGI ERYOMURI BURENGYERW'EIZOOBA.

P.O Box 71, Bushenyi, Uganda; Tel: +256 758 096 775

E-mail: kiurec2017@kiu.ac.ug; Website: www.kiu.ac.ug

EKIHANDIIKO EKIRIKUHAMYA OKWIKIRIZA KWEJUMBA OMUKUCONDOOZA BWANYIMA Y'OKUSHOBORORERWA

OMUTWE GW'OKUCONDOOZA:

Enshonga zirikukireeta abakazi bemyaka yokuzara okukyebeza ekororo yanyinenda aha erirwariro rya kampala intanashonoro, Uganda

ORIKUKURIRA OKUCONDOOZA: Dr. Chidanga John

ENTANDIKIRIRO

Ebirikwetenga kumanya ahabikwatiraine n'okucondooza oku:

- Noshabwa hatariho kugyemwa kuza omukoconddoza oku. Oine obugabe kwanga nainga kwikiriza.
- Ekihandiiko eki nikishoborooraahakucondooza hamwe n'eby'orikushabwa kukora omukocondooza oku.
- Noshabwa okukishoma n'óbwegyendesereza kuhamya ngu wakyetegyereza kurungi kandi noyikiribwa kutwara obwire obw'orikwenda kureeba ngu wayegyereza kurungi.
- Omukocondooza oku nzamu oyekundiire hatariho kugyemwa; nobaasa kwanga kuzamu kandi n'obuwakuba wagiiremu nobaasa kurugamo obwiire bwoona hatariho ekirikukkuteera aha mukono.

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Ekitureeteire kukora okucondooza oku

Ekokoro yanyinenda niyo emwe ekirizeyo okureta okufa omunsi kandi 79% bw'abakazi boona omunsi niburwtwa ekokoro yanyinenda ekirikuretera yaba eyakana omubirikukira kureta ekokoro omubakazi. Ekyokureberaho, Uganda niyo emwe eyine obucweka bwaigi bw'abakazi baine ekokoro yanyin'enda omunsi yoona (54.8 per 100,000 women).

Ekigyenderwa Ky'okucondooza Oku

Ekigyenererwa ky'okucondooza oku n'kwenda ngu tumanye enshonga zirikukireeta abakazi bemyaka yokuzara okukyebeza ekororo yanyinenda aha erirwariro rya kampala intanashonoro, Uganda

Ahabwenki orikushabwa kwejumba omukucondooza oku?

Nituronda abakazi 538 bemyaka yokuzara abarikyebereza ekororo yanyinenda ah'eirwariro eri abuturikuteeka kwejumba omukocondooza oku. N'shabwa kuba omwe ahabaratuyambe kuhikiriza ekigyendererwa eky'okumanya okutwakubaasa kurwanisa endwara ezirikukwata abakazi b'enda omubicweeka ebirikushohoza enkari kandi obwo zitarikwooreka bubonero bw'okurwaara.

Ebirikuza kukorwa omukucondooza oku

Waheza kumanyisibwa okuza omukocondooza, noyiza kushabwa kugarukamu ebibuzo bimwe. Bwayuma noyiza kukweberwa ekokoro yanyinenda (a Pap smear test).

Nihabaasa kubaho okuteganisibwa omukucondooza oku?

Nituteekateeka ngu torikuza kugira okuteganisibwa kuhango omukocondooza oku. Ebirakukorweho n'okukubuuza ebibuuzo hamwe nokukwihaho eshangama, Okuteganisibwa okorukubaasa kugira nihabaho okushohoza ebihama ahabikwatiraine n'oburwaire kwonka omuri eki nitukuhamiza ebirarugye omukoconndooza nibiza kutsigara omukihama.

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Ebirungi ebirikubaasa kuruga omu kucondooza oku

Nobaasa kutagira kihango ekiwagatsirwa ahabw'okwegaita omukucondooza oku kwonka waheza kushangwa oine oburwaire noija kuheebwa obujanjabi. Ekindi, ebirarugye omukucondooza oku nibaasa kuyamba omukuteekaho enteekateeka ezokurwanisa endwara ezekika eki omukazi b'enda.

Hariho okushashurwa ahabw'okwegaita ahakucondooza oku?

Torikuza kutunga okushashurwa ahabw'okwegaita aha kucondooza oku okwihaho okutunga obujanajabi waheza kushangwa oine oburwaire.

Okubiika ebihama

Abarikukora okucondooza oku nibahamya kubakuza kutekaho omutindo gw'ahaiguru omukubiika ebihama.Okubuuza hamwe n'okukyebera nibiija kukorerwa omukihama kandi n'ebirarugye omukucondooza nibiija kushohoziba hatariho maziina nainga ekintu kyoona ekirikworeka oburugo bwaabyo. Bury'omwe naija kubuuzibwa hamwe n'okukyeberwa ari wenka.Washanga nomanya omuntu orikuza kukukoraho okucondooza, noikizibwa kushaba ondiijo muntu kuba niwe yakukoraho nainga okuruga omukucondooza. Abarikukora aha kucondooza bonka nibo bonka barikuza kuba nibamanya omubwijwiire byoona eibirarugye omu kucondooza.

Obugabe bw'abarayegaite omu kucondooza

Okwegaita omucondooza oku noyeshariramu wenka hatariho kugyemwa kandi noikirizibwa kurugamu obwiire bwoona hatariho ekirikukuteera aha mukono nainga okufubirwa kwoona.

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Hagira ekyanshobera nimbuuza oha?

Waba oine ekibuuzo kyoona eshaha egi,otatiina kukibuuza kandi waaba oine ekibuzo bwanyimaho, nobaasa kuteerera esimu y'orukukurira akakiiko akarikureeberera entwaza y'ebyokucondooza ah'eitendekyero erikuru erya Kampala Intanashonoro, eitagi eryomuri burengyerw'eizooba aha ndagyiriro egyi: Dr. Mbyemeire Patrick of KIU-REC on this address: P.O Box 71, Bushenyi Mobile: +256-772601482; Office Tel: +256- 758 096 775; Email: kiurec@kiu.ac.ug(Duration of the interview: three months).

Okuteeka omukono gwaawe narishi ekinkumu ahakihandiiko eki nikimasaki?

Okuteeka omukono nainga ekinkumu aha kihandiiko eki nimanyisa ngu:

- Watuunga okushobororerwa kurungi ebikwatirairne n'okucondooza oku, kandi wayetegyereza kurungi ebibi hamwe nébirungi ebirukubaasa kurugamu.
- Waheebwa omugisha kubuuza ebibuuza byoona ebyorikwenda kandi byagarukwamu kurungi atakateire mukono nainga ekinkumu ahakihandiiko eki.
- Wayegaita omukucoondooza oku oyekundiire hatariho kugyemwa nainga kushashurwa sente ngw'ozemu kandi oine obugabe kurugamu obwiire bwoona hatariho ekirikukuteera aha mukono

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Eiziina ry'omukucondooza	Omukono		Ebiro by'okweezi
_____	_____		_____
Eiziina ry'orikukurira okucondooza	Omukono		Ebiro by'okwezi
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Eiziina ry'omujurizi	Omukono		Ebiro by'okwezi

Leave blank (for REC Office only): NAME OF REC CHAIR: Dr. Chidanga John TELEPHONE: ***+256 752584025*** KIU REC STAMP:	**For REC Office use only:** APPROVAL DATE: APPROVED CONSENT REC VERSION NUMBER: PI's NAME: REC NO: ***UG-REC- 023***

VERSION 2

APPENDIX II: Questionnaire

Topic: Factors associated with uptake of cervical cancer screening in women of reproductive age attending Gynecological OPD clinic at Kampala International University Teaching Hospital.

	Date of interview | | | |		Phone number | |
Socio-demographic factors			
1.	Age How old are you? ……	2.	Area of residence rural ☐ urban ☐
3.	Marital status Married ☐ Single ☐ Specify ……	4.	Education level None ☐ Primary ☐ Secondary ☐ Tertiary ☐
5.	Employment status Civil servant ☐ Business ☐ Peasant ☐ Student ☐ Other specify ……	6.	HIV status Negative ☐ Positive ☐
Knowledge and Uptake of cervical cancer screening			
1.	Have you ever screened for cervical cancer? Yes ☐ no ☐ If yes, where did you get the information from? 1. Radio ☐ 2. Television ☐		

	3. Friend ☐ 4. Health education at heath centre ☐ 5. Other (write) ☐ ……
2.	What causes cervical cancer? ……
3.	Do you know any risk factor to acquisition of cervical? Yes ☐ no ☐ If yes, which ones? Early sexual debut ☐ Multiple sexual partners ☐ Smoking ☐ Human Immunodeficiency Virus ☐ HPV ☐ ……
4.	Do you think you face a risk of developing cervical cancer? Yes, I am ☐ Somehow I am ☐ I am not sure ☐ I do not think I am ☐ No I am not ☐
5.	Do you think cervical cancer can be prevented? Yes ☐ If yes, how do you think it can be prevented? Avoid multiple sexual partners ☐ Regular screening with Pap tests and HPV tests ☐ Vaccination with HPV vaccines ☐ no ☐
6.	Do you think cervical cancer can be detected early? Yes ☐ No ☐
7.	Do you know how to test for cervical cancer? Yes ☐

	If yes which tests do you know of? Pap ☐ Via ☐ Villi ☐ No ☐
8.	Do you know any health facility you can test? Yes ☐ No ☐
9.	Have you ever been screened? Yes ☐ no ☐
10.	How long ago were screened? ……..
11.	Who prompted you to screen? self ☐ medical worker ☐ public health drive ☐
12.	Do you know how often you need to screen? Yes ☐ No ☐ If yes, how long? 1-3 years ☐ 3-5 years ☐ 6-10 years ☐
13.	Would you be willing to be screened? strongly agree ☐ agree ☐ unsure ☐ disagree ☐ strongly disagree ☐

Health facility factors

1.	Have ever been recommended to	2.	Is it easily for you to access screening services

	screen by the health worker yes ☐ no ☐		Yes ☐ No ☐
3.	Place to find screening services? ……		
Other factors			
1.	Have you ever heard any in your family having cervical cancer? yes ☐ no ☐	2.	How many times do you visit the health facility in a month? …….. ……..
3.	Can you screen for cervical cancer given a chance? Yes ☐ No ☐	4.	Have you been treated for any STIs? Yes ☐ No ☐
5.	Do you any sign or symptom of cervical cancer Yes ☐ Per vaginal bleeding after coitus ☐ Blood in urine ☐ Constipation or feeling of incomplete bowel emptying ☐ No ☐ Others, specify …… ……		

Don't fill this (for the principle investigators only)

1. Pap smear results?
    a) Negative ☐
    b) Positive ☐

2. If positive identify
    a) Low-grade squamous intraepithelial lesion ☐
    b) High-grade squamous intraepithelial lesion ☐

APPENDIX III: PG APPROVAL

KAMPALA INTERNATIONAL UNIVERSITY

EXPLORING THE HEIGHTS

Western Campus
P O BOX 71 Ishaka, Uganda
www.kiu.ac.ug

Directorate of Postgraduate Studies, Research, Innovation, Consultancy and Extension (PGS-RICE)

17th June,2021

John Chidanga
MMED/12105/181/DF

LETTER OF APPROVAL

This is to certify that research proposal entitled ***"Factors Associated with Uptake of Cervical Cancer Screening Among Reproductive aged Women attending the Gynecology Outpatient Clinic at Kampala International University Teaching Hospital"*** was reviewed by the Board of Postgraduate Studies and Research of Kampala International University – Western Campus in its meeting held on 25th May,2021 for its Scientific Validity and was approved subject to minor corrections.

You are now required to submit your proposal to IREC for assessment to affirm as to whether it conforms to the research ethical requirements. The Directorate of Postgraduate Studies and Research retains the mandate to continue monitoring your conduct of research.

Yours sincerely,

KIU WESTERN CAMPUS
KIU
17 JUN 2021
P O BOX 71
BUSHENYI
Directorate Of Postgraduate Studies And Re

Prof. Tijani-Adekilekun Ahmad
Director, DPGS-RICE

APPENDIX IV:REC APPROVAL

KAMPALA INTERNATIONAL UNIVERSITY

Western Campus
P O BOX 71 Ishaka, Uganda
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Email: kiurec2017@kiu.ac.ug
Website: www.kiu.ac.ug

RESEARCH ETHICS COMMITTEE (REC)

07/09/2021

To: John Zecha

Type: Initial Review

Re: KIU-2021-38: Factors Associated with Uptake of Cervical Cancer Screening Among Reproductive Aged Women attending the Gynecology Outpatient Clinic at Kampala International University Teaching Hospital , 2, 2021-09-03

I am pleased to inform you that at the 40 convened meeting on 28/07/2021, the KIU REC, committee meeting, etc voted to approve the above referenced application.
Approval of the research is for the period of 07/09/2021 to 07/09/2022.

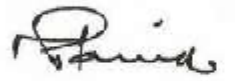
As Principal Investigator of the research, you are responsible for fulfilling the following requirements of approval:

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 07/09/2022 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 KIU REC:

No.	Document Title	Language	Version Number	Version Date
1	Protocol	English	2	2021-09-03
2	Data collection tools	English	2	2021-08-29
3	Informed Consent forms	English	2	2021-08-29

Yours Sincerely



Mbyemeire Patrick
For: KIU REC