UPTAKE OF CERVICAL CANCER SCREENING SERVICES AMONG HIV POSITIVE WOMEN IN DAGORETTI, NAIROBI CITY COUNTY, KENYA.

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MAY, 2016
DECLARATION

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

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Signature...................................... Date..........................

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Kenyatta University
DEDICATION

I dedicate this thesis to all those who have great zeal and interest in Monitoring and Evaluation of cervical cancer screening and treatment programs. It is also dedicated to all women who are living with HIV, to the Ministry of Health in Kenya and all partners taking part in screening and treatment of Cervical Cancer in HIV positive women.
ACKNOWLEDGEMENT

My greatest appreciation goes to my supervisors Dr. Harun Kimani and Dr. Antony Wanyoro for their dedication, constant availability, patience and thorough guidance. You have been a great inspiration to my work. Your devotion to seeing me complete this thesis was a huge sacrifice and favor to me. May the Lord bless you in abundance.

In addition, I thank the HIV positive women receiving care in Dagoretti, Nairobi County for their immense participation and co-operation during data collection. Last but not least, to my family and friends who encouraged me to give it another trial whenever I felt like giving up.
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### ABBREVIATIONS & ACRONYMS

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Full Form</th>
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<tbody>
<tr>
<td>AIDS</td>
<td>Acquired Immunity Deficiency Syndrome</td>
</tr>
<tr>
<td>Cacx</td>
<td>Cervical Cancer</td>
</tr>
<tr>
<td>CCC</td>
<td>Comprehensive Care Centre</td>
</tr>
<tr>
<td>CCS</td>
<td>Cervical Cancer Screening</td>
</tr>
<tr>
<td>CCSS</td>
<td>Cervical Cancer Screening Services</td>
</tr>
<tr>
<td>DNA</td>
<td>Deoxy Nucleic Acid</td>
</tr>
<tr>
<td>G.O.K</td>
<td>Government of Kenya</td>
</tr>
<tr>
<td>HIV</td>
<td>Human Immunodeficiency Virus</td>
</tr>
<tr>
<td>HPV</td>
<td>Human Papilloma Virus</td>
</tr>
<tr>
<td>JHPIEGO</td>
<td>John Hopkins International Education on Gynecology and Obstetrics</td>
</tr>
<tr>
<td>LEEP</td>
<td>Loop Electrosurgical Excision Procedure</td>
</tr>
<tr>
<td>K.N.H</td>
<td>Kenyatta National Hospital</td>
</tr>
<tr>
<td>PAP SMEAR</td>
<td>Papanicolou Smear</td>
</tr>
<tr>
<td>VIA</td>
<td>Visual Inspection Using Acetic Acid</td>
</tr>
<tr>
<td>VILI</td>
<td>Visual Inspection Using Lugol's Iodine</td>
</tr>
<tr>
<td>W.H.O</td>
<td>World Health Organization</td>
</tr>
<tr>
<td>NCCPP</td>
<td>National Cervical Cancer Prevention Program</td>
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OPERATIONAL DEFINITION OF KEY CONCEPTS AND TERMS

For purposes of this study, the following terms are defined as follows:

**HIV positive active woman:** Any woman who has been diagnosed with HIV and has been receiving care within the facility for over a year.

**Pap smear:** Also known as Papanicolou smear. It is a method of cervical cancer screening used to detect potentially pre-cancerous and cancerous processes in endocervical canal (transformation zone) of female reproductive system.

**Cryotherapy:** A treatment option that involves freezing abnormal tissues with a probe cooled by liquid nitrous oxide or carbon dioxide.

**Loop Electrosurgical Excision Procedure (LEEP):** Excision of abnormal cells using a loop electrode.

**Good knowledge level:** Anyone who has a score of 4 and above having assessed knowledge on causes of cervical cancer, predisposing factors, diagnosis, treatment options, and government interventions and whether one had had any access to CCS information.

**Poor knowledge level:** Anyone with a score of 3 and below knowledge score on causes of cervical cancer, predisposing factors, diagnosis, treatment options, and government interventions and whether one had had any access to CCS information.

**Cervical cancer screening service promoter:** Any resource whether material or human and activities that are a necessity for cervical cancer screening and treatment to take place.
ABSTRACT

Although cervical cancer is said to be the leading cause of cancer deaths among women in low resource settings, screening services in health facilities remains very low. The risk of death from this disease is higher among HIV positive women as a result of persistent Human Papilloma Virus (HPV) infection with quicker progression to cancer. As a result, screening services have been cooperated in routine care of all HIV positive women, but uptake remains very low. This could be due to low levels of awareness on the importance of screening within our facilities. In addition, there could be other unaddressed barriers to utilization of these services. This study sought to determine whether the level of awareness, socio-demographic and economic factors and health facility factors affect uptake of cervical cancer screening services among HIV positive women in Dagoretti, Nairobi County. A descriptive cross sectional facility based survey using proportionate random sampling involving HIV positive women receiving care within HIV clinics was conducted. Data was collected using interviewer administered questionnaire and an observation checklist. Data analysis was performed using SPSS version 20 (IBM, USA). Chi-square test was used to establish comparisons between categorical variables. Associations between socio demographic and economic factors, level of awareness and health facility factors with uptake of cervical cancer screening services were analyzed using correlation, binary logistic regression was conducted. Out of the interviewed respondents, 19% had screened for disease yet only 56% of those who had screened were as a result of a doctor’s recommendation. Most of those who had never screened (44%) feared to undress before a health care provider. A greater proportion (72%) had good knowledge levels on cervical cancer screening. Out of the six facilities, only 2 were well equipped for screening. Women with higher level of education (p=0.023), those aged above 45 years (p=0.003), those with current circumcised partner (p<0.0001) and those currently employed (p=0.0008) had good knowledge on screening services. Women aged 45 years and above were 2 times more likely to have been screened (OR 2.071; 1.115-3.847; P=0.021). Women with good knowledge are 2 times more likely to screen (OR2.2981, 1.062-4.973; P=0.035). Respondents with current circumcised partners are 3 times more knowledgeable (OR 2.935, 1.363-6.320; P=0.006) while those in formal education are 2.5 times more likely to have good knowledge (OR 2.537, 1.110-5.797; P=0.027). Findings of this study demonstrated that some socio demographic and economic factors affect uptake of cervical cancer screening services even with good knowledge levels. The information generated in this study might be valuable in informing cervical cancer managers and policy makers on policy review concerning cervical cancer screening and treatment in Dagoretti, Nairobi County and therefore consolidate the gains made in the control of this killer disease among HIV women.
CHAPTER ONE: INTRODUCTION

1.1 Background

Cervical cancer is the second most frequent malignancy affecting women worldwide and seventh overall worldwide with an estimated 530,000 new cases, (Parkin et al., 2006). There are 275,000 deaths from cervical cancer, (W.H.O, 2006), over 90% of them are recorded in the developing countries. More than 85% of global burden occurs in developing countries where it accounts for 13% of all female cancer. In 2008, 75,000 new cases were recorded while 50,000 women died from cervical cancer in African region. This is due to lack of proper screening programs and lack of knowledge on the importance of screening that on the other hand has helped reduce cervical cancer incidence and mortality rates by 70% in developed countries, (Kitchener et al., 2006).

The mortality rates from cervical cancer varies fifteen folds between different regions of the world with rates ranging from 2 per 100,000 population in North America and Western Europe to 25 per 100,000 in Eastern Africa in 2008, (Parkin et al., 2006). Currently, in Kenya, the estimated annual number of cervical cancer cases is 2454 while the annual number of deaths due to cervical cancer is 1676. It is projected that by the year 2025, the number of new cervical cancer cases annually in Kenya will reach 4261. Data from hospital-based registries in Kenya indicated that cancer of the cervix accounted for 70-80% of all cancers of the genital tract and 8-20% of all cancer cases for the 10-year period of 1981 to 1990. It has been reported that there are 10 to 15 new cases of cervical cancer in Nairobi each week, (Kenya Cancer Registry, 2011)

Despite the magnitude of the problem in Kenya and the fact that it is easily preventable, the cervical cancer screening coverage in Kenya for all women 18 to 69 years of age is
Cervical cancer is recognized as an AIDS-defining illness in HIV infection. Among all known risks factors, Human Papilloma Virus (HPV) stands out as the main cause and high risk HPV infection plays a major role in pathogenesis of cervical cancer with estimated prevalence between 85-99%, (Bosch et al, 2007). HIV positive women are more likely to progress to cervical Neoplasia and later to cervical cancer once infected with HPV, (Gichangi et al, 2003).

Cervical cancer screening is therefore included in the routine care of HIV positive women under the National Guidelines for HIV Care. However screening levels remain low in developing countries. According to UN-WHO, just 3.2% of Kenyan women (both positive and negative) aged between 18-69 years are screened for cervical cancer every 3 years compared to 70% of women in developed countries. The Government of Kenya has come up guidelines stipulating screening for cervical cancer among all women with specific recommendations concerning HIV positive women, (Yamada et al, 2008). In 2010, the ministry of health, Kenya trained nurses countrywide on the cervical cancer ‘see and treat” strategy where a number of nurses were trained on provision of Visual Inspection with Acetic Acid (VIA) and Visual Inspection with Lugols Solution (VILLI).

1.2 Problem Statement

Despite the fact that cervical cancer is higher in HIV positive women based on the fact that they live longer with HPV infection, the primary cause of cervical cancer and therefore progress to invasive life threatening disease than those who are HIV negative,
screening rates for the disease remain low in low resource setting areas. In Kenya, just 3.2% of Kenyan women (both HIV positive and negative), aged between 18-69 years are screened for cervical cancer every 3 years compared to 70% of women in developed countries. Most women are not aware of the availability of cervical cancer screening services (CCS) and its importance, (Franceschi et al, 2007). In Dagoretti, about 6734 women have been started on ARVs yet only 1058 women have been screened for cervical cancer between January 2012 and December 2012 (yearly report on CCS from Sub County’s health records, 2012). This raises a concern on the uptake of services putting in mind that services are available and about 23 nurses have been trained on service provision.

1.3 Justification of the Study

In Kenya, cervical cancer screening for this at risk group of women is more important in this era when HIV screening and care have improved remarkably such that many people living with HIV/ AIDS access antiretroviral therapy and other support services and are expected to live long enough to develop the Human Papilloma Virus-associated cervical neoplasm. Fortunately, cervical cancer usually takes some time to develop from its screen able premalignant lesions and the available standard treatment options for the latter are effective in HIV positive women though recurrence may be higher. Caregivers, therefore have ample opportunity to monitor women living with HIV/AIDS so as to identify the cervical lesions early and refer for appropriate treatment. The national cancer screening strategy suggests that HIV positive women should be screened at the point of diagnosis; 6 months post diagnosis and a year later. This seems not to be happening in our CCC facilities in Dagoretti as shown by statistics that out of 6734 women have been started on ARVs yet only 1058 women have been screened for cervical
cancer between January 2012 and December 2012 (yearly report on CCS from Sub County’s health records). The study will therefore seek to find out the reasons for the low uptake in Dagorretti considering the area has enough facilities in place with trained staffs to conduct the service, (NCCPP strategic plan 2012-2015).

1.4 Research Questions

The research questions in this study included:

1. What is the knowledge level of CCS Services among HIV positive attending routine care in CCC facilities of Dagorretti Sub County?

2. How does the level of knowledge on cervical cancer screening services affect uptake of the service among HIV positive women in Dagoretti?

3. What social-demographic and economic factors affect uptake of cervical cancer screening services among HIV positive women in Dagoretti?

4. What health facilities have factors for CCS among HIV positive women in Dagoretti?

1.5 Hypotheses

H₀ - Knowledge level of CCS services among HIV positive women in Dagorretti remains low.

H₀ - There is no relationship between uptake of cervical cancer screening services among HIV positive women and the level of knowledge on importance and availability of the screening service in Dagorretti.

H₀ - Social-demographic and economic factors do not affect uptake of CCS services among HIV positive women in Dagorretti.

H₀ - Health facilities within Dagorretti do not have any factors that affect uptake of CCS services among HIV positive women.
1.6 Research objectives

1.6.1 General Objective

The broad objective was to determine the uptake of cervical cancer screening services among HIV positive women in Dagoretti sub county, Nairobi County.

1.6.2 Specific Objectives

The specific objectives included:

1. To determine the level of knowledge on CCS services among HIV positive women attending routine care in Dagoretti sub county.

2. To ascertain the effect of knowledge on uptake of cervical cancer screening services among HIV positive in Dagoretti in relation to service utilization.

3. To establish the socio-demographic and economic factors affecting uptake of cervical cancer screening services among HIV positive women in Dagoretti Sub County.

4. To establish health facilities with factors for CCS among HIV positive women in Dagoretti Sub County.

1.7 Significance and anticipated output

The findings of this study will be significant in deducing current cervical cancer screening knowledge levels, their association with uptake and identifying other factors that may lead low uptake of screening services. This information may be used by different cervical cancer screening immunization program stakeholders (e.g donors, HPV vaccinators, screening coordinators and managers) to develop and redesign policies, guidelines and standard operating procedures on ways of increasing CCSS in HIV positive women. In addition, determining current levels of knowledge and factors associated with CCSS will enable screening managers strengthen screening and treatment
program, build public confidence and increase uptake among this at risk group. Strategies to improve uptake will be put in place based on practical evidence based information generated. This may ultimately help in consolidating gains made cervical cancer screening and treatment services program. Eventually, levels of screening and treatment uptake for Cacx among HIV positive women may increase.
FIGURE 1.1 CONCEPTUAL FRAMEWORK


INDEPENDENT VARIABLES

Social demographic factors
Age, partner’s status, employment and income status, number of previous general practitioners visits, previous screening uptake, educational level, number and age of children

Knowledge level on importance, perceived risk (HIV positive, many sexual partners, uncircumcised sex partners, early initiation of sex) and availability of cervical cancer screening services

Facilities with ccs promoting factors
- Equipment availability
- Adequacy of supply
- Staff capacity training and attitude
- Availability of IEC materials
- A referral system

DEPENDANT VARIABLE

Uptake of cervical cancer screening services
CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

Cervical cancer is the leading cause of cancer death among women in resource limited settings. It is the second most frequent malignancy affecting women worldwide. It is the leading cause of cancer deaths in developing countries. In 2008, it is estimated that 529,409 new cases occurred globally, with 274,883 of the women (52% of cases) dying, (Parkin *et al*., 2009). Of the total new cases each year, about 86% occur in developing countries, where unfortunately 80-90% of cervical cancer related deaths occur. With the peak age of cervical cancer being 35-45 years of age, it claims the lives of women in the prime of their life when they may be raising children, caring for the family, and contributing to the social and economic life of their community. According to The Kenya national guidelines on cervical cancer screening, (2012), it has been estimated that the average life years lost due to cancer of the cervix is 25.3 years.

Cancer of the cervix is easily detectable and curable in its early stages. Unfortunately, only 5% of women in developing countries undergo screening for cervical cancer compared to over 40% in developed countries, and 70% or higher in countries that have shown marked reduction in incidence and prevalence of cervical cancer. It is therefore not surprising that in Africa—where screening rates are very low—the majority of women present at late stages with invasive and advanced disease. In Kenya, it is estimated that only 3.2% of women in Kenya aged 18-69 years have been screened.

In Kenya, Cacx is the leading cause of cancer deaths in women of reproductive age. Currently, the estimated annual number of cervical cancer cases is 2454 while the annual number of deaths due to cervical cancer is 1676 in Kenya. It is projected that by the year 2025, the number of new cervical cancer cases annually in Kenya will reach 4261. Data
from hospital-based registries in Kenya indicated that cancer of the cervix accounted for 70-80% of all cancers of the genital tract and 8-20% of all cancer cases for the 10-year period of 1981 to 1990. It has been reported that there are 10 to 15 new cases of cervical cancer in Nairobi each week, (Nairobi Cancer Registry, 2006).

Despite the magnitude of the problem in Kenya and the fact that it is easily preventable, the cervical cancer screening coverage in Kenya for all women 18 to 69 years of age is only 3.2%. Cervical cancer is recognized as an AIDS-defining illness in HIV infection. However with HIV positive women receiving ART and living longer, cervical cancer becomes not only a life defining event but a disease that affects their quality of life. The prevalence of HIV in invasive cervical cancer patients in Kenya is 15%. This is double the national average of 7%. According to one study conducted among HIV-positive women attending HIV care clinics in Kenya, 43% of the women had abnormal cervical cytological results. The presence of abnormal cervical cytological results in HIV-positive women is also much higher than what is found in the general population (3.6%). With the recognition that cervical cancer is a major cause of morbidity and mortality among HIV-positive women, the HIV program in Kenya is making significant efforts in integrating cervical cancer screening as part of the minimum comprehensive care package. However, it is also recognized that about 80% of HIV-positive clients in Kenya are not aware of their HIV status. This means that the majority of the at-risk population, do not benefit from the cervical cancer screening program when the comprehensive care centers (CCCs) are used as the only entry point for screenings. This higher risk among HIV positive women warrants the need for frequent cervical cancer screening than in the general healthy women, (Dim et al, 2009). In the general population, cervical cancer screening at intervals of 2 to 5 years is recommended, (W.H.O, 2006), while in HIV positive women,
a more frequent screening is recommended thus; Pap smear at the diagnosis of the disease and a repeat screening after 6 months if negative, afterward the woman should continue on a yearly screening for life, (Workowski et al, 2006). Cervical cancer is thus a preventable disease. Primary preventive measures include healthy lifestyles and HPV vaccine while secondary prevention can be achieved through frequent screening and treatment of cervical lesions by cryotherapy and Loop Electrosurgical Excision (LEEP): treatment options currently available in Kenya. For HIV positive women to avoid this killer disease, they have to screen for cervical cancer lesions frequently which is a secondary preventive measure. It is one thing to have the cervical cancer screening strategy in place in a HIV Compressive Care Centre (CCC) and another thing for those who are expected to benefit from it to utilize the service. The Government of Kenya through the Division of Reproductive Health has ensured integration of this service into routine care of HIV Positive women, in all HIV care centers and has gone a step further in training health care providers on how to provide the service through the `see and treat` strategy. However, a study conducted at Kenyatta national hospital indicated uptake of cervical cancer screening services among HIV positive women remains low, while majority of those who have been screened presented with invasive cervical cancer, (Gichangi et al, 2003).

2.2 knowledge on Uptake of Cervical Cancer Screening

Most women have poor knowledge on the availability of cervical cancer screening services and its importance. Although many women may be saved by anti-retroviral therapy, they may later die of a disease that could have been detected and prevented at
the facilities where they receive their anti-retroviral therapy, (Franceschi et al, 2007). While there seems to be an available body of knowledge on cervical cancer screening and treatment, little has been done on uptake of cervical cancer screening among HIV positive women in the Kenyan set up. Much is being put in place to improve HIV care though knowledge levels of women on cervical cancer and how best to increase uptake of this service among the most at risk group, HIV positive women, by identifying strengths and weaknesses and coming up with suggestions to increase uptake of CCS in our country is lagging, (Gichangi et al, 2003). The main limitation to cervical screening is attributed to lack of knowledge on cervical cancer as a significant health threat to women in the general public and in the healthcare sector as presented in Kenya Medical Research Institute report of 2011, (Huchko et al, 2011). A study conducted in Eldoret, Rift valley Kenya indicated that most women do not perceive themselves as at risk for cervical cancer and therefore do not see the need for screening, (Were et al, 2001). This could be attributed to poor knowledge to predisposing factors to cervical cancer and the available screening and treatment options as well as where to access the services. In a cross-sectional study conducted in Nigeria on cervical cancer screening services awareness, a very small proportion of respondents were aware of availability of these services and therefore very few had used it. After cervical cancer counseling a bigger proportion of the respondents were willing to uptake a Pap smear, irrespective of the cost, (Dim et al, 2003). Another study conducted in Nigeria on the willingness and acceptability of cervical cancer screening among HIV/AIDS positive Nigerian women in Lagos indicated that of all the respondents interviewed, most of them had knowledge on the cervical cancer screening but the rates of screening remained very low, (Olayinka et al, 2003). In Kenya, on the other hand, a case study conducted in a maternal and child health clinics in
Nairobi`s Kayole sub district hospital indicated that many women had poor knowledge on the benefits of a pap smear. Half of the respondents had never heard of it, while those who had an idea of what it was had not taken it up, except on a clinician’s recommendation, (Kihara, 2009). These differing outcomes suggest that even though the level of knowledge greatly influences the uptake of CCS services, there seems to be other underlying promoters and barriers to uptake of this service.

2.3. Factors Contributing to Uptake of CCS Services

Effort has been put in previous studies to identify factors that could be contributory to or hinder uptake of cervical cancer screening services among different populations. Some of the factors identified to be contributory to uptake of cervical cancer screening services included level of education and profession of the respondents in Kenya, (Kihara et al,2009) . Most of the respondents went for the test only because it was a doctor’s recommendation. Other factors that were contributory included having no living child, recent HIV diagnosis and the awareness of HIV related infections. Another study in Nigeria indicate that HIV positive women in our environment are willing to screen for cervical cancer and that the integration of reproductive health services into existing HIV programs will strengthen rather than disrupt the services, (Ezechi et al, 2009). Age is said to have an effect on the demand for using preventive health services. The median age at diagnosis for cervical cancer is in the late 40`s and benefits of screening with avoiding cervical cancer cases has been shown most useful for women between 40 -60 years, (Sasieni et al, 2009). Higher perceived risk could lead to an increased use of preventive care due to increased risk of developing cervical cancer in HIV positive women, (Walter et al, 2004). Education increases the uptake of preventive care for several reasons, because better educated individuals have a higher efficiency in the production of health
and education as well imparts self-efficacy, confidence, motivation, patience and social inclusion, (Sabates et al, 2006). Number and age of children one has could also influence uptake of cervical cancer. This is because if a woman has many young children, she will have time constrains for screening as she has to rush back to cater for them, (Huchko et al, 2011). Females with partners will be more likely to participate in prevention activities, because partners will take care for each other, and therefore their male partners will encourage them to take up screening as a preventive measure, (Rolvall et al, 2005). A study conducted at the Kenyatta National Hospital on knowledge and practice about cervical cancer screening and Pap smear emphasized that many women do not screen for cervical cancer for the belief that they are not susceptible and that cervical cancer is viewed as a terminal illness therefore death is inevitable,(Gichangi et al, 2003).

It is believed that knowledge increases service demand and utilization as put forward by a research that concluded that there is a crude association between knowledge on cervical cancer and having a Pap smear done, (Sudangi et al, 2013). A study done among primary school teachers in Kasarani division Nairobi indicated that most of the participants were aware of cervical cancer while only 75% had screened for it. The main reasons raised for not having the test was that either the respondents did not know about the test, did not know where to go for the test, found the test too expensive, others did not feel sick therefore they did not see the need, while another proportion did not have time for the test, (Kihara et al, 2009).

2.4 Health Facility Factors for Uptake of CCS Services

Despite the existence of a previous National Cervical Cancer Prevention Strategic Plan, (2002 -2006), implementation of the national screening program is still low and haphazard. Cervical cancer screening occurs, but only in a few selected sites and in
disjointed projects rather than a fully-fledged national-level program. This explains why screening coverage is still negligible. Furthermore there is lack of additional diagnostic and treatment options at the secondary levels of care. Additionally, the link between screening and treatment has been dysfunctional. This augurs poorly especially for HIV positive women who tend to have larger lesions and more aggressive disease, (Kihara, 2009).

The main challenges to increasing access to and improving the quality of cervical cancer screening services include: lack of updated National guidelines on cervical cancer prevention and control, inadequate skills among service providers; inadequate equipment and supplies (despite the fact that these are inexpensive for visual screening methods); lack of treatment facilities when there is pre-cancer or cancer diagnosis; inadequate monitoring and evaluation – especially data collection and management- of existing programs and low prioritization of cervical cancer among policy makers and opinion leaders; the HPV vaccine that could be used in primary prevention is also not provided as part of the national vaccine and immunization program,(NCCPP strategic plan 2012-2015).

For a fully-fledged CCS program to be implemented in a facility, there needs to be a room within the facility for screening and treatment, an examination couch, a source of light, speculums for examination, iodine solution or acetic acid for VIA/VILLI and cervix brushes, slides and alcohol for pap smears. Other than that, all facilities need to have a time allocated for CCSS on their service charter.

In Kenya, health services are provided for in different levels which are currently referred to as ‘tiers of care’ and each tier has got its recommended expectations to meet even in relation to cervical cancer screening and treatment. Tier one comprise of the community
which in our case act areas of cervical cancer awareness creation spots. Tier 2 that comprises health centers and dispensaries are expected to provide cervical screening and cryotherapy treatment. The later also applies to tier 3 which comprises County Referral hospitals. Tier 4 is composed of provincial and national hospitals that are expected to provide screening and treatment (both cryotherapy and LEEP) for cervical disease. For health centers and dispensaries which are classified as tier 2 (tier 2 facilities in the Kenyan system comprise of health centers and dispensaries) are expected to practice a ‘see see treat’ strategy, which means they are recommended to screen and if they find any abnormality then they should refer for further treatment. This means there should be a clear referral system to the next tier for treatment. Sub district, district and provincial hospitals which are now referred to as county referral hospitals are termed as tier 3 should practice a see and treat strategy. This means that other that screening participants within their own facilities, they also receive referrals from tier 2 facilities. These facilities therefore should be equipped with a cryotherapy machine for treatment. Although about 300 sites provide screening services in Kenya, only about 30 (10%) have outpatient treatment services. Plans are underway to procure and distribute more cryotherapy equipment across the country in order to avail both screening and treatment at lower levels of care that are more accessible to the majority of clients (Sudangi et al, 2013).

2.5 The National Cancer Screening Strategy

The national cancer screening strategy in Kenya targets women aged between 25 to 40 years though women of other age groups who are willing to screen are offered the service. Recommended screening cycle of the Kenyan program is up to five years for those who have normal results. The strategy focuses on saving clients and provider’s
time, reducing revisits and loss to follow up. The program ensures that those who screen positive receive appropriate treatment preferably on a single visit, the `see and treat` (SVA) approach. Where SVA is not possible due to unavailable supplies, equipment or personnel, a `see, see and treat` which is a screen, re-evaluate\diagnose and treatment approach for precancerous lesions is used. Cervical cancer screening services are integrated into existing MCHFP services, CCC, routine gynecological care and mass campaigns via outreaches. All HIV positive women with a history of sexual activity, 18 – 65 years old will be screened for cervical cancer as part of comprehensive HIV care. The screening cycle of HIV positive patients as opposed to those who are negative (once in every 5 years if with normal results) is as follows; at diagnosis, 6 monthly in the first year, and then yearly if normal.

The recommended treatment strategies for precancerous lesions in Kenya include cryotherapy, LEEP and cold knife conization.

For the Kenya cervical cancer prevention program, simple outpatient procedures which work by excision or ablation will be used to destroy or remove pre-cancerous tissue. To minimize loss to follow up, the Single Visit Approach (SVA) is recommended. The specific treatment choice will depend on predefined criteria that will be outlined in the national guidelines which are cryotherapy, Loop Electrosurgical Excision Procedure (LEEP), and Cold knife conization.

Cryotherapy involves freezing abnormal tissues with a probe cooled by liquid nitrous oxide or carbon dioxide. It has an overall effectiveness rate of 80-90% in women with suitable lesions. It is simple, safe, and major complications are uncommon. It is also inexpensive; does not require electricity, and is practical for low-resource settings. It has been safely performed by nurses and other non-physicians in low level facilities and even
primary care level in Kenya and elsewhere. Cryotherapy is not suitable for lesions that are larger than the cryoprobe tip or for lesions that extend into the cervical canal.

LEEP is a common outpatient method used is in the treatment of cervical lesions. The main advantages are that it can be used to treat large lesions not amenable to cryotherapy and those that extend into the cervical canal. It also can provide tissue specimens for histology. It is 90-95% effective in treating high-grade cervical dysplasia. However it requires more expensive equipment than cryotherapy and necessitates a highly skilled provider. It also requires electricity, local anesthesia and has a higher risk of serious complications as therefore emergency backup facilities to deal with complications must be available. The Kenya cervical cancer prevention program recommends that LEEP be made available at the county hospitals and national referral sites, while cryotherapy should be made more widely available at the lower KEPH levels.

Cold Knife Conization on the other hand can be done in situations where cryotherapy and LEEP are not available, and there is a doctor competent in this procedure, cold knife conization (preferably a shallow conization) may be offered to clients with high grade cervical lesions. Cold knife conization generally has similar requirements to LEEP and additionally has to be performed in theatre usually by a gynecologist. It carries risk of short and long term complications similar to those of LEEP. However, since it an excision method, the specimen obtained can be taken to the laboratory for histological analysis.

In the management of overt cervical cancer, some women with invasive cervical cancer will be identified as a result of the screening program, and they must receive appropriate care and treatment. The National Cervical Cancer Prevention Strategic Plan, 2011-2015
recommends that basic diagnosis and treatment services be available at level 5 and 6 facilities.

Confirmation of the diagnosis is an essential first step. For this to be successful, the presence of a functional histopathological laboratory is imperative. The following approaches are recommended; Colposcopy and Biopsy and Staging and Biopsy.

Treatment options will depend on the stage of disease. Currently radiotherapy is only available at level 6 facilities (referral hospitals). Primary level facilities will utilize existing structures to refer patients to these tertiary sites where treatment is available. It is envisaged that as the program advances, regional radiotherapy centers will be set up.

**2.6 Summary of literature review**

Although cervical cancer screening is considered as a routine care in all HIV/AIDS management providing institutions, screening for the disease among HIV positive women remains low. Not much has been done on cervical cancer and its uptake among HIV positive women. It is unknown whether the low levels of uptake being demonstrated are related to the low level of knowledge among this group. More importantly, the scope of understanding on various aspects of knowledge on cervical cancer predisposing factors, screening options, treatment options and availability of various services have not been explored in previous studies. It was not known whether HIV positive women receiving care in Dagoretti Sub County have knowledge on the availability and importance of CCS.

Similar gaps in literature were evident on the scope of social, demographic, economic and health facility factors that could affect uptake of the aforesaid service. In as much as previous studies cited various factors as affecting the uptake, they were inadequate in exploring the scope of aspects that constitute the effect of these factors on uptake of the service.
CHAPTER THREE: MATERIALS AND METHODS

3.1 Study Design

A descriptive cross sectional facility based design was used. This is so because in Kenya, cervical cancer screening takes place within health facilities and outreach centers. This design therefore enables description of uptake of cervical cancer screening services among HIV positive women at one point in time without influencing their behavior in any way.

3.2 Location of study

The study took place in all HIV care centers in Dagoretti sub county, Nairobi County. Dagoretti is one of the administrative divisions on Western part of Nairobi County which is divided into six locations (kawangware, Kenyatta golf course, Mutuini, Riruta, uthiru / Ruthimitu, and Waithaka). It has a population of about 359,577 according to 2015 projected census report. Out of all this, 6,559 women are receiving care in Dagoretti based HIV care centers which are Coptic hope center, Mbagathi District Hospital, Riruta Satellite heath center, Waithaka health center, Ngong Road health center and Mutuini Health center. The six CCC facilities are almost evenly distributed within the six administrative locations of Dagorretti, giving an equal representation of the entire sub county. It is a Cosmo politan and multi-cultural community. This means that facilities here fall in the first 3 tiers of care with Mutuini, Waithaka and Ngong road health centers being in tier 2 while Riruta Satellite and Mbagathi falling in Tier 3. Coptic Hope Centre was the only Private hospital whose equipment is expected to fall in tier 3. Despite having an almost even distribution of health facilities within the locality in Dagoretti, the screening rates for cervical cancer are as low as 15% of HIV positive women receiving Anti-Retroviral Therapy (ARV) yet the services are available and staffs are well trained.
3.3 Study Variables

3.3.1 Independent Variables

1. Level of knowledge on the importance of CCS services.

2. Health facility factors for uptake of the service such as equipment and supplies availability, trained personnel and a referral system.

3. Social demographic and economic factors (age, partner’s status, employment and income status, number of previous general hospital visits, previous screening uptake, educational level, number and age of children.)

3.3.2 Dependent Variable

- Uptake of cervical cancer screening services.

3.4 Study Population

Respondents included HIV positive women attending routine care in the sampled facilities aged between 18-69 years of age, who consented to the study.

3.5 Sampling Technique

The study was conducted in all the six CCC centers within Dagorretti Sub County. The number of respondents included in this study was distributed proportionally in each of the health centers within the sub county. Eligible members from each facility were randomly selected until the required sample size was obtained for the facility (Table 3.1).
Table 3.1: Proportionate sampling per facility

<table>
<thead>
<tr>
<th>FACILITY NAME</th>
<th>NO. OF ACTIVE HIV POSITIVE WOMEN</th>
<th>NO. OF WOMEN SAMPLED</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coptic Hope Centre</td>
<td>2551</td>
<td>119</td>
</tr>
<tr>
<td>Mbagathi District Hospital</td>
<td>1458</td>
<td>68</td>
</tr>
<tr>
<td>Riruta Satellite health Centre</td>
<td>1115</td>
<td>52</td>
</tr>
<tr>
<td>Waithaka health Centre</td>
<td>686</td>
<td>32</td>
</tr>
<tr>
<td>Ngong Road Health Centre</td>
<td>429</td>
<td>20</td>
</tr>
<tr>
<td>Mutuini Health Centre</td>
<td>322</td>
<td>15</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>6559</strong></td>
<td><strong>306</strong></td>
</tr>
</tbody>
</table>

3.6 Sample Size Determination

Sample size was determined using the formula \( n = \frac{z^2pq}{d^2} \). *(Source: Fishers et al, 2003)*

where:

\( n \) is the desired sample size.

\( z \) is the standard normal deviate (set at 1.96 which corresponds to the 95% confidence level).

\( p \) is the proportion in the target population estimated to have taken up cervical screening tests. According to a study done in Indonesia by John Hopkins University International Education in Gynecology and Obstetrics (JHPIEGO) on Acceptance of cervical cancer screening services among HIV positive women between April 2007 and September 2012, 29.7% of HIV positive women accepted to be screened and took up the test.

\( q = 1.0-p; d \) is the degree of accuracy desired (0.05 level)
\( p = 0.299 \) (according to a study done in Indonesia by JHPIEGO on acceptance of cervical cancer screening services among HIV positive women between April 2007 and September 2012); \( q = 1.0 - p; \ d = 0.05; \ n = \)

Since the estimated total population (\( N \)) is less than 10,000 {6559 being the total number of HIV positive women receiving care in Dagoretti sub county}, In the year 2012 about 3734 women were started on ARVs in Dagoretti district; yet only 1058 women were screened for cervical cancer. (Yearly report on CCS from district health records), then the desired sample size, \( NF = n/1+ \{n/N\} \) where \( N \) is the total population of HIV positive women in Dagoretti district i.e. 6559

\( NF = 306 \)

**Minimum sample size = 306 HIV positive women**

**3.8 Data Collection Tools:**

An interview guide (appendix II) was used to collect information from respondents on social demographic factors, on level of awareness and on factors leading to low uptake of these services. The interviewer would introduce him/herself to the participant, and having obtained an informed consent, he would read out the questions to the participants as they were on the questionnaire and wait for an appropriate answer from the participant without any influence. The guide was both in English and Swahili depending on which language the participant was most comfortable with.

An observation checklist (appendix IV) was used to establish health facilities in Dagoretti with CCS promoting factors just by observation.
3.8 Pretesting

A pretest of the tools took place at Kibera D.O HIV clinic in Lang’ata Sub County that has similar set up as those in Dagoretti. Corrections and amendments on these data collection tools were then made prior to the actual data collection.

3.8.1 Reliability

This was ensured through use of well-designed questionnaires, selection, training and supervision of research assistants and daily checking and correction of completed questionnaires.

3.8.2 Validity

For content Validity, the questions asked were based on study objectives and the study was limited to the area of study.

3.9 Selection Criteria

3.9.1 Inclusion

1. HIV positive women receiving care within Dagoretti.
2. Must be aged between 18 and 69.
3. Must willingly consent to their participation in the study.
4. Must be able to understand either Kiswahili or English.

3.9.2 Exclusion

1. HIV positive women receiving care outside Dagoretti Sub County.
2. Those aged below 18 and those above 69 years.
3. Those who did not consent to participation in the study.
4. Those who did not understand either English or Kiswahili.
3.10 Data management and analysis

Data collected was entered, coded and cleaned in the Excel software, Microsoft office Excel 2010. All statistical analyses were performed using statistical package for social sciences (SPSS) software version 20 (SPSS Inc., USA). Descriptive statistics were computed to generate frequencies, mean, median and standard deviation. The differences in the proportions (percentages) of categorical data were compared between groups using Chi-square. Where Chi-square assumptions were violated, Fisher’s exact test was used to examine such differences in categorical variables. Correlation was used to measure the strength and direction of relationships between continuous variables. A binary logistic regression was then computed appropriately.

To determine the level of knowledge, a Likert scale was used. Each correct response of the cluster questions was assigned a score of 1.0 and each incorrect score was allocated 0.0, then the overall score was calculated for all the six knowledge responses for each individual. The maximum expected score was 6. The overall mean level of knowledge score on causes of Cacx, predisposing factors, diagnosis, treatment options, and government interventions and whether one had had any access to CCS information. The cut point was 3 out of the maximum 6. Anyone scoring 3 or less was termed as having poor knowledge while anyone scoring 4 and above was classified as one with good knowledge. Since data was evenly distributed, the cut off point for those with good knowledge was the mean (values>mean) and those with poor knowledge (value<mean).

An observation checklist was used to gather data on health facility CCSS promoting factors. Items tested included presence of staffs trained on CCS services, presence of CCS Counseling program within the facility, whether there is any time allocation for CCSS on their patient service charter, a specific room for CCSS, and whether the room is
equipped with an examination couch, speculums, acetic acid/Lugols solution, slides and cervix brushes, functional cryotherapy machine and an examination lamp and whether the facility has a clear referral system. Scores were tallied according to presence or absence of an item in question. Presence of an item was awarded a score of 1.0, while absence was awarded 0.0. Later a percentage of the above was calculated according to the scores.

3.11 Ethical Considerations

Authority to conduct this study was sought from Kenyatta University Graduate School. Ethical clearance was sought from the Kenyatta University Review Committee (appendix VI) A Research permit was obtained from National Commission for Science, Technology and Innovation (NACOSTI, appendix V). Permission to carry out the study was also sought from the county’s education office and the county’s health office. An informed consent was also sought from the respondents prior to participation. Participation in the study was voluntary and participants had the right to withdraw from the study at any stage. Study participants were assured of confidentiality by use of codes on questionnaires to maintain anonymity of all participants and keep their information confidential. Copies of signed consent forms were kept in a lockable shelf and access to the keys controlled by the researcher.
CHAPTER FOUR: RESULTS

4.1 Characteristics of study respondents

The study respondent’s characteristics are summarized in table 4.1. The median age of participants was 32.91 (25-38). Majority of the respondents were aged between 35-44 years, (45%) while the least were aged 45 and above (10%). Most of the respondents had acquired primary level education, (35%), while those who had informal education were the least (14%). Majority of the respondents were in a monogamous marriage, (59%), while the least were those in a polygamous type of marriage (15%). Majority of the respondents reported to have had their first sexual intercourse at 15-20 years 38%, and the least being those age 25-30 years (7%). Most respondents reported to have had more than 5 sexual partners (30%), while those with exactly five were the least (8%). Of the total number of respondents, (87%) reported that their sexual partners were circumcised while (13%) who were the least had uncircumcised partners. Majority of the respondents reported to have been pregnant more than thrice (28%), and the least being those who had never been pregnant (5%). Most of the respondents had had one to two live births (36%) while the least number of them had had no live birth (9%). A bigger proportion of respondents were salaried employees (50%) while the least (23%) were self-employed.

Most of the respondents reported to earn less than 5000 Kenya shillings (41%) and the least of them who did not know their total monthly income were 5%.
Table 4.1: Characteristics of study respondents

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>N</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Age Category</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt;24</td>
<td></td>
<td>63</td>
<td>21%</td>
</tr>
<tr>
<td>25 to 34</td>
<td></td>
<td>137</td>
<td>45%</td>
</tr>
<tr>
<td>35 to 44</td>
<td></td>
<td>75</td>
<td>25%</td>
</tr>
<tr>
<td>&gt;45</td>
<td></td>
<td>31</td>
<td>10%</td>
</tr>
<tr>
<td><strong>Education Level</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Non formal education</td>
<td></td>
<td>43</td>
<td>14%</td>
</tr>
<tr>
<td>Primary education</td>
<td></td>
<td>108</td>
<td>35%</td>
</tr>
<tr>
<td>Secondary Education</td>
<td></td>
<td>107</td>
<td>35%</td>
</tr>
<tr>
<td>Tertiary Education</td>
<td></td>
<td>48</td>
<td>16%</td>
</tr>
<tr>
<td><strong>Marital Status</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Single</td>
<td></td>
<td>65</td>
<td>21%</td>
</tr>
<tr>
<td>Married (monogamy)</td>
<td></td>
<td>139</td>
<td>45%</td>
</tr>
<tr>
<td>Married (polygamy)</td>
<td></td>
<td>47</td>
<td>15%</td>
</tr>
<tr>
<td>Divorced/separated</td>
<td></td>
<td>55</td>
<td>18%</td>
</tr>
<tr>
<td><strong>Age at first sexual intercourse</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt;15 years</td>
<td></td>
<td>86</td>
<td>28%</td>
</tr>
<tr>
<td>16-20 years</td>
<td></td>
<td>116</td>
<td>38%</td>
</tr>
<tr>
<td>21-25 years</td>
<td></td>
<td>81</td>
<td>26%</td>
</tr>
<tr>
<td>26-30 years</td>
<td></td>
<td>22</td>
<td>7%</td>
</tr>
<tr>
<td><strong>No of live sexual partners</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1-2</td>
<td></td>
<td>102</td>
<td>33%</td>
</tr>
<tr>
<td>3-4</td>
<td></td>
<td>85</td>
<td>28%</td>
</tr>
<tr>
<td>&gt;4</td>
<td></td>
<td>118</td>
<td>39%</td>
</tr>
<tr>
<td><strong>Current partner circumcised?</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td></td>
<td>266</td>
<td>87%</td>
</tr>
<tr>
<td>No</td>
<td></td>
<td>40</td>
<td>13%</td>
</tr>
<tr>
<td><strong>No. of pregnancies</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0</td>
<td></td>
<td>16</td>
<td>5%</td>
</tr>
<tr>
<td>1-2</td>
<td></td>
<td>131</td>
<td>43%</td>
</tr>
<tr>
<td>&gt;2</td>
<td></td>
<td>159</td>
<td>52%</td>
</tr>
<tr>
<td><strong>No. of live births</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0</td>
<td></td>
<td>27</td>
<td>9%</td>
</tr>
<tr>
<td>1-2</td>
<td></td>
<td>190</td>
<td>62%</td>
</tr>
<tr>
<td>&gt;2</td>
<td></td>
<td>89</td>
<td>29%</td>
</tr>
<tr>
<td><strong>Employment Status</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Self –employed</td>
<td></td>
<td>71</td>
<td>23%</td>
</tr>
<tr>
<td>Housewife</td>
<td></td>
<td>83</td>
<td>27%</td>
</tr>
<tr>
<td>Salaried</td>
<td></td>
<td>152</td>
<td>50%</td>
</tr>
<tr>
<td><strong>Household Income</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Less than5000</td>
<td></td>
<td>124</td>
<td>41%</td>
</tr>
<tr>
<td>Between 5,001-10,000</td>
<td></td>
<td>79</td>
<td>26%</td>
</tr>
<tr>
<td>Between 10,001-15,000</td>
<td></td>
<td>46</td>
<td>15%</td>
</tr>
<tr>
<td>Over 15000</td>
<td></td>
<td>42</td>
<td>14%</td>
</tr>
</tbody>
</table>

Data are represented as the frequency and proportions (%) of respondents n=306.
4.2 Knowledge level on CCS services among HIV positive women attending care in Dagoretti

4.2.1 Source of information on cervical cancer

Most of the respondents reported to have heard of cervical cancer through radio (70%) while the least have heard it from posters/bill boards (5%).

FIG 4.1 Bar chart on source of information on Cacx

4.2.2 Knowledge on CCS

Majority of respondents reported to have received information on CCS from care givers (86%) while the least information was gotten from facility’s television (1%).
4.2.3 Knowledge on predisposing factors to Cacx

A bigger proportion of respondents reported multiple sex partners as the main predisposing factor to Cacx (68%) while none of them pointed smoking as a predisposing factor (0%) as shown below.
4.2.4 Knowledge on Cacx screening options

Majority of the respondents reported to have heard of a pap smear (47%) as a screening option while the least were aware of HPV/DNA test (1%) as a screening test.
4.2.5 Knowledge on Cacx treatment option

Most of the respondents did not know of any available treatment option (49%) while the least had heard of cold knife conization (1%) as a treatment option as shown on the bar graph below.
4.2.6 Overall level of knowledge on cervical cancer screening

Most of the respondents had good knowledge of CCS (72%) while the least (28%) had poor knowledge as shown in the pie chart below.

Figure 4.6: Pie chart on knowledge levels
4.2.7 Level of knowledge based on the Likert scale

Majority of the respondents (72%) had good knowledge on CCS while 28% had poor knowledge. Majority of them (92%) had access to information on CaCx while (8%) had no access. On availability of screening services, majority of them (78%) had access to information of CCS services while (22%) had no access. Out of the interviewed respondents, 84% had knowledge on cervical cancer predisposing factors while (16%) had no information on the predisposing factors. A proportion of 72% of the respondents had good knowledge on CCS procedures while 28% had little knowledge. A proportion of 51% of respondents had knowledge on the available cervical cancer treatment options while 49% had poor knowledge. A bigger percentage 49% of the respondents did not know of any interventions put in place to curb cervical cancer while 51% knew of some of the interventions instituted by G.O.K.
4.3 Association between knowledge and uptake

As illustrated earlier, 19% of the respondents had never had access to information on Cacx while 79% had accessed this information. The association between the two signified that women with good knowledge were more likely to be screened for CCS at $\chi^2_{25.258} (1, n=306) \ p=0.014$ as shown below.

Table 4.2 Association between knowledge and uptake of CCSS

<table>
<thead>
<tr>
<th>Variable</th>
<th>Screened Median, n (IQR, %)</th>
<th>Unscreened Median, n (IQR, %)</th>
<th>Df</th>
<th>$\chi^2$</th>
<th>P-Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Knowledge Levels</td>
<td>Good knowledge</td>
<td>48(22%)</td>
<td>172(78%)</td>
<td>1</td>
<td>5.258</td>
</tr>
<tr>
<td></td>
<td>Poor knowledge</td>
<td>9(10%)</td>
<td>77(90%)</td>
<td>1</td>
<td>5.258</td>
</tr>
</tbody>
</table>
4.4 Uptake of cervical cancer screening in Dagoretti Sub County

Majority of the respondents reported to have never screened for cervical cancer (81%) while the least had been screened (19%).

Fig 4.8: Pie chart on uptake of CCS

4.4.1 Willingness to screen

Most respondents were not ready to screen on the day of the interview (88%) while very few (12%) were willing;

Fig 4.9: Pie chart on willingness to screen on day of interview
4.4.2 Reasons for willingness to screen

Most respondents were willing to screen as a result of a doctor’s recommendation (24%) while the least screened because it was either a standard care at the facility, due to counseling done at the clinic or through influence from social media(13% each).

Fig.4.10. Bar chart on reasons for screening

4.4.3 Reasons for unwillingness to screen

Majority of the respondents were unwilling to screen as a result of fear of undressing before a health care provider (56%) while a smaller percentage (1%) did not have a definite reason for not screening.
4.5 Social demographic and economic factors affecting uptake of cervical cancer screening uptake

Out of the 306 respondents, only 19% had screened for cervical cancer while 81% had never screened. Of all the 19% who had screened, 56% of them had screened in CCC facility they attend care while 44% had screened but not in a CCC facility. Most of them reported to have screened just once (70%) while the least (5%) had screened more than three times. Most of the respondents gave their reason for screening as a doctor’s recommendation (56%), while the least (5%) screened having been advised at a councilor’s office. Of the 249 respondents who reported to have never screened for cervical cancer, majority of the responses (44%) were that of fear of undressing before a health care provider, while 6% did not screen for lack of money. Out of the 306 respondents interviewed, 88% were not willing to screen on the day of interview while only 12% were willing.
Table 4.3 Social economic factors affecting uptake of CCS

<table>
<thead>
<tr>
<th>VARIABLE</th>
<th>N= 306</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Screen for Cac</td>
<td>Yes</td>
<td>57</td>
<td>19%</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>249</td>
<td>81%</td>
</tr>
<tr>
<td>Where they screened</td>
<td>Within facility</td>
<td>32</td>
<td>56%</td>
</tr>
<tr>
<td></td>
<td>Another facility</td>
<td>25</td>
<td>44%</td>
</tr>
<tr>
<td>Reason for CCS</td>
<td>Drs. Recommendation</td>
<td>32</td>
<td>56%</td>
</tr>
<tr>
<td></td>
<td>TV/radio/brochure/magazine</td>
<td>5</td>
<td>9%</td>
</tr>
<tr>
<td></td>
<td>Relative/friend influence</td>
<td>8</td>
<td>14%</td>
</tr>
<tr>
<td></td>
<td>Outreach/workshop on CCS</td>
<td>13</td>
<td>23%</td>
</tr>
<tr>
<td></td>
<td>CCC counselors</td>
<td>3</td>
<td>5%</td>
</tr>
<tr>
<td></td>
<td>Standard of care</td>
<td>5</td>
<td>9%</td>
</tr>
<tr>
<td>No. of times screened</td>
<td>1</td>
<td>40</td>
<td>70%</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>14</td>
<td>25%</td>
</tr>
<tr>
<td></td>
<td>&gt;=3</td>
<td>3</td>
<td>5%</td>
</tr>
<tr>
<td>Reason for not screening</td>
<td>Fear of having disease</td>
<td>78</td>
<td>31%</td>
</tr>
<tr>
<td></td>
<td>Lack of money</td>
<td>14</td>
<td>6%</td>
</tr>
<tr>
<td></td>
<td>Lack of information on where to screen</td>
<td>20</td>
<td>8%</td>
</tr>
<tr>
<td></td>
<td>Lack of CCSS in hospital</td>
<td>17</td>
<td>7%</td>
</tr>
<tr>
<td></td>
<td>Fear of undressing before HCP</td>
<td>110</td>
<td>44%</td>
</tr>
<tr>
<td></td>
<td>It’s a painful procedure</td>
<td>76</td>
<td>31%</td>
</tr>
<tr>
<td></td>
<td>RTA</td>
<td>9</td>
<td>4%</td>
</tr>
<tr>
<td></td>
<td>DK</td>
<td>2</td>
<td>1%</td>
</tr>
</tbody>
</table>

Total sample size n=306. Data are presented as number (No) of subjects and proportions (%)

CCS cervical cancer screening, CCSS cervical cancer screening services, HCP health care provider, RTA refused to answer, DK don’t know.

4.6 Association between respondent’s social economic and demographic factors and
uptake of CCSS

The association between study respondents characteristics and uptake of CCSS is
summarized in table 4.4, $\chi^2$ 5459.5 (1, n=306) $p=0.007$. Proportion of older women over
45 years were more likely to screen for cervical cancer at $\chi^2$ 14.119 (3, n=306) $p=0.003$.

Proportion of respondents who were less educated, primary education or none(35%) have
a low likelihood of having undertaken a screen as opposed to more educated women at
Proportion of women who displayed high knowledge levels on cervical cancer had a higher likelihood of undertaking screening as opposed to women who displayed low knowledge levels at $\chi^2_{10.421} (3, \text{n}=306) p=0.015$. Age and education level affect uptake of cervical cancer screening services among HIV positive women in Dagoretti Sub County.
### Table 4.4: Table on association between respondents’ characteristics and uptake

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Screened Median, n (IQR, %)</th>
<th>Screened Median, n(IQR, %)</th>
<th>P-Value</th>
<th>( \chi^2 )</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>34(28.5-40.5)</td>
<td>30(25-37)</td>
<td>1</td>
<td>5459.5</td>
</tr>
<tr>
<td>Age Category</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt;=24</td>
<td>4(07)</td>
<td>59(24)</td>
<td>3</td>
<td>14.119</td>
</tr>
<tr>
<td>25 to 34</td>
<td>26(46)</td>
<td>111(45)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>35 to 44</td>
<td>23(4)</td>
<td>52(21)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>45 +</td>
<td>4(07)</td>
<td>27(11)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Education Level</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No Formal Education</td>
<td>4(07)</td>
<td>39(16)</td>
<td>3</td>
<td>10.421</td>
</tr>
<tr>
<td>Primary secondary</td>
<td>16(28)</td>
<td>92(37)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Secondary Education</td>
<td>21(37)</td>
<td>86(35)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Higher Education</td>
<td>16(28)</td>
<td>32(13)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Marital Status</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Married (monogamy)</td>
<td>21(37)</td>
<td>81(33)</td>
<td>3</td>
<td>2.284</td>
</tr>
<tr>
<td>Married (polygamy)</td>
<td>8(14)</td>
<td>39(16)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Divorced/separated</td>
<td>13(23)</td>
<td>42(17)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Single/Cohabiting</td>
<td>15(26)</td>
<td>87(35)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>age at 1st sexual debut</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&gt;15 years</td>
<td>15(26)</td>
<td>71(29)</td>
<td>3</td>
<td>1.946</td>
</tr>
<tr>
<td>15-20 years</td>
<td>20(35)</td>
<td>96(39)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>20-25 years</td>
<td>19(33)</td>
<td>62(25)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>25-30 years</td>
<td>3(05)</td>
<td>19(08)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>no. of live sex partners</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>One</td>
<td>7(12)</td>
<td>41(16)</td>
<td>2</td>
<td>0.645</td>
</tr>
<tr>
<td>2 - 3</td>
<td>20(35)</td>
<td>86(36)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&gt;3</td>
<td>30(53)</td>
<td>122(49)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Partner circumcised?</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>48(84)</td>
<td>218(88)</td>
<td>1</td>
<td>0.455</td>
</tr>
<tr>
<td>No</td>
<td>9(16)</td>
<td>31(12)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No. of pregnancies?</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>None</td>
<td>4(07)</td>
<td>12(05)</td>
<td>2</td>
<td>7.267</td>
</tr>
<tr>
<td>1 to 2</td>
<td>19(34)</td>
<td>112(45)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3 or more</td>
<td>34(60)</td>
<td>125(50)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No. of live births</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>None</td>
<td>4(07)</td>
<td>23(09)</td>
<td>2</td>
<td>3.876</td>
</tr>
<tr>
<td>1 to 2</td>
<td>33(58)</td>
<td>157(63)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3 or more</td>
<td>20(35)</td>
<td>69(28)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Employment Status</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Employed</td>
<td>39(68)</td>
<td>184(74)</td>
<td>1</td>
<td>2.281</td>
</tr>
<tr>
<td>Unemployed</td>
<td>18(32)</td>
<td>65(26)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Monthly income</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Less than5000</td>
<td>16(28)</td>
<td>108(43)</td>
<td>3</td>
<td>8.162</td>
</tr>
<tr>
<td>Between 5,001-10,000</td>
<td>18(32)</td>
<td>61(24)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Between 10,001-15,000</td>
<td>7(12)</td>
<td>39(16)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Over 15000</td>
<td>13(23)</td>
<td>29(12)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Data shown are frequencies (n) and proportions (%), DF degree of freedom, \( \chi^2 \) Pearson’s chi square. Bolded values are significant.
4.6 Health facilities with CCSS factors

Coptic Hope center and Mbagathi district Hospitals scored highest 8(66.7%) showing they were more equipped with CCS services. Riruta Satellite scored lowest 7(58.3%) as tier 3 health facilities. For tier 2 facilities, Ngong Road health facility scored highest 4(40%) while Waithaka scored 3(30%) and Mutuini did not score anything at all.

Table 4.5: Tier 3 CCSS factors per facility

<table>
<thead>
<tr>
<th>ITEM</th>
<th>COPTIC</th>
<th>MBAGATHI</th>
<th>RIRUTA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trained staffs</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>IEC material on CCS</td>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Counselling program</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Time allocation on service charter</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Room for CCSS</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Examination couch</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Examination lamp</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Speculums</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Acetic acid/Lugols solution</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Slides/cervix brushes</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Functional cryotherapy machine</td>
<td>0</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Clear referral system</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Total score</td>
<td>8</td>
<td>8</td>
<td>7</td>
</tr>
<tr>
<td>Percentage</td>
<td>66.7%</td>
<td>66.7%</td>
<td>58.3%</td>
</tr>
</tbody>
</table>

Total no of tier 3 facilities=3. Scores awarded as 1.0 for presence, 0.0 for absence of item, total score (proportions) =12 and proportions (%).
Fig 4.12: Pie chart showing percentages of CCSS factors of tier 3 facilities in Dagoretti

In tier 3 facilities, Coptic and Mbagathi had equal percentage (34.7%) of CCSS promoters while Riruta satellite followed (30.4%).

Table 4.6: Tier 2 CCSS factors per facility

<table>
<thead>
<tr>
<th>ITEM</th>
<th>WAITHAKA</th>
<th>NGONG Rd</th>
<th>MUTUINI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trained staffs</td>
<td>1</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>IEC material on CCS</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Counselling program</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Time allocation on service charter</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Room for CCSS</td>
<td>1</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Examination couch</td>
<td>1</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Examination lamp</td>
<td>0</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Speculum</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Acetic acid/Lugols solution</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Clear referral system</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Total score</td>
<td>3</td>
<td>4</td>
<td>0</td>
</tr>
<tr>
<td>Percentage</td>
<td>30%</td>
<td>40%</td>
<td>0%</td>
</tr>
</tbody>
</table>

Total no of tier 2 facilities = 3. Scores awarded as 1.0 for presence, 0.0 for absence of item, total score (proportions) = 10 and proportions (%).
Fig 4.13: Pie chart showing percentages of CCSS promoters of tier 2 facilities in Dagoretti

In tier 2 facilities within Dagoretti Ngong road health center had the most of health facility CCSS promoters (57.1%) while Mutuini had none (0%).

4.6.1. CCSS per facility

Out of the 306 respondents interviewed, 57(19%) had been screened in this facilities within Dagoretti. Mbagathi County hospital had screened the majority 34 (60%) while the least 2(3.5%) had been screened at Mutuini CCC center.
Coptic hospital and Mbagathi district Hospitals scored highest (66.7%) showing they were more equipped with CCS services and therefore had the highest number on uptake. Mutuini CCC which does not have screening services but 4% of their patients had been screened.

4.7 Logistic regression of CCSS uptake and good awareness levels with the characteristics of HIV positive women attending care in Dagoretti

Variables that were significant in the chi-square test analyses were entered into binary logistic regression controlling for other factors to ascertain for their association with uptake and awareness levels. Women who were 35 years and above were 2 times more likely to have undertaken CCSS (OR 2.071, 95% CI, 1.115-3.847 P=0.021). The odds of having primary or no education at all increases the likelihood of one not having undertaken a CCS test 7 folds (OR 0.427 95% CI, 0.228-0.796, P=0.007). Women who displayed good awareness levels about CCSS were 2 times more likely to take up a
screening test (OR2.298, 95% CI, 1.062-4.973, P=0.035). Women whose current partners are circumcised are 3 times likely to be more aware about CCS (OR 2.935, 95% CI, 1.363-6.320, p=0.006). Women in formal employment are about 2.5 times more likely to be aware about CCSS (OR 2.487, 95% CI, 1.315-4.701, P=0.005). Women who have been screened previously are 2.5 times more likely to have high awareness about CCS (OR 2.537, 95% CI, 1.110-5.797, P=0.027) as shown in the table 4.8 below.

Table 4.7: Logistic regression of CCSS uptake and good awareness levels with the characteristics of HIV positive women attending care in Dagoretti

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>OR(95% CI)</th>
<th>P-Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt;=35 Years</td>
<td>Reference</td>
<td></td>
</tr>
<tr>
<td>&gt;35 Years</td>
<td>2.071(1.115 - 3.847)</td>
<td>0.021</td>
</tr>
<tr>
<td>Education Level</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Primary and None</td>
<td>Reference</td>
<td></td>
</tr>
<tr>
<td>Secondary and Above</td>
<td>0.427(0.228 - 0.796)</td>
<td>0.007</td>
</tr>
<tr>
<td>awareness Levels</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Low level of awareness</td>
<td>Reference</td>
<td></td>
</tr>
<tr>
<td>High level of awareness</td>
<td>2.298(1.062 - 4.973)</td>
<td>0.035</td>
</tr>
<tr>
<td>Age at first sexual intercourse</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt;= 20 Years</td>
<td>Reference</td>
<td></td>
</tr>
<tr>
<td>&gt; 20 Years</td>
<td>0.531(0.274 - 1.03)</td>
<td>0.061</td>
</tr>
<tr>
<td>Partner circumcised?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>Reference</td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>2.935(1.363 - 6.320)</td>
<td>0.006</td>
</tr>
<tr>
<td>Employment Status</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unemployed</td>
<td>Reference</td>
<td></td>
</tr>
<tr>
<td>Employed</td>
<td>2.549(1.439 - 4.204)</td>
<td>0.001</td>
</tr>
<tr>
<td>Household Income</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt;= Ksh.10,000</td>
<td>Reference</td>
<td></td>
</tr>
<tr>
<td>&gt; Ksh.10,000</td>
<td>0.213(0.084 - 0.540)</td>
<td>0.001</td>
</tr>
<tr>
<td>Screened for Cervical Cancer</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>Reference</td>
<td></td>
</tr>
</tbody>
</table>

Variables controlled for were knowledge and uptake of the respondents. Data shown are OR, Odds ratio with 95% CI, Confidence Interval values in bold are significant P values.
CHAPTER FIVE: DISCUSSION, CONCLUSION AND RECOMMENDATIONS

5.1 Discussion

5.1.1 Level of knowledge on CCSS

This study elicited that majority of the respondents in Dagoretti Sub County had good knowledge on cervical cancer and the available screening and treatment options as they had access to information on availability of screening services within the facilities they attend. A bigger percentage had access to information on services, predisposing factors to cervical cancer screening, screening options available in Kenya and the treatment options for cervical lesions. These findings are contrary to a study conducted by Franceschi in 2007 that concluded that most women were not aware of the available screening methods. Another study conducted in Nigeria was also inconsistent with this study by concluding that very few women were knowledgeable on the availability of screening services for this deadly disease (Dim et al, 2003). A study conducted in Rift valley, Kenya on awareness and acceptability of cacx screening did not agree with this study as it indicated that women have got no access to information and they believed they were not at risk for the disease( Were and Buziba, 2001).

According to the findings of this study, most women were aware of the predisposing factors to Cacx which should therefore promote uptake of the service though not the case at the moment. This contravenes a study that indicated that most women do not perceive themselves as at risk for the disease (Huchko et al, 2011). It also elicited a fact that most women had never heard of the available treatment options nor of the interventions being put in place by the government to help curb deadly disease. This is consistent to a study conducted in Kayole that most women had never heard of availability of treatment
options for cervical cancer while those who had heard about it were not ready to take up the treatment option as they all knew cancer is a terminal illness (Kihara, 2009).

In general, knowledge levels on uptake of CCSS in Dagoretti is high, a factor that should ideally increase demand for the service but not the case in Dagoretti. This agrees with a study conducted at Kenyatta National Hospital that stated that there seemed to be a wide body of knowledge on cervical cancer but has no impact on uptake, (Gichangi, 2003).

5.1.2 Association between level of knowledge and uptake of CCSS

The overall level of knowledge in Dagoretti Sub County on CCSS is good and majority of the respondents reported to have a good access to information on Cacx screening options and predisposing factors though little is known on available treatment options. This contradicts the findings of a study that stated that most women are not aware of the available CCSS and their importance even though they are already on antiretroviral therapy, (Franceschi et al, 2007). It also contradicts the findings of a crosssectional study conducted in Nigeria that stated that a very small proportion of respondents were aware of availability of these services and therefore very few had used it, (Dim et al, 2003). Although the level of knowledge in this study seems to be high, uptake of the service remains low, that as indicated in the findings of this study, of the 306 respondents who were interviewed, 220 were classified as having good knowledge levels on CCSS having been interviewed on information access, predisposing factors, screening procedures, treatment options and G.O.K interventions to ensure availability of the service. However, only 57 women had screened for the disease. This contradicts with a study conducted in Kasarani amongst teachers whose findings indicated a crude association between awareness and uptake of the service (Kihara et al, 2009).
There is a contradiction on what is actually happening in CCC facilities as opposed to what is stipulated in the cervical cancer national guidelines. Out of the 57 women already screened for disease, only 5% (3 respondents) had screened more than three times for the disease. Following the guideline, HIV positive women are meant to screen for the disease at least twice in the first year of diagnosis, and thereafter once every year to ensure disease is curbed in its early stages, (National Cancer Screening Manual, 2012). This means that even though raising the level of awareness has a positive correlation to uptake of the aforesaid service, there are other underlying factors that need to be addressed in order to increase uptake as pointed out by the Kenya medical Research Institute report of 2011 (Huchko et al, 2011). Another study conducted in Nigeria is consistent with this study as it concluded that most women were aware of cervical cancer, predisposing factor, screening options and treatment options but uptake of the service remains low (Olayinka, 2003). These concurring outcomes suggest that even though the level of knowledge greatly influences the uptake of CCS services, there seems to be other underlying promoters and barriers to uptake of this service.

5.1.3 Social demographic and economic factors affecting uptake of CCSS

Most women who had undertaken CCSS in Dagoretti Sub County were those aged above 45 years. This agrees with a study conducted in Nigeria that concluded that age had differing effects on demand for health care, median age for cervical cancer screening being 40_50 years (Ezechi et al, 2009). In this study, those respondents who had acquired primary education or no education at all had low likelihood of being screened for disease. This is consistent with a study that concluded that education increases the uptake of preventive care for several reasons, because better educated individuals have a higher efficiency in the production of health and education as well imparts self-efficacy,
confidence, motivation, patience and social inclusion, in search for health interventions, (Sabates et al, 2006).

It is also clear that women in formal employment were more likely to uptake CCSS as opposed to unemployed or those who were housewives. The question of affordability of the service arises and as to whether they do take up the service as a job recommendation. This concurs with a study conducted at Kenyatta National Hospital in 2009 that stated women who were employed had a greater interest in procuring CCSS (Kihara et al, 2009).

In this study, women who had reported that their current sexual partners were circumcised had a higher knowledge level and therefore uptake for the service. This contradicts the findings of a study conducted in Nigeria on willingness for CCSS that indicated that this factor was totally insignificant on uptake (Ezechi et al, 2009). Most of the respondents went for the test only because it was a doctor’s recommendation. This was in line with the findings of a study conducted at KNH that came up with the same findings, (Kihara et al, 2009). Most women in this study reported they had not been screened for Cacx for fear of undressing before a health care provider, or fear of having the disease. This is consistent with a study conducted in Jamaica that had similar findings that some of the barriers to screening were identified as fear that their health provider would find cervical cancer as the result of a Pap smear, and nearly half revealed that they feared the pain of a Pap test (Bessler et al, 2005). The rate of married women screening is also high in this population contributing to the reasonable number of women who go for screening. This is in agreement with a statement that females with partners will be more likely to participate in prevention activities because partners will take care of each other in ensuring that either receives the best medical care, (Rodvall et al, 2005).
5.1.4 Health facilities with CCSS promoters in Dagoretti

CCSS activities are solely conducted in health facilities or at outreach centers in this country. This arouses an expectation that since there has been an effort of integrating CCS into routine care of HIV positive women through the introduction of the ‘see and treat strategy’, then our CCC facilities ought to be well equipped to deliver this service. Contrary to this, the findings of this study state that facilities in Dagoretti still have a long way to go so as to meet the ideal requirements as stated by the national guidelines on CCS. Although this study concluded that more equipped facilities (Coptic hope Centre and Mbagathi District Hospital) had higher levels of uptake, the standards required were not met by either of the facilities. Most of these facilities had only one staff trained on CCS, with only one functional cryotherapy machine situated at Mbagathi County Hospital, Coptic, Mbagathi and Riruta are classified in tier 3 and are therefore expected to have functional cryotherapy machines in place. A facility like Mutuini Health center has a CCC running with one staff already trained on service provision but is not in a position to give services except just one outreach activity conducted by Riruta staffs. There is no clear referral system in tier 2 facilities that is Mutuini, Ngong Road and Waithaka facilities. This warrants the type of care granted to those patients who would turn out positive for disease at the point of diagnosis. Most of the facilities reported they would refer to KNH in case of a positive lesion. This only means that the see and treat strategy put in place by the government is yet to pick up. These findings are in line with what has been outlined in the previous National Cervical Cancer Prevention Strategic Plan (2002 -2006); implementation of the national screening program is still low and haphazard. Cervical cancer screening occurs, but only in a few selected sites and in disjointed projects rather than a fully-fledged national-level program. This explains why
screening coverage is still negligible. Furthermore there is lack of additional diagnostic and treatment options at the secondary levels of care. Additionally, the link between screening and treatment has been dysfunctional. This augurs poorly especially for HIV positive women who tend to have larger lesions and more aggressive disease.

The findings of this study in Dagoretti also concluded that health facility CCSS promoters influence the uptake among HIV positive women as shown by the numbers of women screened per facility. Mbagathi leads with the highest percentage of promoters (35%) and is reported to have screened the highest number of HIV positive women 34(60%). Although the highest percentage learns about screening from social media, a significant number of respondents get information from health care caregivers in the facilities they attend. Fliers at the facilities have a low impact and this is in line with what has been put down before, that despite the existence of a previous National Cervical Cancer screening strategy plan implementation of the national screening program is still low and haphazard.

5.2 Conclusion

1) The overall knowledge level on CCSS is high in this region with social media (radio/TV/brochures/newspapers/magazines) being a leading platform in knowledge empowerment.

2) There is a positive association between knowledge levels and uptake of the service among this study population but despite knowledge being good, uptake remains quite low. This has been associated with other factors such as patients’ perception towards the procedure, doctors not following the protocol to refer patients for the service and other health facility factors that tend to hinder uptake.
3) Majority of respondents attending care in Dagoretti CCC had a low uptake of CCSS with most of those who took the service being over 45 years, in a formal employment and those who were highly educated.

4) Health facilities within Dagoretti had CCSS promoters with Mbagathi and Coptic leading tier 3 at 35% while Ngong Road health center leading tier 2 at 40%. Facilities that have got many promoters have the highest level of screened participants for Cacx.

5.3 Recommendations

1) From the findings and conclusions of the study, recommendations are made to the national government through the ministry of health to improve other methods of creating CCS awareness other than social media. More effective fliers, with more pictures are more appealing to individuals and can say more words than literature. This should be standardized across all facilities. More advertisement and information to be placed on social media since it has the largest impact in impacting knowledge on Cacx.

2) The study further recommends that the county government of Nairobi through the county’s health docket organize for more health education through seminars in all health facilities with CCCs and in the community to help all HIV positive women understand the need to get CCS and alleviate fears surrounding Cacx.

3) Standard operating procedures should be put in place by the Ministry of Health at both County and national level to ensure that doctors appeal to more HIV positive women to take up the service since most women attend services because the doctor has recommended so. There should also be male partner involvement in screening and treatment of Cacx.
4) The Ministry of Health and other partners involved in HIV care should ensure that facilities with CCCs have more equipment of treatment and more staffs trained on the same so as to improve facility promoters of CCS. More trained counselors should be placed in clinics to educate women on predisposing factors and to cancel on misconceptions that the population has on CCS.

5.4 Recommendations for further research

1. A study on Cacx knowledge empowerment should be conducted to ascertain how well knowledge empowerment impacts on uptake among the at risk groups.

2. A study should also be conducted on the effect of male partner involvement in cervical cancer screening to see whether it will have some positive influence on the uptake of this service among the at risk group.
REFERENCES


Huchko MJ, Bukusi EA, Oyanga A, Cohen CV (2011), Detection and Treatment of cervical Dysplasia Among Women Attending an HIV Care and Treatment Center in Western Kenya. *KEMRI CCSP Safety and validation Trial vol 2.2*

Kitchenner HC and Castle PE, (2006), Achievements and Limitations of Cervical Cytology Screening; *Cox Journal of Vaccine*, vol 31;24 supplement 3: 53/63-70


Nairobi Cancer Registry, (October, 2006).


APPENDICES

Appendix I: Map of study area
Appendix II: The Interview Guide

1. Name of facility (tick one that is most appropriate)

   ( ) Coptic hope center ( ) Mbagathi district hospital ( ) Riruta Satellite health center
   ( ) Waithaka health center ( ) Ngong road health center ( ) Mutuiini health center

2. When were you born? Year ………….. Month ……… Day……

3. How old are you now?

   ………………………………………………………………………..

4. What is the highest education level you completed (Tick one that is most appropriate)

   None [ ] Primary [ ] secondary [ ] higher education [ ] doesn’t know [ ]

5. What is your marital status? (Tick one that is most appropriate)

   Married (monogamy) [ ]
   Married (polygamy) [ ]
   Divorced/separated [ ]
   Cohabiting [ ]
   Single [ ]

6. How old were you when you had your first vaginal intercourse? (Tick one)

   >15 years [ ]
   15-20 years [ ]
   20-25 years [ ]
   25-30 years [ ]

7. How many sex partners have you ever had in your life?
8. Is your current sex partner circumcised?  
Yes ☐ No ☐

9. How many times have you been pregnant?
   Once ☐
   Twice ☐
   Thrice ☐
   More than thrice ☐

10. How many live births have you had?
    One ☐
    Two ☐
    Three ☐
    More than three ☐

11. What is your type of employment? (Tick one that applies)
    Self–employed ☐
    Casual worker ☐
    Housewife ☐
    Salaried ☐
    Unemployed ☐
12. What is your household income per month?

- Less than 5000
- Between 5,001 - 10,000
- Between 10,001 - 15,000
- Over 15000

13. Have you ever heard, read or watched information on cervical cancer screening?

- Yes
- No

14. If yes, where from? (Tick all that apply)

- Television
- Radio
- Newspapers
- Magazines
- Healthy facilities fliers
- Posters/billboards
- Health talks by health care providers
- Message by attending clinician

15. Have you ever come across any information, education and communication materials on cervical cancer screening within this facility?  

- Yes
- No

16. What type of information was this?

- Brochure
- Health talks
- Information from care giver
- Facility’s television
17. What predisposing factors to cervical cancer do you know?
   - HIV/AIDS
   - HPV infection
   - Early sex
   - Multiple sex partners
   - Sex with uncircumcised male
   - Unprotected sex
   - Smoking

18. What cervical cancer screening procedures do you know?
   - Pap smear
   - VIA/VILLI
   - HPA/DNA testing
   - Colposcopy biopsy

19. What cervical cancer treatment options do you know?
   - Cold knife conization
   - Cry therapy
   - LEEP
   - Total hysterectomy

20. Have you ever been screened for cervical cancer?  Yes [ ]  No [ ]
21. If yes, where did you screen?

In this facility……………………………………………………………………

In another facility………………………………………………………………

22. Why did you screen?

- Doctor’s recommendation
- Television/ radio/ magazines/ brochures
- Relative/ friend recommendation
- Attend health workshop/ outreach
- Counselors at the clinic
- It’s a standard care at clinic

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

24. If never, why haven’t you screened for cervical cancer?

- Fear that I have the disease
- Lack of money/ expensive
- Lack of information on where to go for the first test
- Lack of CCS in the hospital
- Fear of undressing before a health care worker
- It’s a painful procedure
- Refused to answer

25. Are you willing to screen for cervical cancer today?  Yes  No

26. If yes, why are you screening today?

- Doctor’s recommendation
Television/ radio/ magazines/ brochures
Relative/ friend
Attended health workshop/ outreach
Counselors at the clinic
It’s a standard care at clinic

27. If No, why are you not willing?
Fear that I have the disease
Lack of money/ expensive
Lack of information before a health care worker.
Lack of CCS in the hospital
Fear of undressing before a health care worker
It’s a painful procedure
Lack of time
Refused to answer

28. Are there any measures that you are aware that the government is putting in place to help women living with HIV take up cervical cancer screening? (Tick all that apply.)
Health education
Training staffs on service provision
Introduction of see and treat strategy
Funding cervical cancer related services
Awareness creation through media

.....................#END
Appendix III: Informed Consent Form

Dear Participant,

My name is Judith Lukorito. I am carrying out a research on the uptake of cervical cancer screening services among HIV positive women in Dagoretti District, Nairobi County. This research is a requirement in partial fulfillment for the award of Masters of Public health at Kenyatta University.

You are kindly requested to voluntarily participate in this study by answering questions read to you by the interviewer. The information given will be kept confidential. No names will be used to identify you. There are no monetary or financial benefits for your participation in this study. However, the information gathered will help enhance uptake of cervical cancer screening services among HIV positive women in Kenya.

Aside from time taken to participate in the interview (about 15 minutes), no other risks are foreseen. You are free to opt out of this study at any stage without any penalty. In case you have any further questions about this study do not hesitate to contact me on phone number 0729385089. In case you feel your ethical rights have been violated, feel free to conduct the Kenyatta University Research Ethics Committee Chairman, Professor Nicholas Gikonyo on 0722763186.

To take part in this study, you must be a HIV positive woman, aged 18 to 65, and receiving anti-retroviral care in a facility within Dagoretti district.

CONSENT

I have read and understood this consent form and I volunteer to participate in this research study.

Participant

Signature:…………………………………Date…………………………………
Appendix IV: Observation Checklist

NAME OF FACILITY (tick one that is most appropriate)

( ) Coptic hope center ( ) Mbagathi district hospital ( ) Riruta Satellite Health Centre
( ) Waithaka Health Centre ( ) Ngong road health center ( ) Mutuini health center

NUMBER OF ACTIVE HIV POSITIVE WOMEN……………………………..

<table>
<thead>
<tr>
<th>NO</th>
<th>ITEM TO BE OBSERVED</th>
<th>YES</th>
<th>NO</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Are there staffs in this facility trained on cervical cancer screening?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td>Are there any Information, Education and Communication (I.E.C) materials on CCS?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>Is there a CCS counseling program me in place in this facility?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td>Is there any time allocated for CCS on the service charter of this facility?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td>Is there a specific room within this facility for CCS?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6.</td>
<td>Is the room equipped with</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>An examination couch</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Speculums</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Acetic acid or Lugols solution</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Slides and cervix brushes</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Functional cryotherapy machine</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>An examination lamp/touch</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7.</td>
<td>Is there a clear referral system for the patients?</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Appendix V: NACOSTI Permit

THIS IS TO CERTIFY THAT:

MS. JUDITH NASAMBU LUKORITO
of KENYATTA UNIVERSITY, 0-100
NAIROBI, has been permitted to conduct
research in Nairobi County
on the topic: UPTAKE OF CERVICAL
CANCER SCREENING SERVICES AMONG
HIV POSITIVE WOMEN IN DAGORETTI,
NAIROBI COUNTY,
for the period ending:
3rd - November, 2014

Applicant’s Signature

Secretary

National Commission for Science,
Technology & Innovation
Appendix VI: KU Research Ethics permit

KENYATTA UNIVERSITY
ETHICS REVIEW COMMITTEE

Email: chairman.kueric@kuku.ac.ke
secretary.kueric@kuku.ac.ke
enquiries.kueric@gmail.com
Website: www.ku.ac.ke

P. O. Box 43644 - 00100 Nairobi
Tel: 8710901/12
Fax: 8711242/8711575

Our Ref: KU/R/COMM/51/425

Date: 10th March, 2015

Lukorito Judith Nasambu
Kenyatta University
P.O. Box 43644 -00100, Nairobi.

Dear Lukorito,

APPLICATION NUMBER PKU/274/1280 - “UPTAKE OF CERVICAL CANCER SCREENING SERVICES AMONG HIV POSITIVE WOMEN IN DAGORETI SUB COUNTY, NAIROBI, KENYA”

1. IDENTIFICATION OF PROTOCOL

The application before the committee is with a research topic, “Uptake Of Cervical Cancer Screening Services Among HIV Positive Women In Dagoreti Sub County, Nairobi, Kenya,” discussed on November 18th 2014.

2. APPLICANT

Lukorito Judith Nasambu

3. SITE

Dagoreti Sub-County Nairobi, Kenya

4. DECISION

The committee has considered the research protocol in accordance with the Kenyatta University Research Policy (section 7.2.1.3) and the Kenyatta University Ethics Review Committee Guidelines AND APPROVED that the research may proceed for a period of ONE year from 10th March 2015.

5. ADVICE/CONDITIONS

i. Progress reports are submitted to the KU-ERC every six months and a full report is submitted at the end of the study.

ii. Serious and unexpected adverse events related to the conduct of the study are reported to this board immediately they occur.

iii. Notify the Kenyatta University Ethics Committee of any amendments to the protocol.

iv. Submit an electronic copy of the protocol to KUERC.

When replying, kindly quote the application number above.

If you accept the decision reached and advice and conditions given please sign in the space provided below and return to KU-ERC a copy of the letter.

PROF. NICHOLAS K. GIKONYO
CHAIRMAN ETHICS REVIEW COMMITTEE

1. ...accept the advice given and will fulfill the conditions therein.

Signature.......................... Dated this day of .......................... 2015.

cc. Vice-Chancellor