BARRIERS TO CERVICAL CANCER SCREENING AMONG WOMEN IN AN URBAN INFORMAL SETTLEMENT IN KIBERA, NAIROBI COUNTY, KENYA

BY

MARYANNE NYAWIRA GACHARI

A THESIS SUBMITTED TO THE COLLEGE OF HEALTH SCIENCES, SCHOOL OF PUBLIC HEALTH IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE AWARD OF DEGREE OF MASTER OF SCIENCE IN FIELD EPIDEMIOLOGY

MOI UNIVERSITY

2022

DECLARATION

Declaration by Candidate:

"This report is my original work and has not been presented to any other university/institution"

Sign_____ Date:_____

Maryanne Gachari

SPH/PGH/FE/011/2017

Declaration by Supervisors:

"This thesis report has been submitted to Moi University with our approval as University supervisors"

Sign_____ Date:_____

Dr. Hillary Mabeya (MBChB, MMED OB/GYN Senior Lecturer)

Sign_____ Date:_____

Mr. Tura Galgalo (MSc. FIELD EPIDEMIOLOGY)

DEDICATION

I dedicate this project to God, for the opportunity and ability to continue to carry out my work. I also dedicate this to my parents Moses and Regina Gachari, who have always been a constant source of support, love and encouragement. I will forever be indebted to them. Finally, I would like to dedicate this to my siblings, Wambui and Austin who have made this journey in life worthwhile through their love and support.

ACKNOWLEDGEMENTS

I would like to acknowledge my supervisor at Moi University, Dr. Hillary Mabeya, for his constructive feedback and support in the development of this work. I would also like to acknowledge Mr. Tura Galgalo, my FELTP supervisor for his mentorship and contribution in refining of the document. I would like to thank my supervisor at CDC-Kenya, Dr. Marc-Alain Widdowson for his mentorship, availability and continued support with the thesis development. His contribution and willingness to support the study has been of great benefit. I would also like to thank the KEMRI and CDC staff for the support during this process.

ABSTRACT

Background: The global target towards elimination of cervical cancer by 2030 includes screening 70% of women with a high performance test at 35 and 45 years. In Kenya, in 2014, among women with lower social economic status, only 4% had been screened for cervical cancer. In Nairobi, in 2018, Kibera had the highest proportion of cervical cancer disease among women screened. Identification of the barriers to screening will inform interventions to promote early cervical cancer screening and treatment.

Objectives: The objectives were to determine the proportion of women who have been screened for cervical cancer, to determine barriers and factors associated with screening among the women in Kibera, Nairobi County and to determine their knowledge on HPV.

Methodology: A community based cross sectional study was conducted in Soweto West and Gatwekera villages within Kibera. The study population was women aged 18–49 years residing in the two villages for four months consecutively in 2019. Stratified sampling was used by obtaining a list of the women in the study population with their respective ages, and grouping them into three age categories. The proportion of women in each age category in the study population was used to calculate a sample size of 222 study participants. Interviews were conducted with each participant using structured questionnaires and data collected on demographics, screening, and barriers to screening. Descriptive statistics were used to describe participant demographics, screening history and barriers to screening. Multivariate logistic regression was used to calculate factors associated with screening. Associations were reported using odds ratios (OR) and 95% CI. Statistical significance was considered for $p < 0.05$.

Results: History of cervical cancer screening was reported in 77 (35%) study participants. The median age among study participants was 28 years (IQR= 24─33). Those who had completed only the primary level education were 107 (48%) and those who were married were 149 (67%). The barriers to cervical cancer screening reported among 145 women not screened were lack of information on the benefit of screening in 43 (29.7%) participants, fear of painful procedure in 30 (20.7%), and lack of time to go to hospitals for screening in 26 (17.9%) participants. Those who reported not feeling at risk of cervical cancer were 18 (12.4%) and 14 (9.7%) reported that they did not know where to go for screening. Independent factors associated with increased odds of cervical cancer screening were living with HIV (AOR 4.4, 95% CI, 1.5─12.7) and having parity of 1−3 children compared to having no children (AOR 4.7, 95% CI, 1.1─19.9). Women who had never heard of HOV were 51 (23%).

Conclusion: Two-thirds of women reported to have never been screened. The main barriers to screening among the women was lack of information and fear of painful procedure. Women living with HIV were more likely to be screened for cervical cancer.

Recommendation: Community health campaigns for women residing in Kibera on the importance of early cervical cancer screening and to counter fear on screening.

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ABBREVIATIONS AND ACRONYMS

CIN	- Cervical Intraepithelial Neoplasia
DNA	- Deoxyribonucleic acid
IARC	– International Agency for Research on Cancer
HIV	- Human Immuno- Deficiency Virus
HPV	- Human Papilloma Virus
KDHS	– Kenya Demographic and Health Survey
NCCPP	– National Cervical Cancer Prevention Program
PAP smear	– Papanicolaou smear
STI	– Sexually Transmitted Infection
VIA	– Visual Inspection with Acetic Acid
VILI	– Visual Inspection with Lugol's Iodine
WHO	– World Health Organization

OPERATIONAL DEFINITIONS

Bivalent HPV vaccine – a vaccine that helps protect the body against infection with two different types of human papillomaviruses (HPV).

Cervical Intraepithelial Neoplasia - is the abnormal growth of cells on the surface of the cervix that could potentially lead to cervical cancer

Cervical carcinoma – Cancer arising from the cervix

Cryotherapy - a procedure that freezes a section of the cervix using nitrogen gas to destroy the targeted area. It is most often used for the treatment of cervical dysplasia, which describes changes in the cervix that are considered precancerous

Endocervical – cells that are located near the mouth and in the canal of the cervix leading into the uterus

Loop Electrosurgical Excision Procedure - a wire loop heated by electric current to remove cells and tissue in a woman's lower genital tract. It is used as part of the diagnosis and treatment for abnormal or cancerous conditions.

Nonavalent HPV vaccine - vaccine that helps protect the body against infection with nine different types of human papillomaviruses (HPV).

Quadrivalent vaccine - vaccine that helps protect the body against infection with four different types of human papillomaviruses (HPV).

Transformational Zone – Area in the cervix of constant change of columnar cells to squamous cells of, and it is the most common place on the cervix for abnormal cells to develop.

CHAPTER ONE

INTRODUCTION

1.1 Background

Cervical cancer is caused by infection with the human papilloma virus (HPV). There are over 100 known HPV types and of these, 14 can cause cervical cancer. HPV types 16 and 18 cause 70% of cancerous and pre-cancerous lesions (World Health Organisation 2020). In Kenya, the prevalence of women with normal cytology with HPV 16 and/or HPV 18 co-infection is 9.1% (Kinotia et al. 2022). Risk factors for acquiring HPV infection include multiple sexual partners, having a partner with multiple sexual partners and early age of sexual onset. Progression of HPV infection to cervical carcinoma is associated with other factors such as smoking, high parity of more than five pregnancies and long term use of progesterone containing oral contraceptive pills (Chelimo et al. 2013).

Cervical cancer is a preventable disease that takes between 5 and 15 years to develop into invasive cancer. The purpose of cervical cancer screening is to identify lesions early and provide treatment before they develop into invasive cancer. In Kenya, policies were developed in 2011 to provide free cervical cancer screening in public health facilities in Kenya (Mwenda et al. 2022). However, lack of clear implementation programs for cervical cancer screening programs in Kenya has led to low screening coverage. In addition, not all public health facilities that should be providing the screening services are actively screening.

Screening guidelines and policy in Kenya outlines the target age group and frequency for screening (Ministry of Health 2018). However, there was little dissemination to health care workers and thus the rolling out of the program had its challenges (Mwenda et al. 2022). Implementation of the screening services was done through

integration into existing services such as comprehensive care clinics for HIV patients and family planning services. This may limit the target population and should therefore be integrated into routine health services targeting other women such as non-communicable disease clinics.

Women living in urban slums are underrepresented in national surveys because their health indicators are likely to be worse (Kabiru et al. 2011). The limitation of having aggregated data from national urban surveys is that their indicators such as unique barriers to screening may not be well represented. Urban slums have a dense population of youth aged <25 years, a population vulnerable to HIV/HPV infections due to risky behavior (Muli-Kinagwi et al. 2021). This may be because they lack access to formal education and employment. Urban slums are characterized by lack of government support when it comes to health facilities and schools and this poses a barrier to access of health services (Nairobi County 2022).

Challenges that face the screening programs in Kenya include health system challenges, individual challenges and governance (World Health Organisation 2020). Barriers to screening coverage have previously been classified into informational, psychological; fear or exam or positive result, socio-economic; costs and lower education, behavioral and cultural; and geographical; lack of access to health facilities and expensive transport (V.Svlhrova, and Hudeckova 2014).

Individual barriers may be influenced by the perception of risk of developing disease, judgment on how severe the disease can be if acquired and perceived beliefs and barriers that influence the decision to take part in screening programs (Sadat 2012). In addition, cues to action and personal choice influence participation in screening. Knowledge on risk factors and symptoms of the disease empower women to make the

decision to seek screening interventions. Knowledge is determined by education, socio-economic status, age, cues from media, hospitals or family and neighbors (Ilinca et al. 2019). Barriers are individual factors that may deter women to go for screening despite perceived susceptibility and severity. Perceived benefits are the determinants for whether action will be taken. If benefits outweigh perceived barriers, women are more likely to undergo for cervical cancer screening (Francis et al. 2010).

Cues to action are closely related to health system determinants. In hospitals, health care workers may influence the women's decision attending regular services to undergo screening. Posters on the walls display information and benefits of screening may also serve as cues. Mass media like radio, television may broadcast information on screening as well information from family and neighbors (Rosser 2021).

Secondary prevention of cervical cancer is conducted through screening programs which have been integrated into services such as maternal and child clinics and antenatal clinics in both public and private facilities in Kenya (Ministry of Public Health and Sanitation and Ministry of Medical Services 2012). Any pathologic changes indicating possible eventual cancer are then addressed. In high income countries with well-established screening programs, age standardized rates of disease have reduced (Vaccarella et al. 2013). Regular screening for women between 35-64 years has been associated with a 67% reduction in early stage cancer and a 95% reduction in advanced stage disease (Landy et al. 2016). Conversely, in low-income countries where implementation had lagged far behind, rates have remained stable (Vaccarella et al. 2013).

Screening in Kenya is recommended for all women of reproductive age between 25-49 years (Ministry of Health 2018). For HIV negative women, it should be done every

5 years while in HIV positive women it should done at diagnosis, 6 months later, and annually thereafter. The recommended primary screening test for women aged >30 years is HPV DNA testing, however if HPV testing is not available, Visual inspection with Acetic acid (VIA) or Acetic acid and Visual inspection with Lugol's Iodine (VIA/VILI) is recommended (Ministry of Health 2018). Lifetime risk of cervical cancer was projected to reduce by 25% to 30% for women screened once in their lifetime at age 35 with either VIA or HPV DNA testing(Maine, Hurlburt, and Greeson 2011). The cost per year of life saved associated with a single lifetime screen with either VIA or HPV DNA testing was 134 dollars in Kenya. In the low income settings like Kenya, it was reported that strategies that involve screening with VIA or HPV DNA, and that require less than two visits were more cost effective (Maine et al. 2011).

Worldwide, cervical cancer is the fourth most common cancer in women, and as of 2020, globally, there were an estimated 604,127 new cases which represented 3.1% of all female cancers (GLOBOCAN 2020). The number of deaths reported in the same year were 341,831 representing 3.3% of all female cancer deaths. Of the estimated 341,831 deaths that occur annually due to cervical cancer, 85% are from low and middle income countries (Okunade 2020). In Africa, the highest incidence was reported in Eastern Africa (4.5%), Southern Africa (3.7%) and Middle Africa (3.5%). The highest mortality rate was reported in Eastern Africa (3.4%) and Central Africa (2.7%) (GLOBOCAN 2020). In Kenya, there were 5236 new cases, representing 19.7% of all female cancers and 3211 deaths, representing 11.9% of all cancer deaths(GLOBOCAN 2020).

Worldwide, three vaccines are available: a bivalent, quadrivalent and nonavalent vaccine which are effective against HPV 16 and 18 (Jit and Brisson 2018). An

efficacy of over 90% was observed in follow up studies of an initial randomized control trial for the bivalent and quadrivalent vaccine (Luckett and Feldman 2016) while 97.4% efficacy has been reported for the nonavalent vaccine (Huh et al. 2017). The quadrivalent and nonanvalent vaccine have additional protection against HPV 6, 11, 31, 33, 45, 52 and 58 (World Health Organization 2018). The target group is girls between the ages of 9-14 before onset of sexual activity. In a health and economic model study done in Kenya, the mean reduction lifetime risk for cervical cancer in pre-adolescent girls who receive the HPV vaccine ranged from 28% to 49% (Campos 2012).

Limited data are available on cervical cancer screening in urban informal settlements. In 2003, a countrywide WHO household survey estimated proportion of women between 18-69 with a self-reported PAP smear test in the previous 3 years at 3.2% in Kenya(World Health Organization 2003) . In 2014, a country wide demographic and health survey estimated the proportion of women who reported to have had a cervical screen done at 14% (Kenya Demographic and Health Survey 2014). Policies through the National Cervical Cancer Prevention Program (NCCP) strategic plan have been developed to increase coverage through introduction of screening programs(Ministry of Public Health and Sanitation and Ministry of Medical Services 2012).

1.2 Problem Statement

The proportion of women screened for cervical cancer among those in the lowest wealth category were only 4% in comparison to national rates of 14% in the health and demographic survey in 2014 (National Bureau of Statistics-Kenya and ICF International 2015). This indicates the disparity in estimation of data for stratified groups of women their underrepresentation in national surveys. A consequence of late diagnosis due to missed opportunities through screening may lead to high morbidity

and mortality. In addition the medical expenditure for treatment of advanced disease is expensive in Kenya (Maine et al. 2011). Consequently, most lower-income patients cannot afford to seek appropriate treatment once carcinoma has developed. Additionally this disease has a negative economic impact because it leads to loss of income due to increased medical expenditure and places a financial and emotional toll on family and care givers (Randall and Ghebre 2016).

Rapid urbanization has led to the increase in informal settlements especially in sub-Saharan Africa which is projected to have the highest urban growth by 2050 (African Population and Health Research Center (APHRC) 2014). Women in Kibera live in a setting characterized by overcrowding, poor water and sanitation and lack of formal employment for its residents. This predisposes them to poorer health outcomes as a result of limited access to health services, limited access to education and resources to access health services (J. Madise et al. 2012). In these settings, several factors may pose barriers to cervical cancer screening, including limited access to health care facilities, lack of information about screening, and limited resources to pay for healthcare encounters.

An assessment of routine data in the Kenya Health Information System (KHIS) revealed that in 2018, in Nairobi County, Kibera was the leading sub county with highest proportion of cervical cancer lesions (6.8%), an increase from 1.6% in 2017. This underscores the importance of screening women in this setting due to the evidence of increasing cervical disease. There is limited published data on the proportion of women screened in Kibera and documented barriers for screening. This study would provide information on the barriers for screening and evidence based data for interventions and policy. High screening coverage would ensure women do not develop late stage cancer and prevent severe morbidity and mortality. HIV

prevalence is twice as high among urban slum residents (12%) compared to that of their urban non-slum dwellers at 5% (J. Madise et al. 2012), which may, among other things, indicate higher risk sexual behavior – a known risk factor for HPV infection.

Knowledge of HPV is likely limited in urban slums, an indication of low risk of perception on HPV and the link of cervical cancer (Masika 2015). Repeated HPV infections can lead to development of cervical cancer and thus screening to detect these infections can identify lesions and provide treatment for pre-cancerous lesions. Therefore, it is important to routinely screen these women in a high HPV prevalence infection setting by identifying the barriers to screening.

1.3 Justification

Cervical cancer is the leading cause of cancer deaths among women in Kenya, and the second most common cancer among women in Kenya (Ministry of Health 2019). Most of the cancer deaths in Kenya are diagnosed at late stages and this means that treatment is expensive and the cancer is likely to advance to later stages (Ministry of Public Health and Sanitation and Ministry of Medical Services 2012). In addition, in Kibera, there is inadequate access to health services, poverty and low socioeconomic status and limited education(African Population and Health Research Center APHRC 2014). Challenges arise when women are not screened because the cancer may advance to later stages and these women are unlikely to afford expensive treatment.

Kibera is one of the largest urban informal settlements in Africa and Kenya, with an estimated population ranging from 250,000 to 500,000 residents (Kenya National Bureau of Statistics 2009). Approximately five outpatient clinics within the slum offer cervical cancer screening services for this large catchment population. Treatment

procedures for precancerous lesions using a loop electrosurgical excision procedure (LEEP) and cryotherapy equipment are also conducted.

Cervical cancer is a preventable disease and up to 80% of deaths can be averted through screening of cervical cancer (Vaccarella et al. 2013). However, even though cervical cancer screening services are free in Kenya, the proportion of women among low socioeconomic status who are screened is low, and it is therefore important to understand the barriers to cervical cancer screening among them. Limited data exist on the coverage of cervical cancer screening in urban slums in Kenya and barriers to seeking services in these settings have not been described. A community based study will provide an estimate of coverage and assess the barriers that prevent them from seeking these services. Findings from this study will provide information which may be used to institute policies to improve utilization.

1.4 Research Question

1. What is the proportion of women aged 18–49 years screened for cervical cancer in Kibera?
2. What are the factors and barriers associated with participation in cervical cancer screening among women aged 18─49 years in Kibera?

1.5 Objectives

1.5.1 Broad objective

To determine the proportion of women aged 18–49 years screened for cervical cancer, and factors and barriers associated with cervical cancer screening in Kibera.

1.5.2 Specific objectives

1. To determine the proportion of women aged 18–49 years who have undergone cervical cancer screening in Kibera.
2. To determine factors associated with cervical cancer screening among women aged 18–49 years in Kibera.
3. To determine the barriers to cervical cancer screening among women aged 18–49 years in Kibera
4. To determine knowledge on Human Papilloma Virus (HPV) infection among women aged 18–49 years in Kibera.

CHAPTER TWO

LITERATURE REVIEW

2.1 Cervical Cancer Screening Context in Kenya

Cervical cancer cases in Kenya remain high with 5236 new cases in 2020, representing 19.7% of all female cancer cases. (GLOBOCAN 2020). The highest age specific rates have been reported in women aged 60-64 years (Rese 2019). Cervical cancer screening is the main prevention strategy for disease among women aged 25–49 years of age worldwide and in Kenya. Efforts towards reducing these numbers has been mostly through secondary prevention by screening and treatment of pre-cancerous lesions. In Western Kenya, retrospective review of 6787 screened women over a 2 year period found that 1331 (19.6%) were VIA positive. Invasive cancers were found in 68 (1%) of these women (Khozaim et al. 2014). This emphasizes the need for early detection and treatment.

To mitigate the high morbidity and mortality rates from cervical cancer in Kenya, a National Cervical Cancer Prevention Program Strategic plan was developed in 2010 (Mwenda et al. 2022). The goal of this strategy was to achieve 70% coverage of screening in women with the highest risk and those who would benefit most from treatment. Community mobilization to improve knowledge and awareness, primary vaccination for HPV, screen and treat approach and resource mobilization were the main strategies for this program (Ministry of Public Health and Sanitation and Ministry of Medical Services 2012). Screening services in Kenya still face many challenges as evidenced by an evaluation report of the national screening program carried out by Kenya Field Epidemiology and Laboratory Training Program (FELTP) in 8 counties. The report indicated that there was lack of equipment for specialized services and human resource capacity (Kenya FELTP 2016).

Screening coverage in low income countries, Kenya included, is still low with only about 14% of women being screened as compared to 40-50% in high income countries (Sherris, Herdman, and Elias 2001). The last country wide survey was carried out in 2014 during the demographic and health survey but several hospital and few community based studies have been carried out to estimate coverage since then.

2.2 Barriers to Cervical Cancer Screening in Kenya

Barriers are defined as negative perception to a health intervention that prevent individuals from seeking out a health intervention that is beneficial to them(Sadat 2012). Barriers are classified into several categories depending on whether or not individuals are aware of the intervention that is recommended. In Kenya, studies on barriers among urban residents may not have taken into consideration the special population in urban slums. This population is not well represented in urban surveys because they are more vulnerable to poor indicators. There is a shortage of government facilities such as hospitals and schools in urban slums (Kabiru et al. 2011).

In order to develop proper interventions to support screening among the urban poor, barriers to screening need to be properly documented. Although the women in urban slums are at higher risk of HIV and risky sexual behavior that could predispose them to cervical abnormalities, studies on barriers to screening are limited among the urban poor (Opwora et al. 2015). Literature on barriers among women in lower wealth categories is limited to rural areas and the urban non-slum residents. In addition, these studies are mainly focused in hospitals settings. This may bias the results because it excludes women who do not routinely frequent hospitals. The few studies that have been conducted in urban slums focus on knowledge and awareness of sexually

transmitted infections (STIs). These reports have shown that the Human Papilloma Virus infection is an STI that is not well known among urban slum residents, with majority being aware only of HIV (J. Madise et al. 2012). This becomes a challenge in that HPV is a documented cause of over 90% of cervical cancer cases and this lack of knowledge means women continue to engage in risky sexual behavior (Okunade 2020).

Documented barriers in studies conducted include socio-demographic factors like age, sex, marital status, education level and socio-economic status (Randall and Ghebre 2016). Lifestyle behaviour such as multiple sexual partners, age of sexual debut, underlying comorbidities like HIV may influence whether women will attend screening or not. Reported barriers to screening include information barriers, psychological barriers, perceived susceptibility to disease, goegraphical and psychological barriers(Tiruneh et al. 2017). The socio-demographic and lifestyle barriers may also influence information and/or psychological barriers. In this study we explore barriers to screening and explore how socio-demographic and lifestyle factors may directly deter women from undergoing screening.

2.2.1 Age

Age of women influences participation in screening. Age may influence certain barriers to screening such as information, attitude and behavior (Ndejjo et al. 2017). In the Kenya health and demographic survey in 2014, the lowest proportion of women screened was among young women aged less than 25 years(National Bureau of Statistics-Kenya and ICF International 2015) compared to older women. Young

women in urban slums are unlikely to participate in screening because they have limited knowledge on cervical cancer and screening.

2.2.2 Socio-economic status

A higher proportion of women living in urban areas had more knowledge on cervical cancer compared to those in rural areas. However, the women captured in urban areas are from higher wealth categories and urban slum residents may be underrepresented in this population. In 2014, only 4% of women in lower wealth categories had been screened (National Bureau of Statistics-Kenya and ICF International 2015). However, these low income categories of women captured are mainly among women in rural areas. There is therefore a gap on knowledge on barriers among women in the urban slum population in Kenya.

However, in Africa, several studies have been conducted among women in urban informal settlements. In South Africa, a household survey reported that 45% of 665 women reported screening, with most unscreened women being older, less educated, unemployed and not living with a partner (J., L., and L. 2004). In comparison, a similar study in Zambia in an urban informal setting, a household survey enrolled 1100 unscreened women. Of all women, 58% were not educated and 71% had an income of less than 100USD per month (Chirwa et al. 2010). In Nigeria, in two large urban slums, only 10% of 240 women were aware of cervical cancer but 73.3% were willing to undergo a screening test (M R Balogun et al. 2012). Older age, education and previous history of a vaginal exam were positively associated with willingness to participate in the screening.

2.2.3 Education

In the demographic survey of 2014, among women with no education, only 32% of them had heard of cervical cancer screening compared to 80% of their counterparts who have secondary or college education. Women living in urban slums are at a disadvantage because they have limited formal education and access to schools (Desgroppes and Taupin 2011). In a cross sectional study done among women in a low income settlement in Eastleigh in Nairobi, majority of women were college educated, however only 32% of them reported screening (Abdikarim, Carole Atieno, and Habtu 2017). This implies that even among educated women, additional factors affecting women in low income settlements deter them from seeking cervical cancer screening services.

2.2.4 Information barriers

Lack of knowledge on cervical cancer and cervical cancer screening is a documented barrier among women in Kenya. However, even among 76% of Kenyan women who are aware of cervical cancer screening, only 14% of them have reported screening (National Bureau of Statistics-Kenya and ICF International 2015). This means that there exists a gap in knowledge dissemination to women that still deters them from seeking services. In an urban slum in South Africa, majority of unscreened women reported that they had no education on screening and therefore they did not know where to seek services (Botha and Dochez 2012). Those with knowledge on the risk factors of disease were more likely to go for screening because of their perceived risk and susceptibility. Although Kenya and South Africa are similar, in South Africa the screening program has been in existence for much longer and thus knowledge gaps among Kenyan women need to be identified so as to intervene with policy changes.

2.2.5 Psychological barriers

Fear and embarrassment are factors that deter women from seeking screening services (Francis et al. 2010). Additional negative perceptions like fear of the procedure being uncomfortable of painful may deter women from seeking cervical cancer screening services. Independent factors associated with undergoing a Pap smear procedure identified previously include perceived susceptibility and embarrassment while undergoing the procedure. Among women in a rural setting in Isiolo and Tharaka Nithi Counties, majority of unscreened women reported that they feared that the screening would be scary (M.Gatumo 2018). Among women in an urban slum in Nigeria, myths and misconceptions were the main deterrent to cervical cancer screening (Adebamowo et al. 2017). In a cross-sectional study done at the Moi Teaching and Referral Hospital in Eldoret, out of 219 women, only 12.3% reported to have been screened. Out of these women, the main barriers were fear of abnormal results and lack of finances among 22.4% and 11.4% of women respectively (Were, Nyaberi, and Buziba 2011). Different perceptions may exist among women in Kibera would need to be studied to understand myths and misconceptions among them and to facilitate targeted interventions.

2.2.6 Health facility barriers

Cervical cancer screening services are offered for free in public health facilities in Kenya (Ministry of Public Health and Sanitation and Ministry of Medical Services 2012). Trained health workers offer screening tests integrated into maternal and child health services, family planning and comprehensive care clinics for patients on HIV treatment. In 2018, only about 25% of 3000 sampled health facilities were offering screening services despite the fact that the screening program in Kenya was implemented in 2008 (Mwenda et al. 2022). This can be explained by lack of

screening reagents, high turnover of trained health care workers and lack of equipment for treatment of abnormal cervical cancer lesions. In addition poor referral systems for treatment of those with abnormal cervical lesions may deter women from seeking care. Shortage of health care workers especially nurses who provide the services is a major deterrent. It would be important to understand which of these barriers affect women living in Kibera.

2.2.7 Geographical barriers

Limited access to health facilities is a barrier to screening services. However, interventions such as screening and treatment on the same visit has assisted with this challenge (Getinet et al. 2015). This allows for reaching of a greater proportion of women with these services. Kibera hosts a large population and lack of resources to access health facilities may be a major deterrent for screening. Although services are free, women may not have this knowledge and they may assume that screening costs are expensive and they do not attend. In a rural based community study in Tharaka Nithi and Isiolo counties, more than 80% of women aged 18 years and older had never been screened (M.Gatumo 2018). Low literacy levels, poverty and lack of access to health care facilities were the main contributors.

2.2.8 Low Perception of risk for cervical cancer

In Kenyatta National Hospital, a study done in 2003 reported that only 22% had a PAP smear done previously (Gichangi et al. 2003). In one of the largest referral hospitals in Kisumu, 82.5% of respondents had never been screened in their lifetime and factors associated with not having been screened were young age, income of less than 5,000ksh per month and attitudes of low susceptibility to the disease (Morema 2014). If women do not have knowledge on risk factors for cervical cancer, they have low risk perception and as a result do not see the need for seeking screening services.

Women in Kibera are likely to have limited knowledge on the disease and this would be important to assess and identify the specific barriers. Women may not be aware of the signs and symptoms and severity of disease to give them the motivation to undergo screening.

In a study to assess uptake of screening through VIA among 2505 eligible women from four health facilities in Western Kenya, 273 (11%) accepted to have the procedure done (Orang'O et al. 2016). Limiting factors included lack of knowledge and fear of cancer being detected. This shows the importance of educating women that early detection is likely to improve survival by detecting pre-cancerous and not invasive late stage disease.

Screening coverage remains low in Kenya but strategies have been put in place to address this. One study was done in Western Kenya to evaluate effectiveness of a community screening strategy by educating women on self-administered HPV DNA tests. Nearly a third (255) of the eligible population (870) women agreed to the self-testing and of these 19% tested positive for HPV (Swanson et al 2018). This strategy eliminates the barriers associated with facilities such lack of trained staff and long waiting times for service provision. Only 51% of those that tested positive returned to the health facility for follow up. This shows that linkage to treatment is still a challenge, a problem that has also been recognized by the National Cervical Cancer Prevention Program Strategic Plan.

2.3 Knowledge on Cervical Cancer Screening and HPV

In 2013, pilot projects were conducted in preparation for initiation of the HPV vaccine into the national vaccination schedule in schools in Eldoret and Kitui (Masika 2015). The projects involved vaccination of young girls and assessment of vaccine

acceptability among teachers and caregivers. This was important to understand communities' attitude and acceptability (Vermandere et al. 2015). In Eldoret, a study was done with 2808 eligible girls aged 9 to 14 years, and two HPV quadrivalent vaccine doses were successfully administered to 1933 (63.8%) of girls(Mabeya et al. 2018) and 3 doses to 1182 (39.1%). A qualitative study done after the pilot study revealed that cervical cancer knowledge among care takers was poor and that very few had heard about the vaccination opportunity (Mabeya et al. 2018).

In a cross-sectional study done among 147 women in Kisumu in 2007, 95% of them reported that they would be willing to have their daughters receive the HPV vaccine. None of these women had heard of the vaccine prior to the study. This implies that if women are provided with the information about the vaccine, acceptability would be high. In the same group of women, only 15% had ever heard of cervical cancer (Becker-dreps et al. 2010).

In a health and demographic survey conducted in 2014, among 14,626 women aged 15-45 years interviewed, 76% had heard about cervical cancer. In the urban areas, 83.1% had heard of cervical cancer but there is a likelihood that knowledge in the urban slums may be lower(Kenya Demographic and Health Survey 2014).

2.4 Prevention strategies

2.4.1 Primary prevention

The primary prevention strategy is through the introduction of the HPV vaccine. The primary target group for vaccination is young girls between the ages 9-14, a period likely to be before sexual debut and any HPV exposure (World Health Organisation 2020). In Kenya, the two vaccines available are the bivalent (Cervarix) and

quadrivalent (Gardasil) vaccines (Vermandere 2012). WHO recommends two doses for girls aged 9-14 years with a 6 month interval between doses (GAVI 2018).

Measures to improve vaccine acceptability in Kenya include endorsement by community leaders so as to provide reassurance and efficacy of the vaccine for young girls. Education and communication on long term benefits of the vaccine should be done to improve awareness(Friedman et al. 2014).

2.4.2 Secondary Prevention

The three screening tests that are recommended are:

2.4.2.1 Visual inspection with acetic acid (VIA)/Visual inspection with Lugol's iodine (VILI)

In Kenya, if HPV testing is not available as the primary screening method, or loss to follow up is a risk, VIA/VILI is the recommended screening method (Ministry of Health 2018). This procedure involves applying either acetic acid or Lugol's iodine to the cervix and observing after one minute(Ministry of Health 2012). Results are categorized as VIA positive, negative or suspicious for cancer. VIA is not recommended for women over 50 because the transformation zone where most pre-cancerous lesions occur recedes into the endo-cervical canal which makes visual assessment of lesions difficult (WHO 2013).

In Kenya and majority of low income countries in Sub-Saharan Africa, VIA is the preferred screening method because it is simple to perform and cost effective(WHO 2013). It is fairly inexpensive and can be performed by a broad category of health workers(Ajenifuja et al. 2013).

2.4.2.2 Cytology

In Kenya, cytology is recommended for women not eligible for VIA/VILI or HPV testing, those aged below 30 years and as a co-test with HPV in HIV positive women (Ministry of Health 2018). A cytology brush is used to scrape cells from the transformation zone of the cervix, after which cells are fixed onto a glass slide and fixed in absolute alcohol(Ministry of Health 2012). Finally, a PAP stain is used to colour the cells and this is read by a trained pathologist for abnormal cellular changes. The PAP smear method for screening has been difficult to implement in developing countries because it requires sustainable laboratory equipment and highly skilled personnel (Ajenifuja et al. 2013).

2.4.2.3 HPV testing

In Kenya, HPV testing is the recommended primary screening method for women aged above 30 years (Ministry of Health 2018). This procedure is done by looking for HPV DNA in cervical cells. According to WHO, HPV DNA testing is more sensitive than VIA and cytology and allows for screening intervals as long as 5 years(WHO 2013). In studies done in Europe and North America, the sensitivity of cytology varied from 40%-80% while that of HPV testing was consistently above 85%(Tsu et al. 2018). HPV testing is preferable because self-testing can be done, however, initial costs for this are high.

2.5 Conceptual Framework

The conceptual framework was adapted from a model that states that women are likely to seek a health intervention due to their perception of susceptibility to the disease (risk of developing cervical cancer), perceived severity (risk of the negative and debilitating effects of advanced cervical disease), perceived benefit of being screened for cervical cancer (belief that being screened identifies early disease and

provides an opportunity for treatment) and perceived barriers (fear, embarrassment, pain, abnormal results, expensive cost) (Sadat 2012). Additional socio-demographic factors like age and socio-economic status, medical factors like underlying HIV infection, family history of cancer also influence participation directly and also influence perception on risk and barriers (Kabiru et al. 2011). For example, age may influence the knowledge that women have on screening. Women's education may also influence perception on severity and risk.

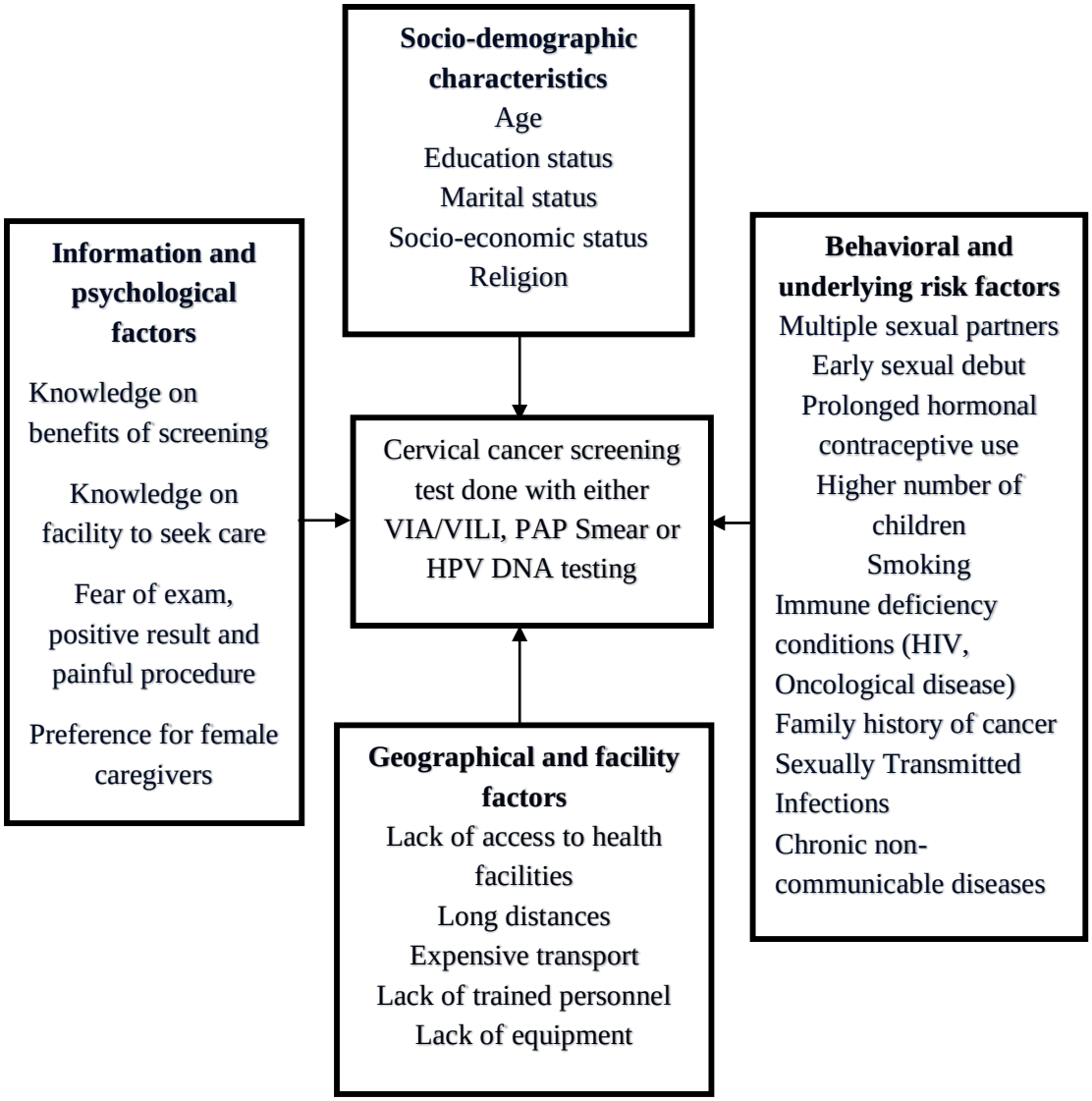

Figure 1: Conceptual Framework

CHAPTER THREE

MATERIALS AND METHODS

3.1 Study site

Kibera is a large, densely populated informal settlement, located 5km southwest to Nairobi city. It is subdivided into 13 villages. Like most urban informal settlements, Kibera is characterized by overcrowded housing, poor water and sanitation and high burden of infectious diseases like HIV/AIDS.

The two villages where this study was carried out were Soweto West and Gatwekera (Figure 1). In these villages, KEMRI and CDC implemented the Population Based Infectious Disease Surveillance (PBIDS) in Kibera since 2007, measuring the burden and etiology of infectious diseases among enrolled individuals. Household and facility-based surveillance is carried out for 4 syndromes; severe acute respiratory illness, diarrheal illness, acute febrile illness and jaundice. PBIDS participants receive medical care free of charge for acute illness at a centrally located outpatient clinic. Cervical cancer screening is conducted by trained nurses at the clinic, independent of PBIDS surveillance activities and treatment is provided for precancerous lesions detected. Those with cancerous lesions are referred to Kenyatta National Hospital (the largest public referral hospital). In addition, cervical cancer screening in approximately 5 clinics located in Kibera.

3.2 Study Design

This was a community based cross sectional study in two villages of Kibera (Soweto West and Gatwekera).

3.3 Study Population

Women of ages of 18-49 years who were residing in Soweto West or Gatwekera villages of Kibera in 2019. The age group women included in this population was based on the target age group for screening of women in Kenya.

3.3.1 Inclusion Criteria

Any woman aged between 18–49 years residing in Soweto and Gatwekera villages in Kibera who had resided in Kibera for at least 4 months consecutively in 2019. This is because of the highly mobile population in Kibera.

3.3.2 Exclusion criteria

Any woman who was pregnant at the time of the study because cervical cancer screening is not recommended for women who are pregnant.

3.4 Sample size calculation

Sample size for estimating coverage of women screened in the study was calculated using Cochran's formula. We calculated a sample size of 222. Assumptions made using this formula were:

$n = Z^2 \times (p\ q) / d^2$

$n = 1.96^2 \times (0.14 \times 0.86) / 0.05^2$

$n = 185$

Non response rate of 20%

n=222

- Assumptions:
    - Z = 95% confidence interval

- P = 14%, the proportion of individuals who self-reported that they had ever had a cervical cancer screening done in a country wide demographic and health survey in 2014
- d = 5% desired precision

3.5 Sampling procedure

The two villages included households with eligible participants, each with a unique identification number and respective age recorded in an electronic database at a field office in Kibera. The primary sampling unit was a household. A list was obtained with eligible participants, their unique household number and age. This list obtained had 1,992 eligible participants and this was used as a sampling frame. The eligible women in the list were divided into three age categories (18-29 years, 30-39 years and 40-49 years). Proportionate stratified sampling strategy was done by using the number of eligible women in each age strata, total number of eligible women in the population and total sample size. The proportion of women in each age strata in the study population was used to calculate a sample size of 222 study participants. The sample size obtained from the age category of those aged 18–29 years was 127 participants (1139/1992*222), 76 participants from the 30–39 age category (683/1992*222) and 19 participants from those aged 40–49 years (170/1992*222) to obtain a total sample size of 222 participants. Simple random sampling was used to select eligible women from each age strata using Microsoft® Excel (Microsoft Office, Seattle, USA, 2013). Only one participant per household was recruited into the study. In case of more than one eligible participant in the household, simple random sampling was used to select a participant.

3.6 Recruitment of Study Participants

A list with potential participants was generated by data coordinators from the electronic database that stores demographic information on the residents in the two villages. The list was then shared with trained community reporters who routinely conduct household visits to collect surveillance data on number of participants in households. Community reporters were trained on the purpose of the study and how to approach potential study participants for enrollment in the study. With the assistance of the reporters, eligible participants were approached in their households, the purpose of the study was explained and their telephone contacts were obtained. The potential participants were requested for informed consent and interview scheduled at their convenience. In case an eligible participant was not in the household at the time of the visit, we rescheduled another visit on another day and moved on to the next household in the list.

3.7 Data Collection

The eligible participants were contacted and the purpose of the study was explained (**Appendix 2**). If an eligible participant agreed to participate in the study, an interview date was scheduled and on the scheduled day of interview, we requested for informed consent from participants using a standard script (**Appendix 3**) and conducted interviews with enrolled participants using a standard questionnaire (**Appendix 4)**.The questionnaire used was adapted from a validated questionnaire based on the health belief model focusing on knowledge on cervical cancer, perceived benefits and barriers to cervical cancer screening and other studies (Kabiru et al. 2011)(Gatumo et al. 2018). The questionnaires were loaded into password protected tablets belonging to the Kenya Field Epidemiology office on Epi info 7.2.3.0 (CDC, Atlanta, 2019). Interviews were conducted by one interviewer per participant either in Kiswahili or

English and lasted approximately 30 minutes. Information collected included socio-demographic variables, sexual history, screening and knowledge on cervical cancer and HPV infection.

3.7.1 Independent variables

Socio-demographic variables including age, residence, ethnicity, religion, socio-economic status, level of education, marital status and occupation were collected. Risk factors including history of parity, miscarriages, oral contraception use, age at first sexual debut, number of sexual partners, sexually transmitted infections, smoking, alcohol use and underlying medical conditions was collected. Information on barriers to screening including information barriers, geographical barriers, health facility barriers, education barriers, perception on susceptibility barriers and psychological barriers was collected.

3.7.2 Dependent variables

The outcome variables was either a positive or negative response to ever having undergone a screening test via VIA/VILI, Pap smear or HPV testing. Additional outcomes of interest included knowledge on cervical cancer screening and HPV virus infection.

3.8 Data Management and Analysis

All tablets containing participant data were password protected and stored in storage cabinets with locks. Identification information was replaced with unique identification numbers and identifiers permanently deleted from the tablets. Questionnaires filled on the Epi Info Version 7.2 tool were merged and exported to Microsoft Excel (Microsoft Office, Seattle, USA, 2013) for cleaning. Data was then uploaded into Epi Info and STATA 14.2 (College Station, Texas 77845 USA, 2018) for analysis.

Descriptive analysis was done by calculating measures of central tendency and dispersion for continuous variables and frequencies and proportions for categorical variables. Chi-square tests were used to assess significant differences between the outcome variables. Chi square test was used to calculate prevalence odds ratios and 95% confidence intervals at bivariate analysis. Variables with an odds ratio of <0.2 were included into a logistic regression model. Variables with a p value of <0.05 were considered statistically significant.

3.9 Ethical Consideration

Ethical approval for this research proposal was obtained from the Moi University Institutional Research and Ethics Committee (IREC). Institutional review board reliance agreement for the study protocol and access to the surveillance data base was also obtained from the Scientific Ethics Review Unit (SERU) at the Kenya Medical and Research Institute (KEMRI) and the Centre for Disease Control and Prevention Kenya (CDC-Kenya). A National Commission for Science, Technology and Innovation (NACOSTI) research permit was obtained once ethical approval was granted.

Informed consent was obtained from all study participants after a detailed explanation on the purpose of the study prior to administration of any questionnaires. Unique identification numbers were used in place of personal identifiers to ensure privacy. Data storage devices were password protected and stored in storage cabinets with locks.

All research assistants and community cluster reporters were trained on the enrollment procedure and questionnaire administration.

CHAPTER FOUR

RESULTS

4.1 Demographic Characteristics of Study Participants

We interviewed 222 study participants. The median age of was 28 years (IQR 24─33 years). Participants who reported to have ever had cervical cancer screening done were 77 (34.7%).

Among the 222 study participants, 66 (29.7%) were aged 25-29 years, 71 (32%) had completed primary education and 149 (67.1%) were married.

Among the 77 screened study participants, those aged 25─29 years were 23 (29.9%), had completed college education were 16 (20.8%) and unemployed were 30 (39%). Those who were married were 61 (79.2%) (**Table 1**). Among the 145 unscreened participants, those who were aged 25─29 years were 43 (29.7%), had completed college education were 43 (29.7%) and unemployed were 66 (44.5%). When we compared age between the two groups, the percentage of screened respondents among the older age groups (35–39 years) was 19.5% compared to those of the unscreened participants at 8.9% (p value 0.006). The percentage of screened participants who had completed primary level of education was 37.7% compared to those who were unscreened at 29% (p value 0.022). The percentage of screened participants who were married was 79.2% compared to those of unscreened women at 60.7% (p value 0.002).

Table 1. Demographic characteristics of study participants in Kibera, Nairobi County, Kenya, 2019

	Total (n=222)	Screened (n=77)	Not Screened (n=145)	
Variable	**Frequency (%)**	**Frequency (%)**	**Frequency (%)**	**P Value**
Age group				
<25	69 (31.1)	13 (16.9)	56 (38.6)	
25-29	66 (29.7)	23 (29.9)	43 (29.7)	
30-34	40 (18.0)	18 (23.4)	22 (15.2)	
35-39	28 (12.6)	15 (19.5)	13 (8.9)	
40-49	19 (8.6)	8 (10.4)	11 (7.6)	0.006
Education				
Incomplete primary	36 (16.2)	17 (22.1)	19 (13.1)	
Complete primary	71 (32.0)	29 (37.7)	42 (29.0)	
Incomplete secondary	27 (12.2)	5 (6.5)	22 (15.2)	
Complete secondary	48 (21.6)	10 (13.0)	38 (26.2)	
College	40 (18.0)	16 (20.8)	24 (16.6)	0.022
Occupation				
Unemployed	96 (43.2)	30 (39.0)	66 (45.5)	
Casual Worker	65 (29.3)	23 (29.9)	42 (29.0)	
Formal employment	39 (17.6)	16 (20.8)	23 (15.9)	
Self employed	22 (9.9)	8 (10.4)	14 (9.7)	0.745
Income (Ksh)				
None	94 (42.3)	30 (39.0)	64 (44.1)	
<1000	1 (0.0)	0 (0.0)	1 (0.7)	
1001-5000	19 (8.6)	8 (10.4)	11 (7.6)	
5001-10,000	60 (27.0)	23 (29.9)	37 (25.5)	
>10,000	48 (21.6)	16 (20.8)	32 (22.1)	0.79
Marital Status				
Married	149 (67.1)	61 (79.2)	88 (60.7)	
Never married	62 (27.9)	10 (13.0)	52 (5.9)	
Separated	10 (4.5)	6 (7.8)	4 (2.8)	
Widowed	1 (0.5)	0 (0.0)	1 (0.7)	0.002
Ethnicity				
Luo	176 (79.3)	64 (83.1)	112 (77.2)	
Luhya	28 (12.6)	7 (9.1)	21 (14.5)	
Kamba	2 (0.9)	2 (2.6)	0 (0.0)	
Somali	2 (0.9)	2 (2.6)	0 (0.0)	
Kisii	9 (4.1)	2 (2.6)	7 (4.8)	
Kikuyu	5 (2.3)	0 (0.0)	5 (3.5)	0.032

4.2 Reproductive, Sexual and Medical History of Study Participants

Among the 222 study participants, those who had 1–3 children were 123 (55.4%) and those who reported to have ever used contraceptives were 154 (69.4%). Comorbidities were reported by 33 (14.9%) study participants, and 21 (63.6%) were living with HIV.

Among the 77 screened participants, those with a parity of 1─3 children were 47 (61%), reported ever use of contraceptives were 61 (79.2%) and had 1─3 lifetime sexual partners were 57 (74%). Those who reported an underlying illness were 21 (27.3%), of whom 15 (71.4%) were living with HIV (**Table 2**). Among the 145 unscreened participants, 76 (52.4%) had a parity of 1─3 children, 93 (64.1%) reported ever contraceptive use and 91 (62.8%) reported to have 1─3 lifetime sexual partners were. Those who reported an underlying illness were 12 (8.3%), of whom 6 (50%) were living with HIV. The percentage of screened respondents who had a parity of 1─3 children was 61% compared to 52.4% in the unscreened participants (p value <0.001). The percentage screened participants who had ever used contraceptives was 79.2% compared to those who were unscreened at 64.1% (p value 0.03). The percentage of screened participants who were living with HIV was 71.4% compared to those of unscreened respondents at 50% (p value <0.001).

Table 2. Reproductive, sexual and medical history of study participants, Kibera, Nairobi County, Kenya, 2019

	Total (n=222)	Screened (n=77)	Not screened (n=145)	
Variable	**Frequency (%)**	**Frequency (%)**	**Frequency (%)**	**P Value**
Ever Pregnant				
Yes	178 (80.2)	73 (94.8)	105 (72.4)	<0.001
Parity[1]				
0	43 (19.4)	4 (5.2)	39 (26.9)	
1−3	123 (55.4)	47 (61.0)	76 (52.4)	
4−6	49 (22.1)	20 (26.0)	29 (20.0)	
>6	7 (3.2)	6 (7.8)	1 (0.7)	<0.001
Pregnancy Loss				
None	144 (80.9)	56 (76.7)	88 (83.8)	
Miscarriage[2]	30 (16.9)	16 (21.9)	14 (13.3)	
Stillbirth[3]	6 (3.4)	3 (4.1)	3 (2.9)	0.125
Ever Contraception Use	154 (69.4)	61 (79.2)	93 (64.1)	0.03
Age of sexual debut				
Never	18 (8.1)	1 (1.3)	17 (11.7)	
12−14	45 (20.3)	14 (18.2)	31 (21.4)	
15−19	136 (61.3)	53 (68.8)	83 (57.2)	
20−24	20 (9.0)	8 (10.4)	12 (8.3)	
≥25	3 (1.4)	1 (1.3)	2 (1.4)	0.519
Lifetime Sexual Partners				
0	18 (8.1)	1 (1.3)	17 (11.7)	
1–3	148 (66.7)	57 (74.0)	91 (62.8)	
4–6	52 (23.4)	17 (22.1)	35 (24.1)	
≥6	4 (1.8)	2 (2.6)	2 (1.4)	0.031
Any Co-morbidity	33 (14.9)	21 (27.3)	12 (8.3)	<0.001
Type of Co-morbidity[4]				
HIV[5]	21 (63.6)	15 (71.4)	6 (50.0)	<0.001
Hypertension	13 (39.4)	7 (33.3)	6 (50.0)	0.232
Asthma	2 (6.1)	2 (9.5)	0 (0.0)	0.229
Epilepsy	1 (3.0)	1 (4.8)	0 (0.0)	0.747

[1]Number of times a woman has given birth, [2]Loss of pregnancy before 20th week of pregnancy, [3]Loss of pregnancy loss after 20th week of pregnancy, [4]Comorbidity by underlying illness, [5]Human Immunodeficiency Virus

4.3 Factors Associated with Screening among Study Participants

4.3.1 Bivariate analysis of factors associated with screening among study participants

At bivariate analysis, older study participants aged 35–39 years had four times the odds of screening compared to those who were younger (<25 years) (COR= 4.97, 95% CI:1.91-12.94) (**Table 3**). Participants who had only primary levels of education had twice the odds of screening compared to those with secondary and higher levels of education (COR=2.04, 95% CI: 1.16–3.58).

The odds of screening for married participants were twice those of the unmarried (COR=2.47, 95% CI: 1.29-4.69). The odds of screening for participants who had a parity of 1─3 children were six times those of participants who had never had children (COR=6.03, 95%CI: 2.02-17.96). Study participants who were living with HIV had five times the odds of screening compared to those who were HIV negative (COR=5.6, 95%CI 2.08-15.13).

Table 3. Bivariate analysis of factors associated with screening among study participants, Kibera, Nairobi County, Kenya, 2019

	Screened (n=77)	Not Screened (n=145)	Crude OR* (95%CI)	P Value
Variable	**n (%)**	**n (%)**		
Age group				
<25	13 (16.9)	56 (38.6)	Ref	
25-29	23 (29.9)	43 (29.7)	2.30 (1.04–5.06)	0.056
30-34	18 (23.4)	22 (15.2)	3.52 (1.48–8.39)	0.007
35-39	15 (19.5)	13 (9.0)	4.97 (1.91–2.94)	0.002
40-49	8 (10.4)	11 (7.6)	3.13 (1.05–9.34)	0.071
Education				
Primary	46 (59.7)	61 (42.1)	2.04 (1.16–3.58)	0.018
Secondary[1]+	31 (40.3)	84 (57.9)	Ref	
Occupation				
Unemployed	30 (39.0)	66 (45.5)	0.76 (0.44–1.34)	0.426
Employed	47 (61.0)	79 (54.5)	Ref	
Income				
None	30 (38.9)	65 (44.8)	0.92 (0.44–1.93)	0.982
< 10,000	31 (40.3)	48 (33.1)	1.29 (0.61–2.74)	0.632
≥ 10,000	16 (20.8)	32 (22.1)	Ref	
Marital status				
Married	61 (79.2)	88 (60.7)	2.47 (1.29–4.69)	0.008
Not married[2]	16 (20.8)	57 (39.3)	Ref	
Parity				
0	4 (5.2)	39 (26.9)	Ref	
1–3	47 (61.0)	76 (52.4)	6.03 (2.02–17.96)	<0.001
≥4	26 (33.8)	30 (20.7)	8.45 (2.66–26.83)	<0.001
Ever Contraceptive use				
Yes	61 (79.2)	93 (64.1)	2.13 (1.12–4.07)	0.03
No	16 (20.8)	52 (35.9)	Ref	
Sexual Debut[3]				
<15	14 (18.4)	32 (25.2)	0.67 (0.33–1.36)	0.346
≥15	62 (81.6)	95 (74.8)		
HIV Status				
HIV Positive	15 (19.5)	6 (4.1)	5.6 (2.08–15.13)	<0.001
HIV Negative	62 (80.5)	139 (95.9)		

*Crude Odds Ratio (95% Confidence Interval)[1]Secondary and college education, [2]Single, separated, divorced and widowed [3]Proportion of participants who reported sexual debut (n=203)

4.3.2 Multivariate analysis of factors associated with screening among study participants

Using logistic regression, the independent factors associated with screening among study participants were parity and HIV status **(Table 4)**. We included variables that had a p value of <0.2 into the model including socio-demographic factors like age, education, marital status, parity, ever contraceptive use and HIV status.

Study participants who had a parity of 1─3 children had four times the odds of screening compared to those who had never had children (AOR=4.79, 95% CI: 1.15-20.05). Participants who were living with HIV had four times the odds of screening compared those who were HIV negative (AOR=4.39, 95% CI: 1.52-12.69).

Table 4. Multivariate analysis of factors associated with cervical cancer screening among study participants, Kibera, Nairobi County, Kenya, 2019

	Screened N=77	Not Screened N=145	Crude OR (95%CI)	Adjusted OR (95%CI)	P Value
Variable	**n (%)**	**n (%)**			
Parity					
0	4 (5.2)	39 (26.9)	Ref	Ref	
1–3	47 (61.0)	76 (52.4)	6.03 (2.02–17.96)	4.71 (1.12–19.84)	0.034
≥4	26 (33.8)	30 (20.7)	8.45 (2.66–26.83)	4.55 (0.87–23.83)	0.073
HIV Status					
Positive	15 (19.5)	6 (4.1)	5.6 (2.08–15.13)	4.39 (1.53–12.66)	0.006
Negative	62 (80.5)	139 (95.9)	Ref	Ref	

4.4 Barriers to Cervical Cancer Screening Among Study Participants

Among the 145 study participants who were not screened, lack of knowledge on cervical cancer screening was reported by 43 (29.3%) of participants and lack of knowledge on cervical cancer was reported by 37 (25.5%). Barriers such as fear of painful procedure was reported by 30 (20.7%) of the participants. Participants who reported not having time to go to the clinic for screening as a barrier were 26 (17.9%). Women who reported that they did not feel at risk for cervical cancer were 18 (12.4%) and those who reported that did not see the need for cervical cancer screening because they had no symptoms were 17 (12.4%).

Among participants who were not screened those who reported lack of knowledge on where to attend screening were 14 (9.7%) and those who had fear of abnormal results following screening were 12 (8.3%) **(Table 5)**. Women who reported that they did not have enough money for cervical cancer screening services were 9 (6.2%) and those who reported not having any interest in the procedure were 6 (4.1%).

Table 5. Barriers to cervical cancer screening among study participants, Kibera, Nairobi County, Kenya, 2019

Variable	Not Screened (N=145)
Barriers to cervical cancer screening	**Frequency (%)**
Lack of knowledge on cervical cancer screening	43 (29.7)
Lack of knowledge on cervical cancer	37 (25.5)
Fear of the "painful procedure"	30 (20.7)
No time to go to hospital for screening	26 (17.9)
Does not feel at risk for cervical cancer	18 (12.4)
Does not see the need because there are no symptoms	16 (11.0)
Lack of knowledge on where to go for screening	14 (9.7)
Fear of abnormal results	12 (8.3)
Embarrassed to undergo the procedure	2 (1.4)
Lack of money to pay for screening services	9 (6.2)
Lack of interest in undergoing the procedure	6 (4.1)
Lack of reagents for screening in the health facility	1 (0.7)

4.5 Assessment of HPV Knowledge among Study Participants

We assessed knowledge on HPV and coded the knowledge scores out of seven accurate total scores as follows; no correct response, 1─3 correct responses, 4─6 correct responses and all correct responses. Among the 222 study participants, only 37 (16.7%) had knowledge on what causes cervical cancer, 51 (23.0%) had ever heard of the HPV virus and 83 (37.4%) knew that there is a vaccine that protects against cervical cancer. On the knowledge scores, 80 (36.0%) had 1–3 accurate scores.

Screened participants who knew what causes cervical cancer were 19 (24.7%) compared to 18 (12.4%) of those unscreened. Screened participants who had ever heard of the HPV virus were 25 (32.5%) compared to 26 (17.9%) of those unscreened. Screened participants who knew that there is a vaccine that protects one from cervical cancer were 35 (45.5%) compared to 48 (33.1%) of those unscreened. The percentage of screened participants who had high scores of HPV knowledge (4─6 accurate responses) were 19.5% compared to 8.3% of those who were not screened. **(Table 6)**

Table 6. HPV Knowledge among study participants, Kibera, Nairobi County, Kenya, 2019

Variable	Total (n=222)	Screened (n=77)	Not screened (n=145)
HPV[1] Knowledge	**Frequency (%)**	**Frequency (%)**	**Frequency (%)**
Do you know what causes cervical cancer?	37 (16.7)	19 (24.7)	18 (12.4)
Have you ever heard of HPV?	51 (23.0)	25 (32.5)	26 (17.9)
Did you know cervical cancer is transmitted by sexual intercourse?	49 (22.1)	25 (32.5)	24 (16.6)
Are there instances where a woman can be infected with HPV and not know?	32 (14.4)	17 (22.1)	15 (10.3)
Can HPV infection cause an abnormal cervical cancer screening test?	27 (12.2)	16 (20.8)	11 (7.6)
Can HPV infection be prevented?	44 (19.8)	23 (29.9)	21 (14.5)
Did you know that there is a vaccine that protects one from cervical cancer?	83 (37.4)	35 (45.5)	48 (33.1)
HPV Knowledge Scores (P=0.04)			
No correct response	102 (45.9)	28 (36.4)	74 (57.0)
1─3	80 (36.0)	28 (36.4)	52 (35.9)
4─6	27 (12.2)	15 (19.5)	12 (8.3)
All correct	13 (5.9)	6 (7.8)	7 (4.8)

[1]Proportion of study participants who gave an accurate response

CHAPTER FIVE

DISCUSSION

The percentage of women screened for cervical cancer in Kenya remains low, and is likely to be lower in urban informal settlements where there is inequity access in health care service. In our study, we sought to determine the coverage, barriers to cervical cancer screening, to determine factors associated with screening and determine HPV knowledge among women residing in the largest informal settlement, Kibera. Overall, the percentage of participants who reported to have ever been screened were 35%. Screened participants were more likely to be older, married and reported to have ever used contraceptives. In this study, independent predictors associated with increased likelihood of cervical cancer screening were women's HIV status and parity. Among the participants, the most common barrier to screening was lack of awareness on the benefit of screening. Majority of participants had little or no knowledge on the HPV virus.

The percentage of screened participants in this study (35%) was twice as high as the national average of 14% reported during the Kenya demographic and health survey in 2014 (National Bureau of Statistics-Kenya and ICF International 2015). This is likely due to the close proximity of clinics in Kibera that provide free cervical cancer screening services at centrally located health clinics (Breiman *et al*., 2012). However, this percentage is still lower than the recommended WHO global target of screening 70% of women aged 25–49 years in order to eliminate cervical cancer as a public health problem (World Health Organisation 2020). The percentage of screened participants in Kibera is comparable to that of a study in a South African informal township, which reported a percentage of 45% (Bradley and Denny 2004). Although this population has similar characteristics, the higher percentage may be attributed to

the early introduction of the national policy for cervical cancer prevention in South Africa in 2000 (Botha and Dochez 2012). In Kenya, the cervical cancer screening program was introduced in 2008 by integrating free cervical cancer screening services in public health facilities in Kenya. However, the screening program has faced implementation challenges and difficulty in sustaining the program. Majority of health facilities may not be offering services due to lack of reagents and treatment equipment. In addition, high turnover of trained staff, attrition of health workers due to devolved governments has contributed to limited health workforce(Rosser 2021).

Younger participants aged <25 years were less likely to be screened compared to older participants. In urban slums, the population has been documented to younger with over 60% aged less than 25 years old (Muli-Kinagwi et al. 2021). Younger people are less likely to be educated on cervical cancer, have higher risky sexual behavior that may predispose them to HPV infection and cervical cancer eventually. However, although they are a higher population, the proportion of women screened was significantly higher among older women aged ≥34 years. In the Kenya health and demographic survey in 2014, the proportion of women screened was 10% among women aged <25 years old as compared to ≥20% of older women (National Bureau of Statistics-Kenya and ICF International 2015). In addition, approximately 75% of women aged ≤25 years had ever had of cervical cancer compared to ≥80% of older women. This implies that even though younger women have knowledge on cervical cancer, additional negative perceptions may be a barrier to them seeking care. Similar results were reported in previous studies in Kenya where younger women between 15-24 years were less likely to be screened compared to their older counterparts (Tiruneh *et al*., 2017), and in a study in Burkina Faso that reported that older women were more likely to have been screened (Compaore, Ouedraogo, and Koanda 2015). The

target age group for screening (25-49 years) (Ministry of Health 2018), may explain the reduced likelihood of screening in young women. Moreover, younger women are less likely to interact with the health care system where women may be encouraged to undergo cervical cancer screening.

Women with higher levels of education have been documented to have greater odds of screening (Gemeda *et al*., 2020), unlike in our study where those with only primary levels of education more likely to report screening. A plausible explanation is that despite having the knowledge on screening benefits, women still face additional psychological barriers that may influence participation. In an interventional study conducted in Western Kenya, an education intervention increased women's knowledge and awareness on cervical cancer, however this did not result in increased screening rates (Joelle I Rosser, Njoroge, and Huchko 2015). This implies that a simple messages on screening may be sufficient to encourage women to attend screening while addressing additional barriers not included in health talks given to women.

There was a higher proportion of unscreened women among those who were unemployed as compared to those who screened. Women's socio-economic status influences their participation in screening. This is because women with jobs may have resources and access to information of cervical cancer screening(Randall and Ghebre 2016). In this setting, women have limited access to formal employment and this limits their opportunities to resources to access health facilities or knowledge on screening and cervical cancer. Advanced cervical cancer treatment in Kenya is expensive and this puts women at a disadvantage for treatment. There was a higher proportion of screened women among married women compare to those who were not screened. Married women are likely to have spousal support and therefore seek these

services(M R Balogun et al. 2012). However, studies conducted in Ethiopia showed no association between marriage and screening status (Woldetsadik et al. 2020). Participation in screening services was influenced by other factors like age and socio-economic status. Women who reported ever contraceptive use were more among the screened women. Prolonged contraceptive use has been documented as a risk factor for cervical cancer and screening services have been integrated into family planning services in public hospitals in Kenya(V. et al. 2014). This provides an opportunity for these women to be screened as they access other services.

Overall, independent predictors associated with cervical cancer screening were parity and living with HIV. The participants who had a parity of one to three children were more likely to report screening compared to those who had never had children. In a case control study in Ethiopia, having only child was a predictor for screening compared to those without unlike in our study where increasing parity increased the odds of screening (Id *et al*., 2019). Multi-parity, a documented risk factor for cervical abnormalities (Kahesa *et al*., 2012), (Getinet *et al*., 2015), underscores the importance of cervical cancer screening in these women. Furthermore, women with children are more likely to frequent hospitals during antenatal and maternal health visits, increasing likelihood of screening (Morema *et al*., 2014).

Women living with HIV were six times as likely to develop cervical cancer compared to women who are HIV negative (World Health Organisation 2020) and as a result, cervical cancer screening services have been integrated into the essential package for HIV care and treatment (Joelle I. Rosser, Njoroge, and Huchko 2015). For this reason, this may increase willingness of women living with HIV to undergo screening (Ezechi *et al*., 2013). This differs from studies where women living with HIV are underrepresented when it comes to screening due to stigma (Joelle I Rosser et al.

2015). Women feel uncomfortable seeking services due to fear of disclosure of their status.

In this study, the most common barriers to cervical cancer screening were lack of awareness on benefit of screening and fear of painful procedure. In studies done in urban slums in Nigeria (M. R. Balogun *et al*., 2012), (Olubodun, Odukoya, and Balogun 2019), Ghana (Ebu *et al*., 2014) and South Africa (De Abreu, Horsfall, and Learmonth 2013) majority of women were unwilling to go for screening because they had never heard of cervical cancer. However, in a study conducted in an urban slum in Botswana, despite having high levels of knowledge on cervical cancer and screening, majority of unscreened women reported fear of painful procedures as the most common barriers (Ibekwe and Hoque 2010). Although women may be willing to undergo cervical cancer screening, fear and misconception should be addressed when giving women health talks on screening. Fear of abnormal results was a concern for women in our study. However, in a cross sectional study conducted in Ghana, having fear of abnormal results was reported as a facilitator to cervical cancer screening (Ebu et al. 2014). This was probably because for women included in that study, majority were aware that having multiple sexual partners was a risk and they had heard of the screening procedure through health campaigns.

Almost a third of women in this study reported lack of time to go the clinic as a barrier to screening. In Kibera, there are scheduled clinic days for screening on weekdays. This is because the trained staff are few and therefore women may not be available to attend. In urban slums in Southern Africa where women stated that because they worked long hours due to their economic disadvantage, the clinic hours was a deterrent to screening (De Abreu et al. 2013). However, in that setting, women were willing to attend screening if the target age group for free screening was

expanded. Women in our study reported not feeling at risk for cervical cancer as a barrier. This could be explained by the fact that women reported that they do not know HPV as a cause of cervical cancer or risky sexual behavior as a risk. Women in this study had underlying risk factors such as early age of sexual debut, use of contraceptives and having at least three sexual partners in their lifetime. Their low perception of risk may be due to this limited knowledge.

Women reported not having symptoms of cervical cancer as a barrier and even though we did not assess knowledge on signs and symptoms, it is likely because a large proportion of women had never heard of HPV that they would also not be aware of signs and symptoms. Symptoms such as bleeding are a sign of advanced disease and if women wait for these symptoms to appear it is likely to be an indication of severe morbidity(P. et al. 2003). A tenth of women did not know where to go for screening despite the fact that clinics located nearby offer services. Women in similar low income settings in India have reported that despite having knowledge on where to seek services, they may not trust the health care system and associated challenges such as long waiting hours (Dsouza et al. 2020). Consequently, this may lead to a missed opportunities for screening. Women reported that lack of resources was a barrier to screening despite the fact that cervical cancer screening services are free. This implies that educating women on cervical cancer is important, however, if they are not informed on issues of cost, this may pose a barrier for those willing to attend (Mabelele et al. 2018).

Majority of women in this study had little or no knowledge on HPV infection which causes cervical cancer. In previous studies in Kenya (Rositch *et al*., 2012) where only 18% of participants had ever heard of HPV. In addition, studies done in Sub-Saharan Africa (Francis *et al.*, 2010), (Assoumou *et al*., 2015) and (Perlman *et al*., 2014) to

assess knowledge of HPV among women of reproductive age, a large number had limited or no information on the subject. This study demonstrated that the percentage of screened women with high HPV knowledge scores was higher than that of unscreened women. Previous studies have shown correlation between knowledge on HPV and increased likelihood of screening (Rositch *et al*., 2012b),(Wong *et al*., 2018). However, it is important to take into consideration that knowledge alone may not be sufficient to influence women to consider screening (Assoumou et al. 2015). We should consider educating women on HPV infection and cervical cancer while addressing other possible barriers.

One of the limitations in this study was that participants reside in a unique setting of urban slums, and the results may not be generalizable to non-urban slum and rural residents due to differences in their characteristics. In addition, the cross-sectional nature on this study does not allow us to make causal inferences.

CHAPTER SIX

CONCLUSIONS AND RECOMMENDATIONS

Despite the fact that the women in this study were from a low income, disadvantaged population, a third of study participants had been screened for cervical cancer. This is likely due to the accessible health facilities and availability of free cervical cancer screening services. However, the recommended target of screening 70% of women is yet to be achieved and we therefore recommend community health education for cervical cancer screening.

Overall, the main barriers to screening among the women was lack of information and fear of painful procedure. In addition women reported not having time to go to clinics because of fixed clinic hours. Interventions to increase the frequency of clinics offering screening services should be implemented to provide an opportunity for a larger proportion of women to be screened. A subset of women also reported that they did not feel at risk for cervical cancer, an indication that women may not be well versed on the asymptomatic presentation of early stages of cervical cancer and the presentation of late disease. Women reported that they did not see the need for screening because of no symptoms. This implies that they are unable to discern between early and late presentation of the disease. Education to empower women oh how cervical cancer presents should be done by health care workers and during community outreaches.

Limited knowledge on where to go for screening was a documented barrier despite the availability of locally available clinics providing these services. Is it therefore imperative to educate women on presence of these clinics through community engagement or use of mass media. Women in this study stated that some health system factors such as lack of reagents in the facilities were a deterrent. Further

research into detailed health system barriers would be important to address these challenges and provide appropriate interventions and policy changes.

Women who had a parity of one to three children compared to those without and those living with HIV were more likely to report screening, possibly because these women have more contact with the health care system. Increased sensitization on the importance of screening to women as they attend routine health clinics should be done. Community education on benefit of cervical screening to counteract fears and misconception on screening and to increase screening coverage is essential to encourage women to participate in cervical cancer screening.

Overall, knowledge and psychological barriers need to be addressed simultaneously during health talks and community outreaches.

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APPENDICES

Appendix 1: Study site map

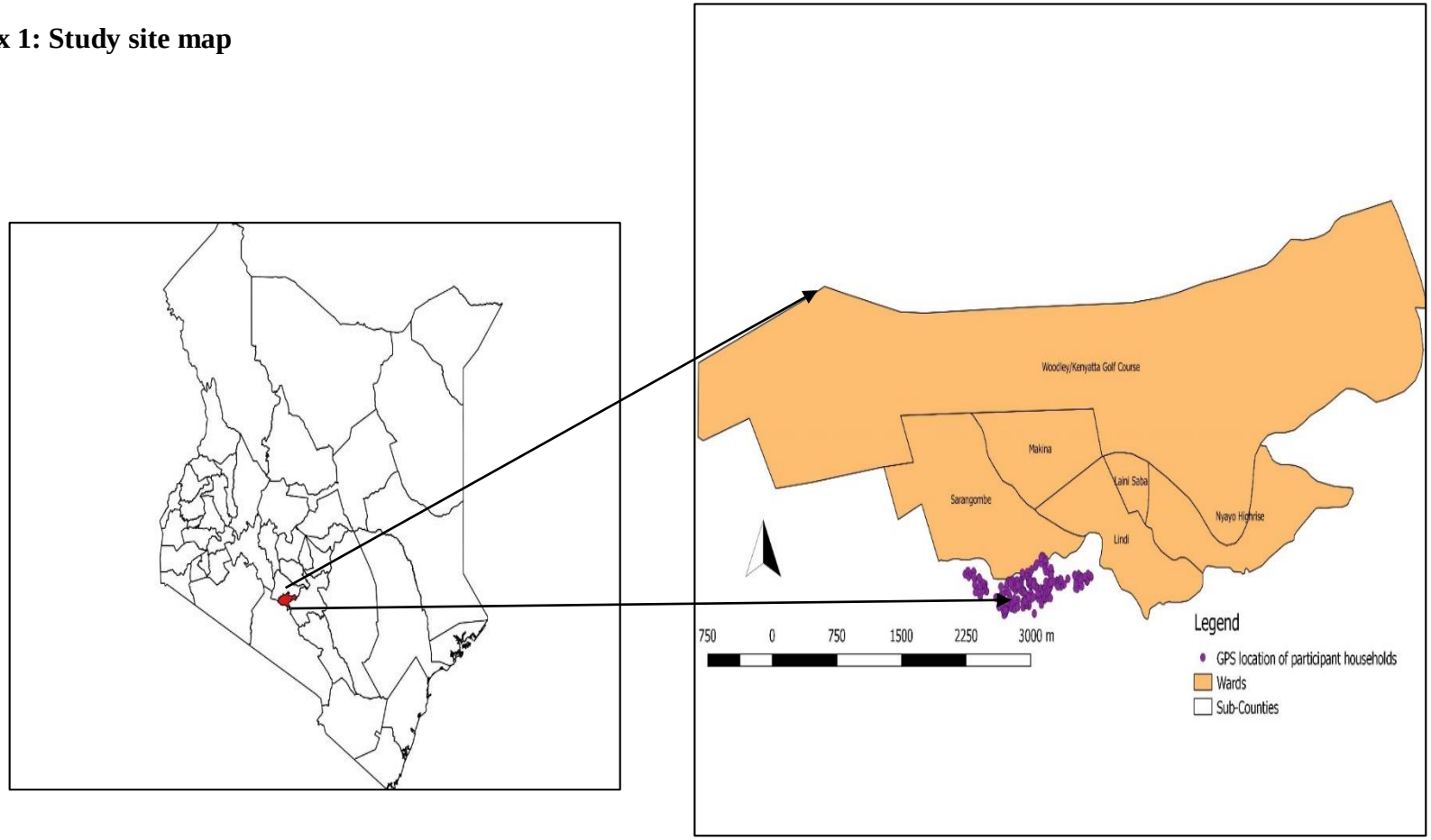

Figure 2. GPS location of participant households, Kibera, Nairobi County, Kenya

Appendix 2: Telephone Script for Invitation for Enrollment - English

Hello _____ (name), my name is_____ and I am calling from KEMRI field office in Kibera. We are conducting a study on cervical cancer screening and barriers to seeking screening services among women between the ages of 18 to 49 years in Kibera. The information collected will provide us with information about barriers to seeking services to help us understand ways that we can improve access to these services.

We would like to ask if you would be interested in joining the study so as to arrange a time you give you more information on it and get your informed consent if you agree to join the study.

Appendix 3: Telephone Script for Invitation for Enrollment-Kiswahili

Habari _____ (jina), jina langu is_____ na ninapiga simu kutoka office ya KEMRI, Kibera. Sisi tunafanya utafiti juu ya uchunguzi wa kansa ya kizazi na vikwazo vya kutafuta huduma ya uchunguzi katika wanawake wenye umri kati ya miaka 18 hadi 45 hapa Kibera. Habari zilizokusanywa na kutupa maelezo kutoa kuhusu vikwazo vya kutafuta huduma kwa kutusaidia kuelewa njia ambazo tunaweza kuboresha upatikanaji wa huduma hizi.

Tungependa kuuliza kama unaweza kuwa nia ya kujiunga na masomo ili kupanga muda kukupa habari zaidi juu yake na ishara idhini fomu kama unakubaliana na kujiunga utafiti.

Appendix 4: Consent form - English

Informed Consent form for women aged 18-49 years residing in Kibera who we will invite to participate in our research study. The title of the research project is "Barriers to cervical cancer screening among women in an urban informal settlement, Kibera, Nairobi County 2019".

Name of Principal Investigator: Maryanne Gachari

Name of Organization: Kenya Field Epidemiology and Laboratory Training Program (K-FELTP)

Name of Sponsor: Centre for Disease Control and Prevention Kenya (CDC-Kenya)

Name of Proposal and version:

This Informed Consent Form has two parts:

- Information Sheet (to share information about the research with you)
- Certificate of Consent (for signatures if you agree to take part)

You will be given a copy of the full Informed Consent Form

PART I: Information Sheet

The purpose of this sheet is to provide you with information about this study to enable you to give voluntary, informed consent to participate in this study. Please read the document carefully before signing the consent form. *(To be read for those who are unable to read)*

Introduction

I am Maryanne Gachari, working with the Kenya Field Epidemiology and Laboratory Training Program. We are doing research on Cervical Cancer screening in Kibera. Cervical Cancer is the leading cause of cancer deaths in women in Kenya today. I am going to give you information about this research and after that you can decide whether you want to be part of the study or not. If you do not understand any part of this document, feel free to ask me to explain. You may also talk to anyone else about the study including the nurses at the cervical cancer clinic in Kibera.

Purpose of the research

Cervical cancer is a disease that affects women and is caused by a virus which is spread through sexual intercourse. Women who are likely to get the disease are those who have many sexual partners, those that have sex at an early age and those who smoke. It develops slowly over many years and the main symptoms are abnormal bleeding after sex and pain during intercourse. The disease can be prevented through regular screening where we check for any abnormality in the cervix. In addition, there is an available vaccine for girls aged 9-14 years which can help prevent the disease. Since this disease can be prevented through regular screening, our study aims to find out how many women in Kibera have been screened. In addition, we will assess the factors why women go for screening or not.

Participant selection

The reason you have been chosen to participate in this research is because you are between the ages of 18-49 years and have been residing in Kibera. Therefore, you are best placed to answer the questions on cervical cancer screening we have for women residing in Kibera.

Voluntary Participation

Participation in this study is entirely voluntary and you may change your mind later once the study starts even if you had agreed to be a participant. Even if you do not agree to participate in this study, you will continue to receive treatment in this clinic as before. Your selection in this study is random and was generated from a list of households.

Description of the Process

Once you agree to be part of the study, we will ask you detailed questions about your background, medical history, sexual history and details on cervical cancer screening. We will record this information on a tablet. The interview will last about 30 minutes.

Risks

There are no risks involved in participating in this study

Benefits

The information that we will collect from you will help us to know how many women have ever been screened for cervical cancer. In addition, we will collect information on any problems that women may face when trying to seek these services. This information will help us to know reasons why women do not go for screening and

helps us come up with ways that can benefit the community when it comes to screening.

Confidentiality

The information we collect from you will be kept confidential. The information will only be accessible to the research team. In place of your name, we will use a specific number assigned to you therefore the information you give will not be able to be linked to you.

The information will be kept in laptops with protected passwords. The findings we collect may be shared more broadly for example through publications but the use of unique numbers will ensure your confidentiality.

Who to Contact

If you have any further questions regarding this study, you may contact the person below:

Name: Maryanne Gachari

Telephone number: 0720 066 449

You can ask me any more questions about any part of the research study, if you wish to. Do you have any questions?

PART II: Certificate of Consent

I have read the above information, or it has been read to me. I have asked questions for any clarification and I have been answered accordingly. I agree voluntarily to be a participant in this research.

Name of Participant_____

Signature of Participant _____

Date _____/_____/_____

(Day/month/year)

If the participant is unable to read:

The participant should select a person of his/her choice to read the information sheet and sign the sheet below as a witness.

I have had the opportunity to witness the accurate reading of the consent form to the potential participant, and the individual has had the opportunity to ask questions. I confirm that the individual has agreed to give consent.

Print name of witness_____

Signature of witness _____

Date ____/ ____/_____

Day/month/year

Statement by the researcher/person taking consent

I have accurately read out the information sheet to the potential participant, and ensured that the potential participant understands what the study entails.

I confirm that the participant was given an opportunity to ask questions about the study, and all the questions asked by the participant have been answered correctly and to the best of my ability. I confirm that the individual has given consent freely and voluntarily.

Name of Researcher/person taking the consent_____

Signature of Researcher /person taking the consent_____

Date _____/_____/_____

Day/month/year

Appendix 5: Consent Form - Kiswahili

Ridhaa aina kwa ajili ya wanawake wenye umri wa miaka 18-49 waliojiunga Idadi misingi Infectious kifani Magonjwa (PBIDs) wanaoishi katika Kibera ambao sisi kuwakaribisha kushiriki katika utafiti wetu wa utafiti. jina la mradi wa utafiti ni "Vikwazo ya uchunguzi wa kansa ya kizazi katika wanawake wa umri wa kuzaa katika maeneo ya mijini makazi rasmi, Kibera, 2019".

Jina la Mpelelezi Mkuu: Maryanne Gachari

Jina la Shirika: Kenya Field Epidemiology and Laboratory Training Program (K-FELTP)

Jina la Mdhamini: Centre for Disease Control and Prevention Kenya (CDC-Kenya)

Jina la Pendekezo na toleo:

Hii ridhaa Fomu ina sehemu mbili:

- Taarifa Karatasi (kushiriki habari kuhusu utafiti na wewe)
- Hati ya Idhini (kwa saini kama unakubali kushiriki)

Utapewa nakala ya full Fomu ridhaa

SEHEMU I: Habari Karatasi

Madhumuni ya karatasi hii ni kutoa kwa taarifa kuhusu utafiti huu ili kukuwezesha kutoa hiari, ridhaa ya kushiriki katika utafiti huu. Tafadhali soma hati kwa makini kabla ya kusaini fomu ya ridhaa. (Ili kusomwa kwa wale ambao hawawezi kusoma)

Introduction

Mimi ni Dr. Maryanne Gachari, kufanya kazi na Kenya Field Epidemiology and Laboratory Training Program. Tunafanya utafiti wa Saratani ya uchunguzi ya kizazi katika Kibera. Kansa ya kizazi ni sababu inayoongoza ya saratani kwa wanawake nchini Kenya leo. Mimi ni kwenda kukupa taarifa kuhusu utafiti huu na baada ya hapo unaweza kuamua kama unataka kuwa sehemu ya utafiti au la. Kama huelewi sehemu yoyote ya hati hii, jisikie huru kuuliza mimi kueleza. Unaweza pia kuzungumza na mtu mwingine kuhusu utafiti ikiwa ni pamoja na wauguzi katika kansa ya kizazi kliniki katika Kibera.

Madhumuni ya utafiti

Kansa ya kizazi ni ugonjwa ambao huathiri wanawake na unasababishwa na virusi ambayo ni kuenea kwa ngono. Wanawake ambao ni uwezekano wa kupata ugonjwa ni wale ambao wana wapenzi wengi, yale ambayo mapenzi katika umri mdogo na wale ambao moshi. Ni yanaendelea polepole miaka mingi na dalili kuu ni usiokuwa wa kawaida damu baada ya ngono na maumivu wakati wa ngono. ugonjwa inaweza kuzuiwa kwa njia ya uchunguzi wa mara kwa mara ambapo sisi kuangalia kwa abnormality yoyote katika mfuko wa uzazi. Aidha, kuna ni chanjo inapatikana kwa ajili ya wasichana wenye umri wa miaka 9-14 ambao unaweza kusaidia kuzuia ugonjwa huo. Kwa kuwa ugonjwa huu inaweza kuzuiwa kwa njia ya uchunguzi wa mara kwa mara, utafiti wetu ina lengo la kujua jinsi wanawake wengi katika Kibera wamekuwa kupimwa. Aidha, sisi kutathmini mambo kwa nini wanawake kwenda kwa uchunguzi au la.

Mshiriki uteuzi

Sababu umechaguliwa kushiriki katika utafiti huu ni kwa sababu wewe ni waliojiunga katika utafiti PBIDs na wewe ni kati ya umri wa miaka 18-49. Kwa hiyo, wewe uko na nafasi nzuri ya kujibu maswali juu ya uchunguzi wa kansa ya kizazi kwa wanawake wanaoishi katika Kibera.

Kushiriki Hiari

Kushiriki katika utafiti huu ni kabisa hiari na unaweza kubadilisha uamuzi wako baadaye mara moja utafiti kuanza hata kama alikubali kuwa mshiriki. Hata kama hukubaliani ya kushiriki katika utafiti huu, utaendelea kupata matibabu katika hospitali hii kama kabla. Uteuzi wako katika utafiti huu ni random na alikuwa yanayotokana na orodha ya kaya kwa ajili ya wanawake waliojiunga na utafiti PBIDs.

Maelezo ya Mchakato

Mara baada ya kukubaliana kuwa sehemu ya utafiti, tutakuuliza maswali ya kina kuhusu historia, historia ya matibabu, historia ya ngono na maelezo juu ya uchunguzi wa kansa ya kizazi. Tutarekodi maelezo haya kwenye kibao. mahojiano itadumu 30 dakika.

Hatari

Hakuna hatari ya kushiriki katika kushiriki katika utafiti huu

Faida

Habari amabazo tutukusanya utatusaidia kujua jinsi wanawake wengi waliowahi kupimwa kansa ya kizazi. Aidha, sisi kukusanya taarifa juu ya matatizo yoyote ambayo wanawake wanaweza uso wakati wa kujaribu kutafuta huduma hizo. Habari hii itatusaidia kujua sababu wanawake hawapati nafasi ya kwenda kwa uchunguzi na husaidia us kuja na njia ambazo wanaweza kufaidika jamii linapokuja suala la uchunguzi.

Usiri

Maelezo tunayokusanya kwenye utakuwa siri. habari tu inaweza kufikiwa na timu ya utafiti. Katika nafasi ya jina lako, tutatumia idadi maalum kwa ajili ya wewe hivyo habari kutoa si kuwa na uwezo wa kuunganishwa na wewe.

Habari itakuwa kuhifadhiwa katika kompyuta ndogo na nywila hifadhi. Matokeo ya utafiti sisi kukusanya inaweza kuwa pamoja kwa upana zaidi kwa mfano kupitia machapisho lakini matumizi ya namba ya kipekee itahakikisha usiri wako.

Nani wa kuwasiliana

Kama una maswali zaidi kuhusu utafiti huu, unaweza kuwasiliana na mtu chini:

jina:

Nambari ya simu:

Unaweza kuuliza mimi maswali zaidi kuhusu sehemu yoyote ya utafiti, kama unataka. Je, una maswali yoyote?

SEHEMU II: Hati ya Idhini

Nimesoma habari hapo juu, au imekuwa kusoma kwangu. Mimi kuulizwa maswali kwa ufafanuzi wowote na nimekuwa akajibu ipasavyo. Nakubaliana kwa hiari kuwa mshiriki katika utafiti huu.

Jina la Participant_____

Sahihi ya Mshiriki _____

Tarehe _____/_____/_____

(Siku / mwezi / mwaka)

Kama mshiriki hawezi soma:

Mshiriki wanapaswa kuchagua mtu wa / uchaguzi wake wa kusoma karatasi habari na ishara karatasi chini kama shahidi.

Mimi kuwa na nafasi ya kushuhudia kusoma sahihi ya aina idhini ya mshiriki watarajiwa, na mtu binafsi imekuwa na nafasi ya kuuliza maswali. Ninathibitisha kwamba mtu imekubali kutoa kibali.

Print jina la witness_____
Sahihi ya shahidi _____
Tarehe ____/ ____/_____

Siku / mwezi / mwaka

Taarifa iliyotolewa na mtafiti / mtu kuchukua kibali

Mimi usahihi kusoma karatasi habari kwa mshiriki uwezo, na kuhakikisha kwamba mshiriki uwezo anaelewa nini utafiti unahusu.

Ninathibitisha kwamba mshiriki alipewa nafasi ya kuuliza maswali kuhusu somo, na maswali yote aliuliza na mshiriki kuwa akajibu kwa usahihi na kwa kadri ya uwezo wangu. Ninathibitisha kwamba mtu ametoa idhini uhuru na kwa hiari.

Jina la Mtafiti / mtu kuchukua consent_____

Sahihi ya Mtafiti / mtu kuchukua consent_____

Tarehe _____/_____/_____

Siku / mwezi / mwaka

Appendix 6: Questionnaire - English

Part A – Participant Information

Unique ID _____ Date of interview_____

Village _____

Interviewer name _____

Part B – Socio-demographic Information

1. Date of birth (day/month/year) _____

2. Age (Years) _____

3. Level of education

□None

□Incomplete primary

□Complete primary

□ Incomplete secondary

□ Complete secondary

□ College

4. Marital status

□ Single

□ Married

□ Divorced

□ Widow/widower

5. Occupation

□ Unemployed

□ Formal employment

□ Casual worker

□ Self employed

5a. What is was your household income last month?

□ < 1000 KSH

□ 1000-5000 KSH

□ 5000-10,000 KSH

□ >10,000 KSH

6. Religion

□ Christian

□ Muslim

□ Others, specify _____

7. Ethnicity

□ Luo

□ Kikuyu

□ Luhya

□ Kamba

□ Nubian

□ Other, specify _____

Part C: Screening Information

8. Have you ever been screened in your lifetime? □ Yes □ No (*If no, skip to Part D*)

8a. Do you have a medical report on the screening procedure done? □ Yes □ No

9. How many times have you ever been screened?

□ 1

□ 2

□ 3

□ 4

□ >4

10. Have you been screened in the last

□ 12 months?

□ 2 years

□ 5 years

□ 10 years

11. Please specify the year that you were screened?

Year 1 _____

Year 2 _____

Year 3 _____

Year 4 _____

12. What screening procedure was done?

□ VIA/VILI

□ Pap smear

□ HPV testing

□ Don't know

13. Were you given the results of your screening? □ Yes □ No (*If no, skip to Q15*)

14. If yes, what were the results?

□ Negative result

□ Positive result

□ Don't know

15. Was there any intervention recommended after screening? □ Yes □ No (*If no, skip to Q18)*

16. If yes, which?

□ Repeat test

□ Cryotherapy

□ Leep therapy

□ Biopsy

□ Don't know

□ Others, specify_____

17. Were you referred to another facility for further management?

Part D: Risk factor information

18. Have you had any pregnancies? □ Yes □ No (*If no, skip to 22*)

19. How many number of living children do you have? _____

20. Have you had prior?

□ Miscarriage

□ Abortion

□ Stillbirth? *(If no, skip to 22)*

21. How many miscarriages or abortions have you had? _____

22. Are you currently on any form of contraception? □ Yes □ No (*If no, skip to Q25)*

23. Which form of contraception are you on?

□ Barrier method – condoms

□ Oral contraceptives (OCPs)

□ Intra-uterine contraceptive device (IUCD)

□ Implants

□ Injectable contraceptive

□ Others, specify_____

24. How many years have you used the above form of contraception? _____

25. At what age (in years) did you have your first sexual experience? ____

26. How many sexual partners have you had in your lifetime? ____

27. Do you have a partner who has sexual encounters with other people? □ Yes □ No

28. Have you ever had a sexually transmitted infection? □ Yes □ No (*If no, skip to Q30)*

29. If yes, which of the following?

□ Syphilis

□ Gonorrhea

□ Herpes

□ Genital warts

□ Chlamydia

□ Don't know

□ Others, specify _____

30. Have you ever smoked tobacco? □ Yes □ No *(If no, skip to Q34)*

31. Do you currently smoke tobacco? □ Yes □ No

32. If you are a current smoker, do you smoke?

□ Daily

□ Less than daily

□ Not at all

33. If you are a past smoker, did you smoke?

□ Daily

□ Less than daily

□ Not at all

34. Do drink alcohol? □ Yes □ No (*If no, skip to Q36)*

35. If yes, how often do you consume alcohol?

□ Everyday

□ 3-5 times a week

□ Once a week

□ Only on weekends

36. What is your HIV status?

□ Positive

□ Negative

37. Do you have any underlying medical condition? □ Yes □ No (*If no, skip to part E*)

38. If yes, which?

□ Cancer

□ Diabetes

□ Hypertension

□ Others, specify_____

PART E: Information on cervical cancer screening

39. Reasons for undergoing cervical cancer screening?

□ Advice from a health care worker

□ Advice from family or friends

□ Personal initiative

□ Campaigns

□ Radio/TV/Media

□ Others, specify_____

□ Never been screened

40. Do you know where to seek cervical cancer screening services? □ Yes □ No

41. Which clinic or hospital do you go to seek care for these services? _____

42. How long does it take you to get to the clinic?

□ < 15 minutes

□ 15-30 minutes

□ 30 minutes – 1 hour

□ > 1 hour

43. Approximately how much time do you spend at the clinic before receiving cervical cancer screening services?

□ < 15 minutes

□ 15-30 minutes

□ 30minutes – 1hour

□ > 1 hour

PART D: ***Perceived barriers to cervical cancer screening***

44. I am worried that the screening test will be painful. □ Yes □ No

I have never heard of the disease

45. I am worried that the test will be uncomfortable. □ Yes □ No

46. I am embarrassed to undergo the procedure □ Yes □ No

47. I am scared of an abnormal result □ Yes □ No

48. I don't feel at risk for cervical cancer. □ Yes □ No

49. I don't see the need as I have no symptoms □ Yes □ No

50. I don't know the benefits of screening. □ Yes □ No

51. I do not have time to go to the clinic □ Yes □ No

52. I prefer female health care workers □ Yes □ No

53. My partner resists screening □ Yes □ No

54. My culture does not allow me to undergo procedure □ Yes □ No

55. Attitude of health care workers discourages me from seeking services □ Yes □ No

56. It is expensive to pay for screening services □ Yes □ No

57. I don't trust results of the screening tests □ Yes □ No

58. I am not sexually active so I do not need to go for screening □ Yes □ No

59. I do not think cervical cancer is a serious disease □ Yes □ No

60. I do not know where to go for screening □ Yes □ No

61. The wait time at the clinic is too long □ Yes □ No

62. The facility is too far away □ Yes □ No

63. I don't have money to pay for transport to the health facility □ Yes □ No

PART E: Knowledge on HPV screening and cervical cancer

64. Have you ever heard of HPV? □ Yes □ No

65. Does HPV cause cervical cancer? □ Yes □ No

66. Is HPV is a sexually transmitted infection? □ Yes □ No □ Don't know

67. Are there instances where a woman can be infected with HPV and not have any clinical features? □ Yes □ No

68. Can HPV infection cause an abnormal screening test? □ Yes □ No □ Don't know

69. Can HPV infection be prevented? □ Yes □ No □ Don't know

70. Did you know that there is a vaccine that protects one from HPV infection and cervical cancer? □ Yes □ No □ Don't know

71. Are you willing to receive HPV vaccine which can protect against HPV infection and cervical cancer? □ Yes □ No

Appendix 7: Questionnaire - Kiswahili

Sehemu ya A - Mshiriki Habari

Kipekee ID _____ Tarehe ya interview_____

Kijiji _____

jina Mhoji _____

Sehemu ya B - Jamii na idadi ya watu habari

1. Tarehe ya kuzaliwa (siku / mwezi / mwaka) _____

2. Umri (mwaka) _____

3. Kiwango cha elimu

□ Hakuna

□ haujakamilika msingi

□ Complete msingi

□ haujakamilika sekondari

□ Complete sekondari

□ College

4. Hali ya ndoa

□ Single

□ walioolewa

□ talaka

□ Mjane / mjane

5. Kazi

□ Ajira

□ rasmi za ajira

□ Kawaida mfanyakazi

□ Self kuajiriwa

5a. ni yaliyo yako ya mapato ya kaya ya mwezi uliopita?

□ <1000 KSH

□ 1000-5000 KSH

□ 5000-10,000 KSH

□> 10,000 KSH

6. Dini

□ Christian

□ Muslim

□ Wengine, bayana _____

7. ukabila

□ Luo

□ Kikuyu

□ Luhya

□ Kamba

□ Wanubi

□ nyingine, bayana _____

Sehemu C: Uchunguzi Habari

8. Je, umewahi kupimwa katika maisha yako? □ Ndiyo □ Hapana (Kama hapana, ruka hadi Sehemu D)

8a. Je, una taarifa ya matibabu ya utaratibu wa uchunguzi kufanyika? □ Ndiyo □ Hapana

9. Ni mara ngapi umewahi kupimwa?

□ 1

□ 2

□ 3

□ 4

□> 4

10. Je, kupimwa katika mwisho

□ miezi 12 iliyopita?

□ miaka 2

□ miaka 5

□ miaka 10

11. Tafadhali taja mwaka huo ulikuwa kupimwa?

Mwaka 1 _____

Mwaka 2 _____

Mwaka 3 _____

Mwaka 4 _____

12. Ni nini uchunguzi utaratibu ilifanyika?

□ VIA / vili

□ PAP smear

□ HPV kupima

□ Sijui

13. Walikuwa wewe kupewa matokeo ya uchunguzi wako? □ Ndiyo □ Hapana (Kama hapana, ruka hadi Q15)

14. Kama ndiyo, ni nini matokeo?

□ matokeo Hasi

□ Chanya matokeo

□ Sijui

15. Je, kulikuwa na kufanya utekelezaji ilipendekeza baada ya uchunguzi? □ Ndiyo □ Hapana (Kama hapana, ruka hadi Swali la 18)

16. Kama ndiyo, ambayo?

□ Rudia mtihani

□ Cryotherapy

□ LEEP

□ Biopsy

□ Sijui

□ Wengine, specify_____

17. Walikuwa wewe inajulikana hospitali nyingine kwa ajili ya usimamizi zaidi?

Sehemu ya D: Hatari sababu habari

18. Je, alikuwa na mimba yoyote? □ Ndiyo □ Hapana (Kama hapana, ruka hadi 22)

19. wangapi idadi ya watoto wanaoishi gani? _____

20. Je, alikuwa kabla:

□ Mimba

□ Abortion

□ Stillbirth? (Kama hapana, ruka hadi 22)

21. Jinsi Mimba au mimba nyingi alikuwa? _____

22. Je, wewe sasa kwenye aina yoyote ya kuzuia mimba? □ Ndiyo □ Hapana (Kama hapana, ruka hadi Swali 25)

23. Ni aina ya upangaji uzazi ni wewe juu?

□ Barrier njia - kondomu

□ Vidonge vya upangaji uzazi (OCPs)

□ Intra-uterine kifaa uzazi (IUCD)

□ Implants

□ kudungwa sindano za kuzuia mimba

□ Wengine, specify_____

24. Miaka ngapi umetumia juu mfumo wa uzazi wa mpango? _____

25. Katika umri gani (katika miaka) ulikuwa na hali yako ya kwanza ya ngono? ____

26. wangapi wapenzi na wewe alikuwa na katika maisha yako? ____

27. Je, una mpenzi ambaye ana nao ngono na watu wengine? □ Ndiyo □ Hapana

28. Je, umewahi kuugua maradhi ya zinaa? □ Ndiyo □ Hapana (Kama hapana, ruka hadi Q30)

29. Kama ndiyo, ni ya yafuatayo?

□ Syphillis

□ Gonorrhea

□ Herpes

□ Genital Warts

□ Chlamydia

□ Don’t know

□ Wengine, bayana _____

30 Je, umewahi moshi tumbaku? □ Ndiyo □ Hapana (Kama hapana, ruka hadi Q34)

31. Je, kwa sasa moshi tumbaku? □ Ndiyo □ Hapana

32. Kama wewe ni mvutaji wa sasa, je, moshi:

□ Kila siku

□ Chini ya kila siku

□ Hata kidogo

33. Kama wewe ni mvutaji siku za nyuma, je, moshi:

□ Kila siku

□ Chini ya kila siku

□ Hata kidogo

34 Je, kunywa pombe? □ Ndiyo □ Hapana (Kama hapana, ruka hadi Q36)

35. Kama ndiyo, mara ngapi wewe hutumia pombe?

□ Everyday

□ Mara 3-5 kwa wiki

□ Mara moja kwa wiki

□ Tu mwishoni mwa wiki

36 hali yako ya VVU ni nini?

□ Chanya

□ Hasi

37. Je, una hali yoyote ya matibabu ya msingi? □ Ndiyo □ Hapana (Kama hapana, ruka kwa sehemu E)

38. Kama ndiyo, ambayo?

□ Saratani

□ Kisukari

□ Shinikizo la damu

□ Wengine, _____

SEHEMU E: Maelezo kuhusu uchunguzi wa kansa ya kizazi

39. Sababu za kufanyiwa uchunguzi wa saratani ya shingo ya kizazi?

□ Ushauri kutoka mfanyakazi wa huduma za afya

□ Ushauri kutoka familia au marafiki

□ mpango kibinafsi

□ Kampeni

□ Radio / TV / Media

□ Wengine, specify_____

□ Sijawahi kupimwa

40. Unajua ambapo kutafuta kizazi huduma ya uchunguzi wa saratani? □ Ndiyo □ Hapana

41. Ni kliniki au hospitali kufanya wewe kwenda kutafuta huduma kwa ajili ya huduma hii? _____

42. muda gani itachukua wewe kupata kliniki?

□ <dakika 15

□ dakika 15-30

□ dakika 30 - saa 1

□> saa 1

43. Takriban kiasi gani wakati gani wewe kutumia katika kliniki kabla ya kupokea kizazi huduma ya uchunguzi wa saratani?

□ <dakika 15

□ dakika 15-30

□ 30minutes - 1hour

□> saa 1

SEHEMU D: (Ikionekana vikwazo kwa wale ambao hawajawahi kufanyiwa uchunguzi)

44. Mimi ni wasiwasi kwamba uchunguzi mtihani itakuwa chungu. □ Ndiyo □ Hapana

Mimi sijawahi kusikia ya ugonjwa

45. Mimi ni wasiwasi kwamba mtihani itakuwa wasiwasi. □ Ndiyo □ Hapana

46. Mimi ni aibu kwa kupitia utaratibu □ Ndiyo □ Hapana

47. Mimi ni hofu ya matokeo usiokuwa wa kawaida □ Ndiyo □ Hapana

48. Mimi wala kuhisi katika hatari ya kansa ya kizazi. □ Ndiyo □ Hapana

49. Sioni haja kama sina dalili □ Ndiyo □ Hapana

50. Sijui faida ya uchunguzi. □ Ndiyo □ Hapana

51. Sina muda wa kwenda kliniki □ Ndiyo □ Hapana

52. Napendelea kike wafanyakazi wa huduma za afya □ Ndiyo □ Hapana

53. mpenzi wangu kuyapinga uchunguzi □ Ndiyo □ Hapana

54. utamaduni wangu hairuhusu me kupitia utaratibu □ Ndiyo □ Hapana

55. Tabia ya wafanyakazi wa huduma za afya tamaa mimi kutoka kutafuta huduma □ Ndiyo □ Hapana

56. Ni gharama kubwa kulipia uchunguzi huduma □ Ndiyo □ Hapana

57. Mimi hawana imani matokeo ya vipimo vya uchunguzi □ Ndiyo □ Hapana

58. Sina kujamiiana hivyo mimi hawana haja ya kwenda kwa uchunguzi □ Ndiyo □ Hapana

59. Sidhani kansa ya kizazi ni ugonjwa mbaya □ Ndiyo □ Hapana

60. Sijui pa kwenda kwa uchunguzi □ Ndiyo □ Hapana

61. kusubiri muda katika kliniki ni mrefu sana □ Ndiyo □ Hapana

62. kituo iko mbali sana □ Ndiyo □ Hapana

63. Sina pesa za kulipia usafiri kwenda kituo cha afya □ Ndiyo □ Hapana

SEHEMU E: hakuna ufahamu kuhusu HPV uchunguzi na kansa ya kizazi

64. Je, umewahi kusikia kuhusu HPV? □ Ndiyo □ Hapana

65. Je, unafikiri HPV husababisha kansa ya kizazi? □ Ndiyo □ Hapana

66. Je, unafikiri kwamba HPV ni maambukizi ya zinaa? □ Ndiyo □ Hapana □ Sijui

67. Je, unajua kama HPV maambukizi husababisha dalili yoyote? □ Ndiyo □ Hapana

68. Je, HPV maambukizi kusababisha usiokuwa wa kawaida wa uchunguzi wa jaribio? □ Ndiyo □ Hapana □ Sijui

69. Je, unafikiri kwamba HPV maambukizi inaweza kuzuiwa? □ Ndiyo □ Hapana □ Sijui

70. Je, unajua kwamba kuna chanjo ambayo inalinda moja kutoka HPV maambukizi na kansa ya kizazi? □ Ndiyo □ Hapana □ Sijui

71. Je, uko tayari kupokea HPV chanjo ambayo inaweza kulinda dhidi ya maambukizi ya HPV na kansa ya kizazi? □ Ndiyo □ Hapana