UTILIZATION OF THE VISUAL INSPECTION SCREENING METHOD FOR CANCER OF THE CERVIX IN KITUI CENTRAL SUBCOUNTY, KENYA

By

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NOVEMBER 2015
DECLARATION

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

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DEDICATION

To my loving mother Freshia Wambui Mwangi for always being there in my education journey and teaching me the value of discipline, humility and hard work.
ACKNOWLEDGEMENT

First I thank God for giving me the strength and wisdom during my study. I sincerely thank my supervisors Prof. Ephantus W Kabiru and Dr. Albert G. Gachau both of Kenyatta University for their professional guidance and tireless effort to assist me during the course of my study. I'm also very glad to Kenya Medical Training College Board of management for partially funding my study and giving me time to finish the course work. My appreciation goes to the Ministry of Education through National Council for Science and Technology and Kitui District Medical Officer of Health for granting me the permission to carry out the research in the various public health facilities. I'm very grateful to members of Kenya Registered Community Health Nursing March 2010 class at Kenya Medical Training College Kitui Campus who served as my research assistants during data collection. Also I’m very thankful to the staff members at Kitui Sub County Hospital Maternal Child Health / Family Planning Clinic, Miambani, Mbitini and Kisasi Health Centres. A lot of thanks go to friends and classmates for their support and encouragement during the course of my study. Finally I can't forget to appreciate my respondents who were very cooperative when answering questions during the study, may God bless you all.
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DEFINITION OF OPERATIONAL TERMS

**Family planning clinic:** A clinic offering health education and services related to birth control, child spacing preconception counseling and infertility management.

**Maternal Child Health Clinic:** A clinic offering mother and/or child health services including immunization, weighing treatment of childhood diseases and antenatal services

**Screening coverage:** extent or degree into which women have been screened in terms of numbers or percentage in a given locality

**Screening services Utilization:** Use of available screening methods for cancer of the cervix

**Single visit approach:** Screening for cancer of the cervix, providing results, treating or referring in a single visit.

**Supportive supervision:** Use of constructive feedback and dialogue to assist staff offering cancer of the cervix screening services

**Visual inspection screening methods:** These are methods used to visualize the cervix to search for macroscopic lesions on the cervix when it have been smeared with acetic acid or lugol iodine

**Women of Reproductive age:** Women between the ages of 15 years to 49 years.
# ABBREVIATIONS AND ACRONYMS

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
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<tbody>
<tr>
<td>ACCP</td>
<td>Alliance for Cancer of the cervix Prevention</td>
</tr>
<tr>
<td>ACOG</td>
<td>American College of Obstetricians and Gynecologists</td>
</tr>
<tr>
<td>AIDS</td>
<td>Acquired Immunodeficiency Virus</td>
</tr>
<tr>
<td>ART</td>
<td>Anti-retroviral treatment</td>
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<tr>
<td>CIN</td>
<td>Cervical intraepithelial neoplasia</td>
</tr>
<tr>
<td>CPIS</td>
<td>Cervical Preconcert Information System</td>
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<tr>
<td>DNA</td>
<td>Deoxyribonucleic acid</td>
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<tr>
<td>GLOBOCAN</td>
<td>Global Cancer</td>
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<tr>
<td>HIV</td>
<td>Human Immunodeficiency Virus</td>
</tr>
<tr>
<td>HMIS</td>
<td>Health Management Information System</td>
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<tr>
<td>HPV</td>
<td>Human Papilloma Virus</td>
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<tr>
<td>HSIL</td>
<td>High-grade squamous intraepithelial lesion</td>
</tr>
<tr>
<td>IARC</td>
<td>International Agency for Research on Cancer</td>
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<tr>
<td>ICO</td>
<td>Institute Catalan’ d’Oncologia</td>
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<tr>
<td>KEBS</td>
<td>Kenya Bureau of Standard</td>
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<tr>
<td>KDH</td>
<td>Kitui Sub County Hospital</td>
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<tr>
<td>LBC</td>
<td>Liquid Based Cytology</td>
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<tr>
<td>LEEP</td>
<td>Loop electrosurgical excision procedure</td>
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<td>LSIL</td>
<td>Low-grade squamous intraepithelial lesion</td>
</tr>
<tr>
<td>MoH</td>
<td>Ministry of Health</td>
</tr>
<tr>
<td>MoMS</td>
<td>Ministry of Medical Services</td>
</tr>
<tr>
<td>NIAID</td>
<td>National Institute of Allergy and Infectious Disease</td>
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<tr>
<td>NHSSP</td>
<td>National Health Sector Strategic Plan.</td>
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<tr>
<td>PAHO</td>
<td>Pan American Health Organization</td>
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<tr>
<td>PATH</td>
<td>Program for Appropriate Technology in Health</td>
</tr>
<tr>
<td>PGH</td>
<td>Provincial General Hospital</td>
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<tr>
<td>Acronym</td>
<td>Full Form</td>
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<tr>
<td>RTOCG</td>
<td>Royal Thai College of Obstetricians and Gynecologists.</td>
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<tr>
<td>SOGC</td>
<td>Society of Obstetricians and Gynecologists of Canada</td>
</tr>
<tr>
<td>STIs</td>
<td>Sexually Transmitted Infections</td>
</tr>
<tr>
<td>SVA</td>
<td>Single Visit Approach</td>
</tr>
<tr>
<td>VIA/VILI</td>
<td>Visual Inspection with Acetic acid /Visual Inspection with Lugols Iodine</td>
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<tr>
<td>VIAM</td>
<td>Visual Inspection with Acetic acid with Magnification</td>
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<tr>
<td>WHO</td>
<td>World Health Organization</td>
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<td>WKCCPP</td>
<td>Western Kenya Cancer of the cervix Prevention Program</td>
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ABSTRACT
Cancer of the cervix is a disease of public health importance with a high global morbidity and mortality. More than 266,000 women die every year, 87% of these women coming from low and middle-income countries, where programmes for screening and treatment are deficient or underutilized. The Ministry of Health through the Division of Reproductive Health launched the National Cancer of the cervix Prevention Program, action plan 2005-2009 with the main aim of reducing cancer of the cervix mortality rates. Despite the program being rolled out and services being availed, they remain underutilized and cancer of the cervix mortality remain relatively high in Kenya. This study aimed at establishing the factors influencing utilization of the visual inspection method of cancer of the cervix screening services in Kitui Central Sub county. It assessed the respondents level of awareness about cancer of the cervix prevention, their social demographic, social economic, social cultural characteristics and health care facilities factors as the variables associated with utilization of the availed cervical screening tests. A cross-sectional study design was used. A sample of 370 women of reproductive age attending MCH/FP clinic in public health facilities in the study area were systematically randomly selected and exit interview was the main data collection technique. Key informants were interviewed and facilities readiness to offer screening services was assessed using facility survey checklist. Analysis and Processing of data was computed using Statistical Package SPSS (Version 20). Key informants were also interviewed. The level of awareness on cancer of the cervix prevention among eligible clients in study area was low, 53.8% (n=199) compared to the national target of more than 90% while the prevalence of utilization of VIA/VILI services was also low, 14.9% against the recommended coverage rate of 70% for the programme to have an impact. There was statistical significant association between utilization of VIA/VILI cancer of the cervix screening services and Awareness on cancer of the cervix and its prevention (OR 3.0675 p=0.000), level of education ($\chi^2=21.728, df=3, p=0.000$), main source of income ($\chi^2=15.030, df=2, p=0.01$), average monthly income ($\chi^2=27.942, df=4, p=0.0001$), main decision maker in the family ($\chi^2=6.908, df=2, p=0.032$). Public Health facilities were not well staffed and equipped to adequately offer the VIA/VILI screening services effectively. From this study, strategies should be put into place to increase awareness on available methods of screening and importance of being screened for cancer of the cervix among eligible women, Communities should empower women educationally and economically and the County Government should provide public health facilities with adequate human and material resources for cervical screening purpose and together with National Government increase health care provider knowledge and skills.
CHAPTER ONE INTRODUCTION

1.1 Background information
Cancer of the cervix is the fourth commonest cancer in women and the seventh overall, with estimated 528,000 new cases every year (GLOBOCAN, 2012). Around 85% of the global burden occurs in the developing regions where it accounts for almost 12% of all female cancers. (WHO, 2013). Cancer of the cervix remains the most common cancer in women in Eastern Africa and Central Africa. There was an estimated 266,000 deaths from cancer of the cervix worldwide in 2012, accounting for 7.5% of all female cancer deaths. The mortality is high where the programmes for screening and treatment are deficient or underutilized (WHO, 2010). Cancer of the cervix affects the younger age group (less than 25 years) as a result of early sexual activity, multiple sexual partners and history of sexually transmitted diseases mainly linked with HPV (WHO/ICO, 2010).

In Kenya and most other developing countries, (Tanzania having the highest mortality rates in East and central Africa). Cancer of the cervix is killing more women than any other cancer. This is a huge burden to the women, their families, their communities, and their health care systems especially in poor, rural areas (Sellors et al, 2004). 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% for all the cancer cases (MoPHS/MoMS 2012).

One way to prevent cancer of the cervix is through screening and early management programmes. Cancer of the cervix screening and management are justified based on the principles of public health screening. Slow progression of precancerous lesions to cancer of the cervix provides a window of 10 years or more to detect and manage the lesions, therefore preventing their progression to invasive cancer. It is possible to implement effective cancer of the cervix prevention programs in low-resource settings. The program should aim to achieve high screening coverage (more than 70%), offers an effective and acceptable test, and ensure appropriate management for test-positive women (ACCP, 2004).
Several screening tests are currently available for detecting pre-invasive cervical lesions. The most commonly used method is cytology based, which detects cellular changes by directly examining a sample of desquamated cells taken from the cervix; this method includes conventional Pap smear, and liquid-based cytology. Another more recent, option is to screen for the presence Human Papilloma Virus (HPV) sero types associated with cancer of the cervix in a sample of cells taken from the cervix or the vagina. Several tests are available which identify HPV DNA. A third approach is to search visually for a macroscopic lesion on the cervix; VIA, VIAM, cervicography, speculoscopy and VILI are included in this category. Pap smear remains the recommended test because of its high specificity but its limitations are applicability in low resource settings.

A positive result from any of these techniques indicates a raised risk of developing cancer of the cervix, and a number of diagnostic tests can be used to confirm the presence of disease. Colposcopy is the most commonly used confirmatory exam, followed by histology when lesions are identified. Visual inspection with acetate (VIA), also called cervicography entails naked-eye visualization of the uterine cervix after smearing it with diluted acetate, to screen for cervical abnormalities. A solution of 3% to 5% acetate is required, and the cervix is illuminated with a good source of light. VIA with magnification (VIAM) is when low power magnification is used. The same process can be done by use of Lugol iodine instead of acetic acid (VILI). (PAHO, 2003).

1.2 Problem statement

Cancer of the cervix accounts for almost 12% of all female cancers worldwide. High-risk regions, with estimated age standardized rates over 30 per 100,000 women, include Eastern Africa (42.7), Melanesia (33.3), Southern (31.5) and Central Africa (30.6). Rates are lowest in Australia/New Zealand (5.5) and Western Asia (4.4). Cancer of the cervix remains the most common cancer in women in Eastern and Middle Africa (GLOBOCAN, 2012).

New estimates of worldwide and regional cancer incidence and mortality published by the World Health Organization in the GLOBOCAN 2012 report confirm the prediction
that the numbers for cancer of the cervix would continue to rise, especially in developing countries. The estimated annual incidence in the less-developed countries of the world is now more than 450,000 and the mortality more than 250,000. It is predicted that by the year 2030, 98% of cancer of the cervix deaths will be in developing countries (GLOBOCAN, 2012).

In Kenya, women at risk for cancer of the cervix (Female population aged >=15 yrs) are 10.32 million while annual number of cancer of the cervix cases is 4,802 women. Annual number of cancer of the cervix deaths is 2,451 women while without intervention projected number of new cancer of the cervix cases in 2025 is 7,933 women. Projected number of cancer of the cervix deaths in year 2025 is 4,063 women. Crude incidence rates per 100,000 populations per year for Cancer of the cervix is 12.7% (WHO/ICO, 2010). Data form Kitui Sub County Hospital gynecological ward shows that there are at least two cases of confirmed cancer of the cervix lesions every month in women between the ages of 20 to 50 years.

In developing countries less than 10% of women are screened for cancer of the cervix annually. In most cases the services for screening and treatment are deficient and areas where they are availed they are grossly underutilized (WHO/ICO, 2010). In Kenya like any other developing country, majority of women present with advanced/invasive disease (MOH, 2007).

The visual inspection methods for cancer of the cervix screening were incepted in 2005 and services were offered from 2007 in selected districts in Kenya (MOH, 2007). Kitui Central Sub County started offering the services in 2009. Up to now (2013) the coverage is less than 15% among eligible clients against the national target of 70% (Kitui Hospital Based registry, 2012). National cancers of the cervix prevention program in which visual inspection tests are being implemented have not been reviewed and there is limited official documentation on the program processes since its inception in 2005. In Kitui Central Sub county progress of the programme has never been reviewed nor evaluated.
1.3 Study justification

Since most women present with symptoms when the cancer of the cervix has advanced or in late stages of the disease, early detection of cells abnormalities through cervical screening becomes imperative for good prognosis (GLOBOCAN, 2012). Incidence rates of cancer of the cervix in developed countries have declined significantly due to organized Pap smear screening programs, linked with access to effective treatment (Gakidou et al, 2008). In addition, reduced parity and access to health care in general have played important roles in reducing the risk of cancer of the cervix. Even in developed countries, communities with the highest rates of cancer of the cervix are often ethnic minorities or the poorest. The knowledge and technology to reduce this gap are now available and should be implemented (GLOBOCAN, 2012). Visual inspection methods of cancer of the cervix screening have been introduced in low resource settings and have been proved to be effective (WHO, 2006). Hospital based registries in Kitui Sub County Hospital showed that between the year 2010 and 2011 at least two women were diagnosed with cancer of the cervix each month. The mortality rate was lower because the patient was referred to higher level hospitals for intensive therapy. The hospital based records also showed low screening rates of cancer of the cervix among eligible women. A research was required to establish why even when the services were provided or assumed to be availed eligible women were not utilizing the services. The study aimed at establishing factors that affects utilization of the visual screening method for cancer of the cervix in the study area as it has been found to reduce cancer of the cervix mortality and morbidity rates in other countries. The result of this study can be used for guidelines and strategies for program managers and policy makers in the process of implementing services aimed at reducing cancer of the cervix mobility and mortality.
1.4 Research questions

What are the factors that determine the utilization of visual inspection method of cancer of the cervix screening in Kitui Central Sub County?

1.5 Null hypothesis

1. The level of awareness on visual inspection screening method for cancer of the cervix and social factors do not influence the utilization of the service in Kitui Central Sub County

2. The health care facility and provider factors do not influence utilization of visual inspection method of cancer of the cervix screening in Kitui Central Sub County

1.6 Objectives

1.6.1 Broad objectives

To establish factors influencing utilization of visual inspection method of cancer of the cervix screening in Kitui Central Sub county.

1.6.2 Specific objectives

1) To establish the level of awareness on cancer of the cervix prevention among eligible clients in Kitui Central Sub county.

2) To determine the socio-demographic, and socio-cultural factors that influences the utilization of the visual inspection screening services for cancer of the cervix in Kitui Central Sub county.

3) To establish the health care facilities factors that influences the utilization of the visual inspection screening services for cancer of the cervix in Kitui Central Sub County.

1.7 Significance and anticipated output

The findings from this study can provide information and insights on implementation process of the VIA/VILI screening methods in the context of the national cancer of the cervix prevention program which will in turn be used by policy makers and program managers to devise strategies for improving the quality of services in cancer of the cervix control and prevention.
1.8 Limitations and delimitations

1.8.1 Limitations
Language and culture restriction was a challenge as some of the questions referred to organs in the body that respondents were uncomfortable with.

1.8.2 Delimitations
Research assistants were mainly from the local community and were able to assist respondents on questions that seemed embarrassing and also privacy and confidentiality was upheld throughout the research process.

1.9 Conceptual Framework

There are social demographic, social economic and social cultural characteristics that affect a woman decision to utilize or not to utilize the availed cancer of the cervix screening services. The demographic characteristics include the woman's age, education level, marital status, religion and others. Social economic characteristics include source of income (economic activities), average monthly income, and main income earner in the family (main bread winner). Social cultural characteristics include the individual perception about cancer of the cervix as a disease, main decision maker in the family on health related issues. The way the health care system is organized will also affect the delivery of the health services including VIA/VILI screening method and treatment using cryotherapy. If the facility is relatively far from the client and/or the infrastructure and material supplies are not adequate services will not be offered and utilized well. Health care providers who are available well trained and have the right attitude will also enhance utilization of the screening services. The single visit approach (SVA) is a strategy where a woman is screened and if the test is positive treated the same day at the facility. This reduces loss of follow up and results and management are prompt. Health care system organization is greatly influenced by government commitment, policy guidelines and where possible donor support. For the awareness to increase regarding cancer of the cervix and its prevention community where the eligible women live have to be sensitized through participation and involvement. The intended output of any cancer of the cervix prevention programme is to increase the women awareness and knowledge on cancer of the cervix and its prevention methods, increase the satisfaction
level on the screening methods and increase the coverage of the screening services. (Figure 1.1). The outcome is increase in utilization of cancer of the cervix screening services while the impact will be reduction of cancer of the cervix mortality.

**Figure 1.1 Conceptual framework**

*Source: Constructed from literature*
CHAPTER TWO: LITERATURE REVIEW

2.1 Cancer of the cervix incidence and prevalence
Cancer of the cervix develops in the lining of the cervix, at the neck of the uterus. It usually develops over time (more than ten years). Normal cervical cells with time can undergo changes to become precancerous and then cancerous. The term used to describe these abnormal changes is cervical intraepithelial neoplasia (CIN). CIN is classified according to the level of cell abnormality. Low-grade CIN denotes a minimal change in the cells and high-grade CIN indicates a higher level of abnormality (WHO, 2006).

Cervical cancer is the second commonest cancer in women, Worldwide; around 450,000 cases of cancer of the cervix are diagnosed each year (Stanley J, 2011). Cancer of the cervix is the leading cause of cancer death among women in the developing world. It kills more people than any other cancer in Kenya and creates a heavy burden for women in the prime of life, their families, and the health care system. East Africa has the highest age-standardized rates (42.7 per 100,000 women) in the world. This is more than three folds the rates in North America and Europe where aggressive screening programs and prompt available management brought down cancer of the cervix incidence levels in 1960s and 1970s (Gakidou et al, 2008). Screening programs based on repeated cytology requires skilled technical personnel (cytotechnicians, obstetric and gynecogists, pathologists) to implement. For the positive results trained health workers and equipment are needed for precancer management (WHO, 2006). Kenya has made several efforts in the past decade to tackle this challenge, but the goal of a nationwide, sustainable and affordable program to control cancer of the cervix has remained elusive (MoH, 2007).

2.2 Cancer of the cervix causes and risk factors
Human Papilloma Virus (HPV) is associated with 99.7% of all cancer of the cervixs. Worldwide about 70% of all cases of cancer of the cervix are caused by Human Papilloma Virus sub type 16 and 18 (Munoz et al, 2002). Risk factors to Human
Papilloma Virus infection include the number of sexual partners, the sexual partner's number of previous sexual partners, immune system status and partner's circumcision status. Persistent, chronic infection with high-risk HPV has been recognized in the causation of cancer of the cervix. Furthermore, various studies have suggested that the progression to cancer of the cervix depends on several factors acting together with high-risk HPV infection. Some of the reported risk factors associated with HPV infection and cancer of the cervix include and not limited to: high parity, tobacco smoking, long-term use of oral contraceptives (WHO/IARC 2002) co-infection with HIV and other STIs – particularly Chlamydia trachomatis (Samoff E et al, 2005) and herpes simplex type 2, and immunosuppression. Human immunodeficiency virus (HIV) infection decreases the immune system's ability to fight infection (including HPV infection) and raises the probability that precancerous lesions will progress to cancer. Other factors associated with incidences of cancer of the cervix are history of sexually transmitted infections (STIs) and sexual intercourse at a young age (Stanley J, 2011).

2.3 Screening of cancer of the cervix
Cancer of the cervix screening and management are justified based on the principles of public health screening. Slow progression of precancerous lesions to cancer of the cervix provides a window of 10 years or more to detect and manage the lesions, therefore preventing their progression to invasive cancer. It is possible to implement effective cancer of the cervix prevention programs in low-resource settings. The program should aim to achieve high screening coverage (more than 70%), offers an effective and acceptable test, and ensure appropriate management for test-positive women (ACCP, 2004).

2.3.1 Types of cancer of the cervix screening tests
There are three main screening tests for cancer of the cervix that includes cytology based (liquid based cytology and Pap smear), Human Papilloma Virus (HPV) testing, and Visual inspection of the cervix method (VIA and VILI). Conventional cytology (Pap smear) entails a health provider taking a sample of cervical cells and examination by trained cytotechnicians in a laboratory. Liquid-based cytology (LBC), involves
obtaining a sample of cervical cells with a small brush, immerse them in special liquid, and sending them to a laboratory. In HPV DNA testing or Molecular testing for human papillomavirus (HPV), the provider or the woman herself takes a swab and sends the contents to a laboratory. It's very hard to avail these tests in low-resource settings. And therefore they are almost nonexistent. There are two main Visual methods, Visual inspection with acetate (VIA) or with Lugol’s iodine (VILI). A trained health care provider examines the cervix after staining it with acetate (VIA) or with iodine (VILI). The methods are safe, reliable, and valid and it is possible to avail them in low economic environments (WHO, 2006). the test should be done after every five years until the woman is 50 years of age, thence Pap smear or HPV tests used. The recommended age when using VIA screening are women between 25-49 years of age (primary target). Women under 25 years of age should only be screened when they have a high risk of cervical abnormalities (these includes women who have had multiple partners, early sexual exposure, are HIV positive or had previous abnormal screening results or CIN). VIA/VILI is not appropriate for women above 50 years. Those above this age should be screened at five-year intervals using Pap smear or HPV testing techniques (MOPHS/MOMS, 2012).

2.3.2 Assessing screening test qualities
A proper screening test should be safe i.e. no one should be hurt by it, Accurate in that the test provides a reasonable probability of differentiating disease from health (i.e., has an acceptable sensitivity and specificity). It should also be actionable i.e. test results can be acted upon immediately (no waiting for lab result analysis which may take relative long duration for some tests). The test should be affordable in a way that the testing program can be budgeted by the private and public sectors. Accessibility should be considered so that high coverage is possible even in hard-to-reach areas. The test should be widely available even at the lowest primary health care delivery points. Finally tests should be practical such that skills must be present at all levels of the health care delivery systems to perform, communicate, and monitor the test results (WHO, 2006).
2.3.3 Comparison of screening test qualities

For screening services to achieve high coverage (more than 70%) in low resource settings, certain criteria have to be achieved. These includes, safety (no harm to clients) high accuracy in terms of sensitivity and specificity, actionable in that test positive women should be assisted timely, affordable to clients, and health care systems, accessible (physically, and financially) and practical in that they can be provided by lower cadres of health care providers. Only VIA/VILI have all these attributes (Table 2.1)

<table>
<thead>
<tr>
<th>Potential alternatives to pap smears screening tests quality</th>
<th>VIA/VILI</th>
<th>Conventional cytology (Pap smear)</th>
<th>Liquid based cytology(LBC)</th>
<th>HPV DNA Testing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Safe</td>
<td>√</td>
<td>√</td>
<td>√</td>
<td>√</td>
</tr>
<tr>
<td>Accurate</td>
<td>√</td>
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</tr>
<tr>
<td>Actionable</td>
<td>√</td>
<td>×</td>
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<tr>
<td>Affordable</td>
<td>√</td>
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<tr>
<td>Accessible</td>
<td>√</td>
<td>×</td>
<td>×</td>
<td>√/×</td>
</tr>
<tr>
<td>Practical</td>
<td>√</td>
<td>×</td>
<td>×</td>
<td>×</td>
</tr>
</tbody>
</table>

Key √ = Yes ×= No (R Lu, 2009)

2.3.4 Cost-effectiveness of screening approaches

Cancer of the cervix screening approaches that involve conventional cytology and require more than one visits have been found to be impractical in low resource settings. To establish the cost-effectiveness of cancer of the cervix screening in five developing countries (Thailand, Peru, Kenya, South Africa and India), computer-based models were used to evaluate some cancer of the cervix screening approaches. The assessment
showed that the most cost-effective approach were those that required the fewest visits, and resulted in improved follow-up testing and management. This study concluded that, the alternatives to cytology based screening programmes in low resource settings are strategies that incorporate VIA or DNA testing for HPV in one or two clinical visits. (Goldie et al, 2005).

2.4 Cancer of the cervix treatment methods
One of the components in the comprehensive cancer of the cervix prevention and control programme is treatment/management. In many cases precancerous lesions can be managed in outpatient or clinic set up by use of relatively non invasive procedures. These treatment methods may be excisional (surgically removing abnormal tissues or ablative (destroying abnormal tissue by heating or freezing). The choice of treatment depends on the experience and training of the provider, the extent and location of the lesion, the cost and the advantage and disadvantage of each method.

Cryotherapy is a procedure that utilizes a highly cooled metal disc (cryoprobe) which is applied to the cervix, and freezes its surface using nitrous oxide or carbon dioxide gas. In resource-poor regions, cryotherapy is being recommended for use in the Single Visit Approach (SVA) to lower the number of clinic visits by women and thereby avoid loss to follow up and treatment. The lesions to be treated by cryotherapy should be located in the ecto-cervix, should be visible in its entire extent and do not extend more than 2 to 3mm into the canal. Loop Electrosurgical Excision Procedure (LEEP) is device that produces power and transmits it to a wire loop device that removes abnormal tissue. LEEP targets the lesion and the entire transformation zone. It should only be used for lesions extending into the endo cervical canal, the distal or cranial limit of the lesion is seen and there is no evidence of invasive cancer or glandular dysplasia. Cold knife conization is used for the lesion not extending into the endocervical canal and it's not possible to confirm the exact extent and also exceeds the excision capacity of the LEEP technique (WHO, 2006)... is a method where a scalpel is used to remove a cone-shaped area from the cervix, including portions of the outer and inner cervix the lesion should extend into the endocervical canal and it's not possible to confirm the exact extent and
also exceeds the excision capacity of the LEEP technique (WHO, 2006). Cervical cancer that has metastasized is usually treated with surgery, radiation, and chemotherapy. (Stanley J, 2011).

2.4.1 Cryotherapy: appropriateness for low-resource settings
Due to its relative simplicity in usage and maintenance, Cryotherapy is well suited for implementation in low-resource settings. It uses simple and relatively inexpensive equipment and training for its handlers takes just a few days. Cryotherapy does not require anesthesia or electricity, and complications and side effects are rare. For small lesions, it has a high cure rate (86% to 95%). However; cryotherapy is less effective for larger lesions, with cure rates of less than 80% at one year. In addition, cryotherapy does not provide a tissue sample for histological exam. This treatment method requires a sustained supply of nitrous oxide or carbon dioxide, and sometimes it leads to prolonged and profuse watery discharge (WHO, 2006).

2.4.2 Challenges with conventional treatment approaches
In developed countries, treatment of early cervical changes has shifted from use of surgery (e.g., cone biopsy and hysterectomy), to less invasive, but equally effective outpatient interventions (e.g., electrocautery, freezing, cold coagulation and laser vaporization). Although still used in limited circumstances, these inpatient surgical procedures are expensive and often result in over treatment. In addition, these conventional treatment approaches can be associated with serious complications (e.g., hemorrhage and infection) and require use of significant resources for anesthesia, equipment, and hospitalization for recovery (WHO, 2006).

2.5 Single Visit Approach
The single visit approach (SVA) combines screening for cancer of the cervix using visual inspection of the cervix with acetate (VIA) and provides results, referral, and/or treatment with cryotherapy in a single visit. When implemented correctly SVA is safe for testing and treating women at Sub County Hospitals and in primary health care facilities, acceptable to both patients and providers, feasible as well as cost-effective for
use in low-resource settings. This approach reduces loss to follow up and increases screening coverage (RTCOG/Jhpiego, 2003).

2.5.1 Rationale for using the SVA in low-resource settings
The Pap smear, which has led to significant declines in cancer of the cervix incidence and mortality in the developed world, has limitations in low-resource settings. It requires a continuous supply of well-trained technicians and pathologists to review abnormal slides along with well-managed and effective service delivery systems. These elements often are not available in low-resource settings. In addition, follow-up of women is difficult (RTCOG/Jhpiego, 2003). Single visit approach using VIA/VILI and cryotherapy is a practical alternative because the screening approach is safe, relatively easy to perform, and the cost is low. The test can be done by various cadres of health care providers in almost any setting and results are available on time, which provides an opportunity to manage and reduces loss to follow-up (WHO, 2006).

2.5.2 Support for the SVA
According to the Alliance for Cancer of the cervix (ACCP), the most efficient and effective strategy for secondary prevention of cancer of the cervix in low-resource settings is to screen by either VIA or HPV-DNA testing and then treat precancerous lesions using cryotherapy in a single visit. A joint policy statement from professional organizations such as the American College of Obstetricians and Gynecologists (ACOG), Society of Obstetricians and Gynecologists of Canada (SOGC), and Royal College of Obstetricians and Gynecologists (RCOG) also supports the position that the "single-visit approach," which links a detection method with an immediate management option, is a safe, acceptable and cost-effective approach to cancer of the cervix prevention (ACOG, 2004).

2.6 Preventing cancer of the cervix
Prevention of cancer of the cervix can be classified into three categories, namely primary, secondary and tertiary. Primary prevention includes vaccination with HPV Vaccine, abstinence, condom use, family planning to reduce parity and male

2.6.1 Components of a successful cancer of the cervix prevention program
A comprehensive approach to cancer of the cervix programming includes Advocacy/Policies and Outreach/Education. Advocacy and policies involves increasing awareness, consolidating action by governments and funders, and assisting in the development of guidelines and policies to support cancer of the cervix prevention processes. Education and Outreach components includes but not limited to preparing culturally appropriate materials for community education and mobilization. The key programme components are training, equipment procurement and logistics, information management, service delivery and Referral system Training involves developing training resources and coordinating competency based training for health care providers and their supervisors. Referral system ensures women are provided with the appropriate follow-up and treatment by strengthening the existing health care systems. Equipment, procurement, and logistics ensure an effective supply chain (e.g., the cylinder containing the carbon dioxide or nitrous oxide must not be too hot or too cold and it must be kept in a vertical position). Information management involves providing job aids for training and service delivery while Service delivery includes working with persons involved to build a continuous service delivery system that take into considerations supplies processes, repair, and maintenance of equipment; monitoring and evaluation; and supervision systems for maintenance of a consistent quality of services. It also entails providing quality assurance during supervision visits (WHO, 2006).

2.6.2 Characteristics of an effective program
An effective screening programme should Increase country readiness for implementation of cancer of the cervix prevention efforts, develop capacity to sustain and expand large-scale, coordinated cancer of the cervix prevention efforts, expand
access to high quality visual inspection of the cervix with acetic acid (VIA) and cryotherapy at service delivery points and improve program performance and finally develop a strategy to reach eligible women. (WHO, 2006).

2.7 Successful experiences
Cancer of the cervix is slow to develop and slow to grow. It might take a decade or more to demonstrate a new intervention's effectiveness or impact at reducing cancer of the cervix incidence and mortality. However, a study in India did demonstrate a significant reduction in cancer of the cervix incidence (25%) and mortality (35%) in Indian villages seven years after VIA screening was introduced compared to villages where it was not introduced (Sankaranarayanan et al, 2007). In Thailand a study by Chumworathayi et al (2010) was conducted to determine the effect of VIA and cryotherapy, offered in a single visit, as a cancer of the cervix prevention approach. This study compared the cancer of the cervix incidence rates (1997-2006) in Roi Et Province – where VIA and cryotherapy were introduced in 2000 to rates in neighboring provinces where there was no intervention. After the 2000 program launch, the number of Roi Et cancer of the cervix cases referred increased continuously compared to the neighboring provinces, in which the number of cases referred remained the same. The improvement of cancer of the cervix detection rates and referrals in Roi Et was a good sign that the intervention was leading to increased identification and earlier management of cancer of the cervix.

2.8 Level of awareness about cancer of the cervix screening
Client's perceptions of the screening services, awareness of the risk factors for the disease, having financial resources and support from the spouse are some of the significant factors in determining use of available screening services. Some of the key barriers to cervical screening access include fear of positive screening results, lack of awareness about the screening services and lack of funds to buy the services. (Were et al, 2011). Nwankwo KC et al, (2011) cited lack of awareness and low priority accorded women's health as some of the factors contributing to the observed reluctance of women to access screening services. Previous exposure to reproductive health services has been
reported to be associated with higher awareness of screening for cancer of the cervix in an Indian population. (Singh S et al, 2012)

Knowledge of risk factors for cancer of the cervix development has also been observed to be associated with better uptake of screening services the correct perception of individual or own risk of development of cancer of the cervix is an important potential cue to action on the road to cancer of the cervix screening. Perception of not being at risk is documented to be associated with low uptake of screening. (Adesina et al, 2013).

Nwankwo (2011) reported that, high awareness about cancer of the cervix prevention is directly proportion to high level of education among the women. They postulated that education was significantly related to awareness for both the disease and screening services. Emphasis on girl child education should therefore be sustained. Continuous use of mass media in creating awareness and educating the general populace should be encouraged.

2.9 Clients Social demographic, social economic and social cultural characteristics
Even where screening facilities and services are available, there are individual characteristics that determine whether a woman actually does utilize the services. Women who accept to screen tend to be younger (aged 30–39), married, had mostly been pregnant, better educated and had ever used contraception (Were et al, 2011). In rural China, women social demographic and social economic profile including marital status, parity low social economic status, less education, early marriage and place of residence affected cancer of the cervix screening services usage (Holroyd et al, 2004).

"Utilization of screening services was found to be directly proportion to parity of the women indicating that previous contact with reproductive health services in their earlier parity (in form of gynecological checkups) may increase awareness among women to be more responsive towards health workers and facility settings "(Sankaranarayanan et al, 2007).
Due to economic challenges women tend to prioritize other financial and social responsibilities related to their families, other than their health resulting to self neglect (Singh et al, 2012).

"Cultural beliefs and custom barriers faced by women in most cases make her shy to discuss their problems and getting examined by the male health professionals may lead to decreased screening especially in Muslim women. An effective program for cancer of the cervix screening should target both gender as male partners have a role to encourage their spouses to be screened and male leaders can promote women participation in cancer of the cervix screening processes irrespective of their marital status" (Singh et al, 2012).

"A significant cancer of the cervix screening barrier cited by women in both the developing and developed world is embarrassment. Embarrassment in gynecological screening is a well-known but ill-defined phenomenon. From screening for sexually transmitted infections to cancer of the cervix, many women cite embarrassment as the reason for not participating in screening, yet little is known about the specific components of screening that are most embarrassing and the wider impact this has on screening uptake and adherence. Some of the issues contributing to embarrassment include lack of privacy, discomfort with sexuality, fear of judgment and religious rationale. Embarrassment is commonly viewed as a static psychosocial barrier with little discussion on how it can evolve and dissipate. With such strong psychosocial barriers to screening, it follows that compliance with future testing or initiating screening at all may be threatened" (Flora et al, 2014).

"Beliefs and attitudes towards the concept of prevention may also affect utilization of services where understanding of prevention is sometimes limited. For example, women interviewed in Western Kenya reported that it is often problematic for a woman to go to a health clinic to be screened if she is "feeling healthy," as she must convince her partner to get money for transport when she is not visibly ill. Furthermore, results from the PAHO analysis of qualitative studies in Latin America and the Caribbean suggest that women generally do not distinguish among types of cancer affecting women's
reproductive organs and, therefore, do not readily understand that cancer of the cervix is a preventable disease. Many women and their male partners, especially in rural areas, have a limited understanding of female reproductive organs and associated diseases. In many project settings, women sometimes erroneously believe that cervical screening tests also are used to detect STIs or HIV, and thus, may decide not to get screened. In South Africa, for instance, women often believe that a positive screening test means that they have AIDS. This view also prevailed in western Kenya where cervical screening often is confused with the "AIDS test" or with STI testing because women have been told that cancer of the cervix is caused by human papillomavirus (HPV). Further, positive STI test results often are viewed as proof of marital infidelity. Because of these stigmas, some women are especially fearful about explaining the results of these examinations to their spouses, and therefore may decide not to be screened" (Allison et al, 2003).

"On the other hand, some women may see added benefits to cervical screening because other ailments can also be treated. This is the case where cervical screening is part of a broader group of women's reproductive health services. ACCP researchers in Bolivia found that some women refused Pap smear screening because they believed that it is a diagnostic tool for any vaginal/gynecological problem. On the other hand, women in Bolivia who did go for screening perceived the benefit in terms of receiving an STI diagnosis only, because vaginal discharges also were treated during the same visit. In South Africa, of 69 women interviewed who had come for cervical screening, 52 reported after probing that they had actually came because they perceived they had a "womb-related ailment". In some clinics, however, providers reported that this perceived benefit has resulted in the same women getting cervical screening services as often as every three to six months, which results in an inefficient use of scarce resources.

Fears stemming from negative images of cancer and gynecological care may hinder cancer of the cervix screening services. Women interviewed in a variety of countries reported having powerful and quite frightening images of cancer. These fears may
contribute to a woman's reluctance to get screened. Images are associated with words such as "devour or eating", "putridity", or "plague". For example, in Mexico, terms used to describe cancer of the cervix included "rotting or devouring of the womb". Women in Kenya describe the inevitability of cancer of the cervix and the belief that, at a minimum, the womb will be "cut out", resulting in the loss of womanhood and sexuality. In Mexico, women reported a fear that any treatment would leave them "hueca" (sexually disabled), and in Bolivia, women stated that cancer is a "death sentence" that destines them to die slowly and painfully. In South Africa, the pelvic examination is referred to as "hanging the legs" and women refer to the experience as "surrendering oneself". In this setting, a cervical examination is especially problematic because, unlike a pregnancy-related exam (which is viewed favorably by the community), a positive cervical screening test implies that she is somehow "dirty" or promiscuous. It also challenges the male partner's "ownership" of and control over his wife" (Allison et al, 2003).

"Another key factor in a woman's decision to participate in cancer of the cervix prevention services is her husband's positive emotional and, if needed, financial support. For instance, in western Kenya, community health workers noted that many women do not seek cervical screening services or make follow-up visits because their husbands provide little support or are actively opposed" (PATH, 2004).

"Where cryotherapy is used as the main method of treatment for precancerous cervical lesions, compliance with clinical requirements may be difficult for women and their partners without proper counseling. Women who receive cryotherapy treatment often defer or fail to return for follow-up appointments. Reasons include lack of funds for transport, lack of support by husbands to attend follow-up visits, fears of what would happen if they returned, and lack of qualified providers at the time of the visit" (Allison et al, 2003).
2.10. Health facility and provider related factors

"Location of service: For some women, especially those living in communities where there is minimal access to health care, the location of the service facility is an important determinant of participation in screening processes. Geographic inaccessibility remains a central barrier in most resource-poor settings, as a significant portion of the population at risk for cancer of the cervix may be located in areas where little or no coverage currently exists. In Peru, ACCP researchers have found that screening rates were much lower in districts where services were distant or difficult to access. Conversely, regional coverage rates were much higher where static services were more accessible to major population centers or where mobile campaigns brought services to women. In Nayarit, Mexico, and in Western Kenya, women reported that transportation costs and distance played a significant role in screening participation and loss to follow-up. In these rural areas, there is no public transport and women must pay for private transportation. Kenyan studies also show that many women must travel anywhere from two to eight hours, at an average cost of a day's agricultural wage. Community health workers in Kenya reported that some male partners do not permit their wives to seek screening because they do not want those traveling long distances, which often requires travel at night. Women come to clinics only when they are able to finance the trip, negotiate their home responsibilities, and obtain support from their husbands. When women do make the trip, they are not as likely to return if they are turned away or otherwise unable to be seen " (Allison et al, 2003).

"Structure of the service delivery system: Cancer of the cervix prevention efforts around the world require multiple visits for screening, confirmatory diagnosis, treatment, and follow-up, compounding both financial and opportunity costs to women and contributing to high attrition rates. A key ACCP goal has been to investigate the safety, efficacy, and acceptability of clinical approaches that reduce the overall number of visits. For example, efforts in Peru to reduce loss to follow-up have included increasing the number of mobile campaigns to distant communities, offering screening and immediate treatment during the same visit, improving the referral system, and seeking out women who have not returned for follow-up" (Allison et al, 2003).
"In Bolivia, functioning tracking systems that ensure clients continue with treatment or additional visits are rare, and attrition is high. In one Bolivian hospital, approximately 50 percent of the women requiring treatment for precancer never received it. In order to address this problem, screening, diagnosis and treatment (conization) of precancer is provided to women aged 25 to 49 at no cost in government facilities, making additional care more accessible to women in this age group" (PATH, 2004).

"Need for information on cost of services and related costs: Women often do not receive accurate information about the actual costs of services. In Bolivia, the availability of free screening and selected treatments for women aged 25 to 49 has improved women's access to services by up to 200% in some regions, but many women still do not know that these services are free. Furthermore, providers often do not offer screening services unless a woman requests it. In Western Kenya, community health workers inform women in advance of the exact costs of screening services and of transport to clinics. They also advise women to bring extra money to clinics in case they have to purchase medication for other health problems" (PATH, 2004).

"The need for women-centered quality services: The client-provider relationship greatly affects client satisfaction. For example, the conditions under which counseling takes place, how effectively and respectfully the provider communicates information to the woman, the woman's ability to ask questions, the process of informed consent, and the respect for privacy and confidentiality all are important factors that influence a woman's experience with care. Screened women interviewed in Peru, Kenya, Mexico, and South Africa highlighted the importance of providers taking time to converse with them, answering questions, explaining procedures, and giving encouragement. Women appreciated being addressed by their names, and wanted providers to speak simply, softly, and gently, and avoid brusque behavior. Non-Spanish-speaking indigenous women who were interviewed in the Nayarit study highlighted the importance of having an interpreter available at the clinic, as many do not seek services because of the language barrier " (Allison et al, 2003).

"Physical aspects of the facility: Other important dimensions of quality of care are the physical aspects of the facility, such as the appearance and cleanliness of the clinic and
provider, and arrangements to assure maximum privacy during the examination. For example, women in Western Kenya reported that they had more confidence in a provider who had clean and pressed clothing, a clean appearance, clean instruments, and clean linen on the examination table. Client satisfaction study data from Kenya and Peru showed that women realized the same specula were used with many women and that their common concern was that the specula were not properly cleaned before being used. To address this, Kenya clinical practices were adjusted so women actually see the speculum being taken from the "clean" room before use and put into soapy water and then a decontamination solution after use. Women in several settings also suggested improving privacy by minimizing the number of people coming into the examination room, having a dead bolt on a door, or having a privacy screen set up during the examination". (Allison et al 2003)

2.11 Health care services utilization
A country of approximately 38.6 million people, Kenya has struggled to build a health system that can effectively deliver quality health services to its population. Access to health care varies widely throughout the country and is determined on numerous factors, though in particular, major divides exist between rural and urban communities, and between the moneyed elite and the poorer masses. In Kenya, the poorer masses—those living below the national poverty line—constitute approximately 52% of the population (UNDP, 2009).

According to recent analysis on the health care utilization rate in Kenya by Wamai R. (2009), it revealed that approximately 77% of those who are sick seek medical attention, meaning that a large percentage of the population does not seek care despite being ill. In order to bring about broad improvements in health in Kenya, it is essential to understand who is currently using the facilities that are available, and what factors are preventing those who do not seek care from doing so (Dustin R, 2010). The two most significant barriers to entry in the Kenyan health system are the cost of care, and the availability of suitable care within a reasonable distance (i.e., geographic barriers). According to NHSSP II, “the physical [health] infrastructure in some regions of the
country has coverage of one facility per 50-200 km,” making the availability of health resources to those who are sick virtually non-existent in certain cases (MOPHS/MOMS, 2010).

"There are a number of other, harder to quantify factors that also shape the utilization of health services in Kenya. For example, the impressions that individuals and communities, from past interactions with the health services sector may influence their decision to seek healthcare in the future. If the population has a favorable view of health services, it follows that the utilization of health services will improve as more people seek care. Dissatisfaction with the health system affects health seeking behavior. If an individual makes what is likely to be an arduous trip to a health facility only to discover that they are out of medicine, medical supplies or no staff on duty, the likelihood that the same individual will make the trip again in the future is lessened. When this scenario becomes commonplace, an entire community might become less likely to seek health services, even when they are needed. Low education levels, particularly in rural areas, may influence the ability of individuals to judge when care should be sought, while knowledge of what care is available and its potential benefits may be incomplete or totally unknown" (Dustin R, 2010).

2.11 Gaps in literature reviewed

Gaps that were identified that this study tried to bridge, included the scenario on the ground/grassroots levels in Kenya where cervical cancer screening services are provided or assumed to be availed, and what are some of the client and health provider factors that influence the uptake.

VIA and VILI screening tests for cervical cancer have not been used for a long time compared with cytology based (Pap smear). Few studies so far have been done to describe their success especially in low resource settings in Africa, this study looked at the processes involved within the health care delivery system in Kenya in provision of cervical cancer screening services as directed by the policy guidelines. It described the situation at the Level four hospital, Health centres and dispensaries and compared it
with the guidelines and best practices elsewhere (Asian countries) to establish its effectiveness.

Evaluation and review of NCCPP have not been done in the study area and the whole country in general and this study can be among the pioneer for the same. There is also need for data reconciliation and consolidation regarding cervical cancer (and other cancers) at all health care services delivery levels.
CHAPTER THREE: MATERIALS AND METHODS

3.1 Study design

A cross-sectional, descriptive analytical study design was used. The study design was to provide information about the presence and strength of associations between variables, permitting the testing of hypothesis about such relationships. The study design was selected as it compared different variables at a single point in time.

3.2 Main study variables

The major variables of the study were categorized into two namely independent and dependent variables. Independent variables were client’s level of awareness regarding screening services social demographic, social economic and social cultural factors, and, health facility factors. Dependent variable was the utilization of the screening tests.

3.3 Study area

The study area was Kitui Central Sub County, Kitui County in Kenya. It covers an estimated area of 806.6 KM$^2$. It has a population of approximately 157,718 people. (2009 Census population projections by KNBS). There are eight locations and thirty sub location in the Subcounty. The public health facilities include one Sub County Hospital six Health centres and nineteen dispensaries. The Sub county Hospital was within the urban area of the Sub county while all the Health centres were within rural setting of the Sub county. The dispensaries were not selected because they were not offering VIA/VILI screening tests by then.

3.4 Study population

The study population was women of reproductive age (15-49 years) attending public health facilities for MCH/FP services. The recommended age when using VIA screening are women between 25-49 years of age (primary target). Women under 25 years of age should only be screened when they have a high risk of cervical abnormalities (these includes women who have had, multiple partners, early sexual exposure, are HIV positive or had previous abnormal screening results or CIN). A
woman who is coming for MCH/FP services will be eligible for screening.

3.4.1 Inclusion criteria
Women of reproductive age who were attending the selected public health facilities for MCH/FP services and those who consented to participate in the study.

3.4.2. Exclusion Criteria
Pregnant women more than 20 weeks gestation on their first visit to the clinic and those who were eligible but declined to participate in the study.

3.5 Sample size determination
The sample size was determined using the following Fisher et al. formulae (1998).

\[ N = \frac{Z^2pq}{d^2} \]

Where:

- \( N \) = The desired size (when population is greater than 10,000)
- \( Z \) = the standard normal deviate at the required confidence level.
- \( P \) = the proportion in the target population estimated to have a particular characteristic being measured. In this case women of reproductive age attending MCH/FP clinics.
- \( q = 1 - p \)
- \( d \) = the level of statistical significance set/degree of accuracy.

\( Z = 1.96 \)
\( p = 0.37 \)
\( q = 1 - 0.37 = 0.63 \)
\( d = 0.05 \)

Thus the sample size was calculated as follows:

\[ N = \frac{(1.96^2 \times 0.37 \times 0.63)}{0.05^2} \]
\[ = 358.19 \]
A minimum sample of 358 respondents were sufficient for the study, the number was rounded up to 370 women after probability distribution of the respondents as shown below by Table 3.1.

<table>
<thead>
<tr>
<th>Facility</th>
<th>Client flow per month</th>
<th>Sample</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kitui Sub County Hospital</td>
<td>300</td>
<td>159</td>
</tr>
<tr>
<td>Miambani Health Centre</td>
<td>151</td>
<td>79</td>
</tr>
<tr>
<td>Kisasi Health Centre</td>
<td>100</td>
<td>53</td>
</tr>
<tr>
<td>Mbitini Health Centre</td>
<td>150</td>
<td>79</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>701</strong></td>
<td><strong>370</strong></td>
</tr>
</tbody>
</table>

There were ten key informants who included the District medical officer of health, one gynaecologist, the DPHN, MCH/FP unit in charge, and all the in charges of the Health Centres and their deputies. The incharges of the Health centres were Clinical officers while their deputies were Nursing Officers.

3.6 Sampling unit
Sampling unit was a woman aged 15 to 49 years attending the MCH/FP clinic.

3.7 Sampling methods
Simple random method was used to select Kitui Central Sub County among other Sub counties. The Sub County Hospital was included in the study and I randomly selected three Health Centres among six. Each health facility was allocated respondents according to client flow where facilities with higher client flow got higher ratio. Systematic random sampling method was used to select respondent from each health facility. Research assistants and I interviewed the first client of the day who exited after receiving health services; every other alternate client thereafter was interviewed until a total sample of 370 respondents was obtained cumulatively from all the health facilities.
3.8 Developing research instruments
Research instruments included interviewer-administered structured questionnaire for clients, interview schedule for key informants and health facility survey and inventory checklist. These were to capture the necessary information to address the research questions. The questionnaires were pre-coded and took into consideration the research objectives of the study. They also provided in depth information regarding the client related variables under study while the interview schedules were used to get opinions of the key informants regarding utilization or implementation of the policy guidelines on cancer of the cervix screening. The facility survey checklist was used to assess the public health facilities infrastructure and other resources in readiness to offer VIA/VILI cancer of the cervix screening services.

3.8.1 Validity
In order to ensure validity, subjects that were involved in the study had to meet the required characteristics. Proper selection, training and supervision of the research assistants on the various instruments which were used to collect data were done and daily tracking and checking of complete tool. The accuracy was ensured by questions within the questionnaire and interview schedule being precise, language used being understandable and clear to the respondents. All the objectives were addressed by the research instruments. The research assistants were able to understand the local language and were in a position to interpret the questions for the respondents who weren’t conversant with English or Swahili and also for the questions that seemed embarrassing to them.

3.8.2 Reliability
This was ensured by pre-testing the study instruments before undertaking the final study.

3.9 Pre-test of the instruments
This was done at Kauwi Sub County Hospital in Kitui west Sub County which is similar to the study area (geographically and demographically) with use of 17 questionnaires,
5 interview schedules and a health facility survey tool.

3.10 Data collection methods
The study involved use of pretested structured questionnaires (Appendix II), interview schedule, (Appendix IV), facility survey checklists (Appendix III), and use of records which were applied as seen fit.

3.11 Data analysis methods
The questionnaires were checked for completeness and coded. Analysis of the data was done using Statistical Package for Social Sciences (SPSS) version 20. Both descriptive and inferential statistics for different variables were computed and the findings presented by use of frequency tables, bar charts, and figures. Chi-square was used to show the association between Variables. Qualitative data from the key informants were presented by narration.

3.12 Ethical consideration
i. Ethical approval to conduct the research was obtained from Kenyatta University research ethical committee
ii. Authority was sought from Ministry of Education (National Commission for Science, Technology and Innovation) and Ministry of Health through the District Medical Officer of Health.
iii. Informed consent was obtained from the study participants prior to conducting the study.
iv. Assent of participants below 18 years of age were obtained from their legal guardians and other relevant authorities.
v. After data collection, information obtained was only used for research purpose and confidentiality was strictly maintained
CHAPTER FOUR: RESULTS

4.1 Social demographic information

4.1.1 Age of the Respondents
Women within the age bracket of between 20-29 years were the majority 55.1% (n=204), those within the age bracket of 30-39 years were 21.9% (n=81), 14.1% (n=52) were between the age of 15-19 years while 8.9% (n=33) were between the age of 40-49 years. (Table 4.1)

<table>
<thead>
<tr>
<th>Age (Years)</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; 20</td>
<td>52</td>
<td>14.1</td>
</tr>
<tr>
<td>20-29</td>
<td>204</td>
<td>55.1</td>
</tr>
<tr>
<td>30-39</td>
<td>81</td>
<td>21.9</td>
</tr>
<tr>
<td>40-49</td>
<td>33</td>
<td>8.9</td>
</tr>
<tr>
<td>Total</td>
<td>370</td>
<td>100.0</td>
</tr>
</tbody>
</table>

4.1.2 Highest Level of Education
The findings showed that women in the public health facilities, 55.7% (n=206) had completed their primary education, 30.5% (n=113) had completed secondary level education, 7.6% (n=28) had completed their college education while 6.2% (n=23) had no formal education. (Table 4.2)

<table>
<thead>
<tr>
<th>Level of schooling</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary</td>
<td>206</td>
<td>55.7</td>
</tr>
<tr>
<td>Secondary</td>
<td>113</td>
<td>30.5</td>
</tr>
<tr>
<td>Tertiary</td>
<td>28</td>
<td>7.6</td>
</tr>
<tr>
<td>No formal education</td>
<td>23</td>
<td>6.2</td>
</tr>
<tr>
<td>Total</td>
<td>370</td>
<td>100.0</td>
</tr>
</tbody>
</table>
4.1.3 Current Marital Status of Respondents
The study established that majority 68.1% (n=252) of the women in the public health facilities were married 23.5% (n=87)) indicated that they were single, while 8.4% (n=31) were not living with their partners. (Table 4.3)

Table 4.3: Marital status of the respondents

<table>
<thead>
<tr>
<th>Marital status</th>
<th>Frequency</th>
<th>Proportion (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Single</td>
<td>87</td>
<td>23.5</td>
</tr>
<tr>
<td>Married</td>
<td>252</td>
<td>68.1</td>
</tr>
<tr>
<td>Not living with partner</td>
<td>31</td>
<td>8.4</td>
</tr>
<tr>
<td>Total</td>
<td>370</td>
<td>100.0</td>
</tr>
</tbody>
</table>

4.1.4 Number of Children
The study showed that 37.3% (n=138) of the women in the public health facilities had 2-3 children, 38.6% (n=143) indicated that they had only 1 child 15.9% (n=59) stated that they had 4-5 children while 8.1 % (n=30) indicated that they had more than five children. (Table 4.4)

Table 4.4: Respondents Number of Children

<table>
<thead>
<tr>
<th>No. of children</th>
<th>Frequency</th>
<th>Proportion (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>143</td>
<td>38.6</td>
</tr>
<tr>
<td>2-3</td>
<td>138</td>
<td>37.3</td>
</tr>
<tr>
<td>4-5</td>
<td>59</td>
<td>15.9</td>
</tr>
<tr>
<td>&gt; 5</td>
<td>30</td>
<td>8.1</td>
</tr>
<tr>
<td>Total</td>
<td>370</td>
<td>100.0</td>
</tr>
</tbody>
</table>

4.1.5 Age of Last Born
Figure 4.1 shows that majority of the last born children were < 5 years, 46.8% (n=173), 34.6% (n=128), last born aged five to ten years, 9.5% (n=35) were 11 to 15 years, 5.9% (n=22) were 16 to 20 years, while a marginal of 3.2% (n =12) were aged more than 20 years.
Figure 4.1 Age of Last Born

4.1.6 Religion of Respondents
The study established that majority of the women were Protestants 57% (n=211), 36.8% (n=136) were Roman Catholic while 6.2% (n=23) were Muslims. (Table 4.5)

<table>
<thead>
<tr>
<th>Religion</th>
<th>Frequency</th>
<th>Proportion (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Roman Catholic</td>
<td>136</td>
<td>36.8</td>
</tr>
<tr>
<td>Protestant</td>
<td>211</td>
<td>57.0</td>
</tr>
<tr>
<td>Muslim</td>
<td>23</td>
<td>6.2</td>
</tr>
<tr>
<td>Total</td>
<td>370</td>
<td>100.0</td>
</tr>
</tbody>
</table>

4.2 Social Economic Information

4.2.1 Main source of income of the Respondents
The study findings showed that majority 61.4% (n=227) of the women under study were farmers 20.5% (n=76) indicated that they were employed or salaried while 18.1% (n=67) were having businesses or were self employed. (Table 4.6)
Table 4.6: Main source of income

<table>
<thead>
<tr>
<th>Source of income</th>
<th>Frequency</th>
<th>Proportion (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Farm produce</td>
<td>227</td>
<td>61.4</td>
</tr>
<tr>
<td>Business</td>
<td>67</td>
<td>18.1</td>
</tr>
<tr>
<td>Employed</td>
<td>76</td>
<td>20.5</td>
</tr>
<tr>
<td>Total</td>
<td>370</td>
<td>100.0</td>
</tr>
</tbody>
</table>

4.2.2 Main Income Earner
Twenty nine percent (n=107) of the sampled out women in the survey were themselves main income earners, 52 %( n=192) of them stated that their husbands/ partners were their main income earners while 19.2 %( n=71) of them stated that they were being supported by other people (children, relatives). (Table 4.7)

Table 4.7: Main income earner in the family

<table>
<thead>
<tr>
<th>Main income earner</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self</td>
<td>107</td>
<td>28.9</td>
</tr>
<tr>
<td>Husband/Partner</td>
<td>192</td>
<td>51.9</td>
</tr>
<tr>
<td>Support from others</td>
<td>71</td>
<td>19.2</td>
</tr>
<tr>
<td>Total</td>
<td>370</td>
<td>100.0</td>
</tr>
</tbody>
</table>

4.2.3 Average Income
Twenty three percent (n=86) of the sampled out women in the survey earned an average monthly income below Ksh 2,500, 37.6% (n=139) of them earned an average monthly income of between Ksh 2,500-5,000, 19.2% (n=71) of them earned an average monthly income above Ksh 5,000-10,000,9.5% (n=35) of them earned an average monthly income above Ksh 10,000-20,000 while 10.5% (n=39) of them earned an average monthly income of more than Ksh 20,000. (Table 4.8)
Table 4.8 Respondents average monthly income

<table>
<thead>
<tr>
<th>Average monthly income</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; Ksh 2500</td>
<td>86</td>
<td>23.2</td>
</tr>
<tr>
<td>Ksh 2501-5000</td>
<td>139</td>
<td>37.6</td>
</tr>
<tr>
<td>Ksh 5001-10000</td>
<td>71</td>
<td>19.2</td>
</tr>
<tr>
<td>Ksh 10001-20000</td>
<td>35</td>
<td>9.5</td>
</tr>
<tr>
<td>&gt; Ksh 20000</td>
<td>39</td>
<td>10.5</td>
</tr>
<tr>
<td>Total</td>
<td>370</td>
<td>100.0</td>
</tr>
</tbody>
</table>

4.2.4 Summary of the respondents characteristics and utilization of the screening services

The social demographic and economic variables that had a significant statistical association with utilization of VIA/VILI screening tests included level of schooling, main source of income and average monthly income. (Table 4.9)

Table 4.9: Association of respondents characteristics and utilization of screening services

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Screened No (%)</th>
<th>Not screened No (%)</th>
<th>$\chi^2$,df,p</th>
<th>Odds Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Age in Years</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt; 20</td>
<td>7(13)</td>
<td>45(87)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>20-29</td>
<td>24(12)</td>
<td>180(88)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>30-39</td>
<td>18(22)</td>
<td>63(78)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>40-49</td>
<td>6(18)</td>
<td>27(82)</td>
<td>$\chi^2=5.382$, df=3, $p=0.146$</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>55(15)</td>
<td>315(85)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Level of schooling</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Primary</td>
<td>15(7)</td>
<td>191(93)</td>
<td>$\chi^2=21.728$, df=3, $p=0.000$</td>
<td>OR=5.727, p=0.000</td>
</tr>
<tr>
<td>Secondary</td>
<td>26(23)</td>
<td>87(77)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tertiary</td>
<td>8(29)</td>
<td>20(71)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No formal education</td>
<td>6(26)</td>
<td>17(74)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>55(15)</td>
<td>315(85)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Marital status</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Single</td>
<td>12(14)</td>
<td>75(86)</td>
<td>$\chi^2=0.127$, df=2, $p=0.938$</td>
<td></td>
</tr>
<tr>
<td>Married</td>
<td>38(15)</td>
<td>214(85)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not living with partner</td>
<td>5(16)</td>
<td>26(84)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>55(15)</td>
<td>315(85)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Attribute</td>
<td>Screened</td>
<td>Not screened</td>
<td>$\chi^2$,df,p</td>
<td>Odds Ratio</td>
</tr>
<tr>
<td>-------------------</td>
<td>----------</td>
<td>--------------</td>
<td>-----------------------</td>
<td>------------</td>
</tr>
<tr>
<td><strong>No.of children</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
| 1                 | 21(15)   | 122(85)      | $\chi^2=0.767$  
| df 3              | p =0.857 |              |                       |            |
| 2-3               | 19(14)   | 119(86)      |                       |            |
| 4-5               | 9(15)    | 50(85)       |                       |            |
| >5                | 6(20)    | 24(80)       |                       |            |
| **Total**         | 55(15)   | 315(85)      |                       |            |
| **Religion**      |          |              |                       |            |
| Roman Catholic    | 20(15)   | 116(85)      | $\chi^2=7.926$  
| df=2              | p =0.019 |              |                       | OR = 0.739 |
| Protestants       | 27(13)   | 184(87)      |                       | p=0.228    |
| Muslims           | 8(35)    | 15(65)       |                       |            |
| **Total**         | 55(15)   | 315(85)      |                       |            |
| **Main source of income** |        |              |                       |            |
| Farm produce      | 26(11)   | 201(89)      | $\chi^2=15.030$  
| df=2              | p =0.001 |              |                       | OR=0.576, |
| Business          | 7(10)    | 60(90)       |                       | p=0.001    |
| Employed/salaried | 22(29)   | 54(71)       |                       |            |
| **Total**         | 55(15)   | 315(85)      |                       |            |
| **Main income earner** |      |              |                       |            |
| Self              | 20(19)   | 87(81)       | $\chi^2=1.788$  
| df 2              | p =0.409 |              |                       |            |
| Husband           | 25(13)   | 167(87)      |                       |            |
| Support from others (parents, children) | 10(14) | 61(86)       |                       |            |
| **Total**         | 55(15)   | 315(85)      |                       |            |
| **Average monthly income** |    |              |                       |            |
| ≤ Ksh 2500        | 7(8)     | 79(82)       | $\chi^2=27.942$  
| df =4             | p =0.000 |              |                       | OR=0.692  |
| Ksh 2501-5000     | 14(10)   | 125(90)      |                       |            |
| Ksh 5001-10000    | 13(18)   | 58(82)       |                       |            |
| Ksh 10001-20000   | 15(43)   | 20(57)       |                       |            |
| >Ksh 20000        | 6(15)    | 33(85)       |                       |            |
| **Total**         | 55(15)   | 315(85)      |                       |            |
4.3 Awareness of Cancer of the cervix

4.3.1 Prior awareness on cancer of the cervix

Seventy three percent 73% (n=294) had heard about cancer of the cervix while 27% (n=101) had not. (Figure 4.2)

Eighty percent of the respondents (n=296) didn't know anyone with cancer of the cervix while 20% (n=74) knew. (Figure 4.3)

![Figure 4.2 Awareness on existence of cancer of the cervix](chart1.png)

![Figure 4.3 Awareness on someone with cancer of the cervix](chart2.png)
4.3.2 Awareness of availability of services for cancer of the cervix screening
Fifty four percent (n=199) of the sampled out women in the survey agreed that they were aware of services for screening cancer of the cervix compared to 46% (n=171) of them who stated that they were not aware of the screening services. Among those who were screened 14.3% were aware while 0.5% were not, those who were not screened 39.5% were aware of the availability of screening services while 45.7% were not. (Figure 4.4)

\[
\begin{array}{c|c|c}
\text{Screened} & \text{Aware} & \text{Not aware} \\
14.30\% & 39.50\% & 45.70\% \\
\end{array}
\]

OR 3.0675 p=0.000

**Figure 4.4 Awareness of cancer of the cervix screening**

4.3.3 Source of information about cancer of the cervix screening
Thirty five percent (n=131) of the sampled out women in the survey confirmed that they received information about cancer of the cervix from their healthcare providers, 2.2% (n=8) of the sampled out women in the survey learnt from relatives, 7.6% (n=28) of them learnt about screening for cancer of the cervix from friends, 8.6% (n=32) of them learnt about it from media (print and electronic) while 44.8% were not aware about it. (Figure 4.5)
Figure 4.5 Respondents source of information on cancer of the cervix screening

4.3.4 Familiarity with health problems associated with Cancer of the cervix
Thirty five percent (n=130) of the sampled out women in the survey confirmed that they were familiar with symptoms of the cancer of the cervix compared to 65 % (n=240) of them who did not know the symptoms (Figure 4.6)

Figure 4.6 Familiarity with cancer of the cervix health problems
4.3.5 Awareness on factors predisposing to cancer of the cervix
Thirty four percent (n=126) of the sampled out women in the study did know any factor that may cause or lead to the development of cancer of the cervix. 9.5% (n=32) believed that family history of the disease condition is one of the factors that makes a woman to develop cancer of the cervix, 47.3% (n=175) of them believed that having multiple sexual partners could cause cancer of the cervix while 9.5% (n=32) of them associated cancer acquisition with age. (Figure 4.7)

![Factors that could predispose respondents to cervical cancer](image)

Figure 4.7 Knowledge on factors that make a person prone to cancer of the cervix

4.4 Screening Practices

4.4.1 Cancer of the cervix screening in the last five years
Fifteen percent (n=55) of the sampled out women in the survey had been screened for cancer of the cervix within the last five years compared to 85% (n=315) of them who had not. (Figure 4.8)
4.4.2 Reasons for not Screening

Thirty seven percent (n=138) of the non screened women in the survey were not screened because they were not aware of the supposed screening, 3.8% (n=14) of them were not screened because they did not have enough time for the exercise, 1.4% (n=5) couldn't get the services when they needed them, 4.6% (n=17) of them did not think they were susceptible for cancer of the cervix, 2.2% (n=8) of them did not get approval from their husbands/partners, 12.2% (n=45), were embarrassed to be examined on the private parts, 9.2% (n=34) were worried that they will be told they have cancer of the cervix while 14.6% (n=54) of them had not thought about it. (Table 4.10)

Table 4.10 Respondents reasons for not being screened

<table>
<thead>
<tr>
<th>Reasons for not being screened</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>No information</td>
<td>138</td>
<td>37.3</td>
</tr>
<tr>
<td>Didn't have enough time</td>
<td>14</td>
<td>3.8</td>
</tr>
<tr>
<td>Didn't get the services when needed them</td>
<td>5</td>
<td>1.4</td>
</tr>
<tr>
<td>Didn't think they were susceptible</td>
<td>17</td>
<td>4.6</td>
</tr>
<tr>
<td>Embarrassment of being examined in the private area</td>
<td>45</td>
<td>12.0</td>
</tr>
<tr>
<td>No approval from their partners</td>
<td>8</td>
<td>2.2</td>
</tr>
<tr>
<td>Worried that can be told they have cancer of the cervix</td>
<td>34</td>
<td>9.2</td>
</tr>
<tr>
<td>Hadn't thought about it</td>
<td>54</td>
<td>14.6</td>
</tr>
<tr>
<td>Total</td>
<td>315</td>
<td>85.1</td>
</tr>
</tbody>
</table>
4.4.3 Intention of being screened in the next five years
Eighty six percent of the respondents (n=317) had intentions of getting screened within the next five years compared to 14% (n=53) of them who were not willing.

4.5 Social Cultural Factors
This section sought to show the social cultural factors that affected screening or determined cervical screening among women in the public health facilities.

4.5.1 Decision of going to Hospital/Clinic
Seventy three percent (n=271) of the sampled women were the decision maker on who, when and where to go for health services, 20% (n=73) had their partners deciding while 7% (n=26) decisions were made by their parents or guardians. (Table 4.11)

<table>
<thead>
<tr>
<th>Variables</th>
<th>Screened</th>
<th>Not screened</th>
<th>$\chi^2$,df,p</th>
<th>OR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Partner</td>
<td>5</td>
<td>68</td>
<td>$\chi^2=6.908$</td>
<td>OR=0.448</td>
</tr>
<tr>
<td>Self</td>
<td>43</td>
<td>228</td>
<td>df=2</td>
<td>p=0.009</td>
</tr>
<tr>
<td>Others (parents/guardians)</td>
<td>7</td>
<td>19</td>
<td>p =0.032</td>
<td></td>
</tr>
</tbody>
</table>

4.5.2 Respondents Perception about Cancer of the cervix
Thirty eight percent (n=141) of the respondents thought cancer of the cervix is an incurable disease, 24% (n=89) believed it is a killer disease, 5.4% (n=20) thought it is a curse while 32.4% (n=120) had not thought about it. (Figure 4.9)
4.6 Health facility and providers related factors

4.6.1 Distance to the Health Facility
Thirty eight percent (n=142) indicated that the health facility was 1-2 km from their homes, 17.6% (n=65) were less than 1km 26.5% (n=98) pointed out that the health facility was more than 3-5km from their homes, while 17.6% (n=65) were located more than 5km away from the health facility. (Figure 4.10)
4.6.1 Health care providers cadres
Seventy percent (n=21) of the cadre in the sampled facilities were nursing officers while 30% (n=9) of them were clinical officers. (Figure 4.11)
4.6.2 Cadre trained on VIA/VILI processes
Forty seven percent (n=14) were trained on VIA/ VILI screening process, while 53% (n=16) were not. Among the trained were 10 nurses and four clinical officers.

4.6.3 Attendance of refresher courses on VIA/VILI
Twenty five percent (n=8) of the health care providers confirmed that they go for refresher courses or they are updated on VIA/ VILI and Cryotherapy compared 75% (n=22) of them who didn't.

4.6.4 Supervision
Ninety percent (n=27) of the health care staffs in the survey confirmed that they are visited by their supervisors from the district headquarters or division of reproductive health in their respective facilities.

4.6.5 Support from relevant authorities
Forty five percent (n=13) of the health care cadres in the survey felt that the number of visits to their respective facilities are adequate to support the implementation of VIA/ VILI screening process.

4.6.6 Client referrals
All the health centres referred clients who required further attention to Sub County Hospital and private hospitals while the Sub County Hospital referred the clients to level 5 hospitals (Machakos General Hospital) and National Hospital (Kenyatta National Hospital)

4.6.7 Availability of staff in offering VIA/VILI screening services
According to Key informants sometimes it's very hard to offer the screening services continuously everyday due to staff shortages.MCH/FP services are given priority when staffs are not adequate.
4.6.8 Constrain encountered while offering VIA/VILI screening services
Some of the challenges or constraints encountered according to key informants are shortage of trained personnel while offering screening, lack materials and instruments during the exercise, lack support from their respective supervisors, work overload and non cooperating clients. (Figure 4.12)

![Constraints encountered graph]

<table>
<thead>
<tr>
<th>Constraint</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shortage of trained personnel</td>
<td>45.00%</td>
</tr>
<tr>
<td>Lack of materials and instruments</td>
<td>35.00%</td>
</tr>
<tr>
<td>Lack of support from relevant authorities</td>
<td>55.00%</td>
</tr>
<tr>
<td>Work overload</td>
<td>65.00%</td>
</tr>
<tr>
<td>Non cooperating clients</td>
<td>55.00%</td>
</tr>
</tbody>
</table>

Figure 4.12 Constrains encountered while offering VIA/VILI screening services

4.6.9 Hinderance to utilization of VIA/VILI screening services by clients
The key informants reported that lack of awareness was the major hindrance to utilization of VIA/VILI screening but negative cultural practices/ beliefs also affected utilization of the services.

4.6.10 Assessment of essential supplies and necessarily resources required for VIA/VILI procedures.
Table 4.12 shows the result of the assessment of the four public health facilities on the availability of required supplies and materials in readiness to screen clients by VIA/VILI cancer of the cervix screening procedures.
Table 4.12: Essential supply needs for VIA and Cryotherapy service provision.

<table>
<thead>
<tr>
<th>S.No</th>
<th>Items</th>
<th>Facilities</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>KDH</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Miambani</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Mbitini</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Kisasi</td>
</tr>
<tr>
<td>1</td>
<td>Appropriate room for examination</td>
<td>Missing</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Missing</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Missing</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Missing</td>
</tr>
<tr>
<td>2</td>
<td>Appropriate gynecological room for examination</td>
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<td></td>
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<td></td>
<td>&quot;</td>
</tr>
<tr>
<td>3</td>
<td>Adequate speculums</td>
<td>&quot;</td>
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<td>&quot;</td>
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<tr>
<td>4</td>
<td>Halogen lamp</td>
<td>&quot;</td>
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<td></td>
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<td>&quot;</td>
</tr>
<tr>
<td>5</td>
<td>Perishable supplies</td>
<td>&quot;</td>
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<td></td>
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<td></td>
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<td>&quot;</td>
</tr>
<tr>
<td>6</td>
<td>Privacy screen</td>
<td>Available</td>
</tr>
<tr>
<td></td>
<td></td>
<td>&quot;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Available</td>
</tr>
<tr>
<td></td>
<td></td>
<td>&quot;</td>
</tr>
<tr>
<td>7</td>
<td>Sheets and gowns</td>
<td>&quot;</td>
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<tr>
<td></td>
<td></td>
<td>&quot;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Missing</td>
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<td></td>
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<td>&quot;</td>
</tr>
<tr>
<td>8</td>
<td>Waste segregation bins</td>
<td>&quot;</td>
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<td></td>
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<td>&quot;</td>
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<tr>
<td>9</td>
<td>90% Isopropyl ethyl Alcohol</td>
<td>&quot;</td>
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<td></td>
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<td>&quot;</td>
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<td></td>
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<td>&quot;</td>
</tr>
<tr>
<td>10</td>
<td>Autoclave sterilizer</td>
<td>&quot;</td>
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<td></td>
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<td>&quot;</td>
</tr>
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<td></td>
<td></td>
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<td></td>
<td></td>
<td>&quot;</td>
</tr>
<tr>
<td>11</td>
<td>Sponge holding forceps</td>
<td>&quot;</td>
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<tr>
<td></td>
<td></td>
<td>&quot;</td>
</tr>
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<td></td>
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<tr>
<td></td>
<td></td>
<td>&quot;</td>
</tr>
<tr>
<td>12</td>
<td>Cryotherapy unit</td>
<td>&quot;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>&quot;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>&quot;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>&quot;</td>
</tr>
<tr>
<td>13</td>
<td>Monsel's paste or silver nitrate sticks</td>
<td>&quot;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>&quot;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Available</td>
</tr>
<tr>
<td></td>
<td></td>
<td>&quot;</td>
</tr>
<tr>
<td>14</td>
<td>Glutaraldehyde (Cidex)</td>
<td>&quot;</td>
</tr>
<tr>
<td></td>
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<td></td>
<td></td>
<td>&quot;</td>
</tr>
<tr>
<td>15</td>
<td>Mackintosh</td>
<td>&quot;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Available</td>
</tr>
<tr>
<td></td>
<td></td>
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<td>&quot;</td>
</tr>
</tbody>
</table>
CHAPTER FIVE: DISCUSSION, CONCLUSION AND RECOMMENDATIONS.

5.1 Discussion
5.1.1 Socio-demographic, socio-economic and socio-cultural factors
Women within the age bracket of between 20-29 years were the majority 55.1% (n=204) these are women in their prime reproductive age and need to be protected against cancer of the cervix.

There was no statistical significant relationship between the client age and her propensity of using the availed VIA/VILI screening service (p =0.146). Although cancer of the cervix can occur at any time within the woman life most of the precancerous lesions occurs and can be detected before the woman is thirty years of age. Cancer of the cervix has a long precancerous period, usually taking more than ten years to progress from precancerous lesions to invasive cancer. As a result, it's rare for cancer of the cervix to develop in a woman less than thirty years of age (WHO, 2006). This means that the best time to screen is when the woman is below this age and resources for screening should focus on this group more.

The study established that most of the respondents 68.1% (n=252) of the women in the public health facilities were married. This shows that majority of the target women were living as a family unit and measures to increase cancer of the cervix can target the same.

There was no statistical significant relationship between marital status of the respondent and use of cancer of the cervix screening services. (p = 0.938). This was in contrast with Redhwan Ahmed Al Nagger et al (2010) in their study on knowledge and barriers towards cervical screening among young women in Malaysia where they found age, marital status ethnicity and monthly family income having an influence on cancer of the cervix screening. In many communities, the marital status of an individual normally improves a persons social status. Marital status may influence a woman decision whether to be screened or not, may be through its influence on female autonomy and status or through financial resources. Single women may be poorer economically but enjoy greater autonomy than those married. Young single women may be cared for by their extended families, which may encourage or discourage cancer of the cervix screening choices.
The study found that 47% (n=173) of the women in the public health facilities had 2-3 children and 27% (n=100) indicated that they had only one child. Multiparty is a risk to many maternal conditions and its one of the predisposing factor to cancer of the cervix.

Munoz et al. (2002) found that HPV-infected women who had five or more children had a three-fold increase in risk of cancer of the cervix compared to women with no children. There was a no statistical significant relationship between the number of children the respondent had and her uptake of the availed screening services. (p = 0.857). The results are supported by the findings of Were et al (2011) in their study on Presentation and health care seeking behavior of patients with cancer of the cervix seen at Moi Teaching and Referral Hospital, Eldoret Kenya, where parity had no influence on screening for cancer of the cervix. Parity refers to the number of pregnancy a woman have had and some woman may have few life children but a number of pregnancies, this is mainly due to miscarriages or abortions. The results were inconsistent with Singh et al (2012) study on factors influencing uptake of cancer of the cervix screening among women in India where they found that utilization of screening services was directly proportional to parity of the women indicating that previous contacts with reproductive health services in their previous parity (in the form of gynecological checkups) may increase awareness among women to be more responsive towards health workers and facilities and getting screened opportunistically.

The result showed that majority of the respondents last born children were < 5 years, 46.8% (n=173). The duration between the last process of child birth and another pelvic examination can have influence on the woman decision to be screened more so if the process was painful. The woman may avoid any procedure that reminds her on what she experienced. This includes pelvic examination for family planning and cancer of the cervix screening purposes. There was no significant statistical association between the client last born age and her utilization of the screening services.

Almost 94% (n=347) of respondents attending the public health facilities had completed their primary education while 6.2% (n=23) had no formal education. There was a strong statistical relationship between the respondent education level and utilization of the
availed cancer of the cervix screening services ($p = 0.000$). These findings were supported by study by Singh et al (2012) on determinants of cancer of the cervix screening and also a study by Allison et al (2003) on factors affecting utilization of cancer of the cervix screening services in low resource settings. Both studies supported the direct relationship between a woman level of education and her willingness to be screened for cancer of the cervix. Education is an important determinant in health seeking behavior. Educated people are able to perceive their health and health related problems better than non educated ones. In many cases uneducated or semi educated people do not access health services despite being economically stable due to various misconceptions. They may choose unconventional or traditional therapies over conventional effective remedies. Though it might take a long time to greatly improve population literacy level, Strengthening and expanding programs addressing women/girl child education should contribute to improving women's health in the long term. It is assumed that an educated person is an empowered person who is able to rationalize all the decisions he/she makes.

The study established that majority of the women attending the public health facilities were Protestants as shown by 57% (n=211). There was no statistical significant association between the respondents religion and her desire to use the VIA/VILI services, ($p = 0.228$). Sorababhb Badaya et al (2012) in their study on determinants influencing uptake of Pap smear among Indian woman did not find any statistical significant relationship between their religion and their use of Pap smear as a cervical screening method. In contrast Toan et al, (1996) in a study on utilization of reproductive health services in rural Vietnam showed that Catholics in Vietnam were less likely to receive proper health care. A study by Matin et al, (2004) found out that, among Immigrant Muslim women there is low rates of health services utilization, more so in preventive care such as, mammograms, breast exams and cancer of the cervix screening. Cultural and religious beliefs, such as the value placed on premarital virginity and modesty, contribute to reluctance to seek health services. In general depending on the conviction of the various teachings, the religion of a woman may influence positively or negatively utilization of the availed health services.
The study findings showed that majority of the women 61.4% (n=227) under study were unemployed and the main source of income was farming. A statistical significant relationship existed between the client main source of income and use of VIA/VILI services (p= 0.001). Indrani et al (2010) in their paper on addressing low utilization of health services in developing countries showed that when the population is very poor with very low income, they do not give enough attention to their health care needs due to financial problems. Women issues become secondary and are ignored by the household heads as they struggle to cater for the basic needs of their families. Sarah et al (2012) in their papers on personal factors influencing use of cancer of the cervix screening services reported that "rates of cervical screening were lower amongst women who were older, reliant on welfare, obese, current smokers, reported childhood sexual abuse, and those with anxiety symptoms"

Although there are no charges for women to be screened by VIA/VILI, many women associate health services with fees and when a woman is financially poor there is a tendency to shy off in response to availed health services as opposed to when she have some funds which will motivate her to seek health care.

Majority of the respondents 52% (n=192) were supported by their husbands/partners as they were the main income earners. There was no statistical significant relationship between the main income earner and the client willingness to use the cancer of the cervix screening services (p = 0.409) This was in contrast with Singh et al (2012) in their study on factors influencing uptake of cancer of the cervix screening among women in India. Male partners were a factor in determining the uptake of the services as he was the one to provide the funds for transport and the hospital fee. Todd et al, (2006) in their paper on men's involvement in promoting reproductive health concluded that" involvement of males is vital in promoting their own and their partners’ reproductive health. Such involvement should prevail throughout the relationship, leading to open communication about planning families, using contraceptives effectively, and reporting signs of abnormalities early to health care professionals for prompt treatment". In most
communities the head of the family who is usually the main income earner and in most cases the male partner decides who, when and where to seek health care services.

Sixty percent (n=222) of the sampled women earned Ksh 5000 or less per month. There was a statistical significant association between the client average monthly income and use of the availed cancer of the cervix screening services (p=0.001). These results were supported by Al-Naggar et al, (2010) in their study on barriers towards cancer of the cervix screening among young Malaysian woman where they found low income as a barrier to being screened among young women.

Seventy three percent (n=271) of the sampled women were the decision makers on who, when and where to go for health services. There was a statistical significant relationship between the person who makes the decision on who, where and when to seek for health care and utilization of the availed cancer of the cervix screening services. (p= 0.032). Thirty five percent (n=130) of the respondents stated that they had never heard people discussing about cancer of the cervix. This implies that the level of engagement of the community in discussing cancer of the cervix is low.Glanz et al (2008) in their paper on Health behavior and health education theory, research, and practice, emphasized the importance of community readiness and participation in increasing cervical screening services uptake in a given community.

One of other comment people made about VIA/ VILI screening method was that the reagents caused itching. Flora et al (2014) in their paper on Understanding the role of embarrassment in gynecological screening in Uganda concluded that "embarrassment and other psychosocial barriers may play a large role at the onset of a screening programme, but over time as education and knowledge increase, and the social norms around screening evolve, its role diminishes.

The role of peer education and community authorities on health care cannot be overlooked and can have major impact in overcoming psychosocial and social barriers to screening". 
5.1.2. Awareness of Cancer of the cervix and its prevention
Seventy three percent 73% (n=270) of the women who were sampled out in the survey had heard about cancer of the cervix compared to 27% (n=100) of them who admitted of not having heard of the disease before, however only 53.8% (n=199) indicated that they were aware of services for screening cancer of the cervix. Only 35.4% (n=131) of those who were aware of the screening services learnt about it from their health care providers. This indicates that the dissemination of health information at the public health facility was not very effective as every respondent was to be advised on the available screening service.

There was a statistical significant association between the client awareness of cancer of the cervix prevention and her willingness to be screened for the same. (p = 0.000).

Thirty one percent (n=113) of the sampled out women in the survey confirmed that they knew women who had suffered from cancer of the cervix.

The above association have been supported by many studies including Ayinde et al (2004) study on" awareness of cancer of the cervix, PAP smear and its utilization among female undergraduate in Ibadan", Aniebue et al (2008)" Awareness and practice of cancer of the cervix screening among female undergraduate students in Nigeria universities," and Singh et al (2012) on" Factors influencing uptake of cancer of the cervix screening among women in India". All the studies found a statistical significant relationship between the awareness on the existence of cancer of the cervix and willingness to be screened for the same. Perceived seriousness and perceived susceptibility to a given health condition depend on knowledge about the condition. Irwin et al (1950) in their health belief model postulated that" higher perceived threat leads to higher likelihood of engagement in health-promoting behaviors". The health belief model predicts that if a person feel he is susceptible to a certain disease, he/she will behave in ways that protect him/her from the condition, hence women who are aware of cancer of the cervix will most likely use the screening methods availed to them.

Thirty five percent (n=131) of the sampled out women in the survey confirmed that they received information about cancer of the cervix from their healthcare providers. The
best and comprehensive information regarding cancer of the cervix and the available screening methods is from the health professionals. Once the women come in the MCH/FP clinic they should be provided with health education on cancer of the cervix. The study was an exit interview and the expectation was that all the women who attended the facilities were educated on cancer of the cervix and its screening but only 35.4% (n=131) confirmed being advised by the health care professionals. This underlines the importance of improving the morning health talks at the clinics and also when proving the integrated services in the MCH/FP rooms.

Thirty five percent (n=130) of the sampled out women in the survey confirmed that they were familiar with symptoms of the cancer of the cervix compared to 65% (n=240) of them who did not know the symptoms. Like most cancers the initial stages of the cancer of the cervix are asymptomatic and as the disease progresses the only sign is vaginal bleeding. By the time bleeding and other signs and symptoms occur the disease may have progressed to CIN2/3 (Stanley J, 2011). This means that one can live with condition for a long time without being aware and the best way to avoid this is screening after every three to five years. Most of the respondents gave signs and symptoms of urinary tract and sexually transmitted infections. Sign and symptoms should never be relied upon in the prevention of a given disease as the disease will have already established.

Forty seven percent (n=173) of the respondents believed that having multiple sexual partners could cause cancer of the cervix. Cancer of the cervix is associated with Human papilloma virus which can be transmitted sexually.

Regarding VIA /VILI cancer of the cervix screening service, one of interesting definition was 'A method of expanding female genital parts with a metallic material'. This indicated some of the negative attitude the respondents had regarding the VIA/VILI method.
5.1.3 Screening practices
Fifteen percent (n=55) of the sampled out women in the survey had been screened for cancer of the cervix within the last two years compared to 85% (n=315) of them who had not.

Although this study is on VIA/VILI cancer of the cervix screening services, the results are supported by Gakidou et al (2008) study on pap smear coverage, where they found out that in developing countries coverage is lower than 19% while that of developed countries is more than 63%.

Screening coverage for VIA/VILI should be higher than other methods of screening because it's cheap in terms of resources needed, can be done by lower cadres of health care professionals, results are immediate among other advantages.

Among the reasons the women gave for not being screened included lack of awareness about the availability of the screening services and the need to be screened, lack of time and funds, others didn't think they were susceptible to the condition, did not get approval from their husbands/partners, were embarrassed to be examined on the private parts, worried that they will be told they have cancer of the cervix and finally some had not thought about it. These reasons just prove that majority of the reasons the women are not screened is as a result of ignorance, if women are given the right information at the right time, screening services can be improved tremendously.

Natalie et al (2011) in their study on "the role of primary care professionals in women’s experiences of cancer of the cervix screening" found that the highly intimate and personal nature of the screening is challenging, and many women report unsatisfactory experiences. "Problematic issues include: embarrassment and discomfort (sometimes severe) in exposing an intimate and personal part of their body; surrendering control and finding the test painful, uncomfortable and personally threatening. Though there is an important role for primary health care professionals in easing discomfort and facilitating positive experiences, women often report feeling disappointed with how the procedure is conducted. Women suggest that practitioners’ attempts to normalize the interaction and maintain a degree of detachment could have the perverse effect of making them feel more uncomfortable and that more personalization would be welcome".
Eighty six percent of the respondents (n=317) had intentions of getting screened within the next five years compared to 14% (n=53) of them who were not willing. Although it was hard to establish for sure those who intended to be screened were do so in future, through proper guidance and persistent health education on cancer of the cervix screening during any contact with health professionals, screening will be enhanced. The main reason of not intending to be screened was lack of awareness on the cancer of the cervix risks and lack of information about the cancer of the cervix screening services. Compared to other tests for cancer of the cervix screening VIA with cryotherapy is more feasible and can help increase the coverage in developing countries. Gakidou et al (2008) reported that "the large declines in cancer of the cervix mortality in developed countries as being attributed to widespread screening, but it is unclear whether this success can be replicated in the developing world". They concluded that "Strategies for improving cancer of the cervix prevention must be adapted to meet the specific needs of individual countries. Expanded screening may be a viable option where sufficient infrastructure and health system access exists". Paul et al (2013) in their paper on screen and treat approach by use of VIA and cryotherapy showed that "use of VIA and cryotherapy in low resource settings is a feasible approach to providing cancer of the cervix prevention services. Activities that can help ensure successful programs includes mobilizing and educating communities, organizing services to meet women's schedules and needs, and strengthening systems to track clients for follow-up. Sustainability also depends on having an adequate number of trained providers and reducing staff turnover." Phongsavan et al (2011) study on "safety feasibility and acceptability of visual inspection tests," found that "Visual inspection with acetic acid is a simple test that requires minimal infrastructure and expenditure. Integration of VIA with cryotherapy at the primary care level constitute a feasible program for the prevention of cancer of the cervix in low resource settings".

Utoo et al (2013) in their study on "Utilization of screening services for cancer of the cervix in Makurdi Nigeria" concluded that "health workers should help change the perception of non susceptibility of women. They should be made to understand that as long as a woman is sexually active she stands a chance of been affected. More screening
centres should be designated. So, a well organized national mass screening programme is done". In the initial plan for the NCCP in Kenya, dispensaries were to offer screening services without the cryotherapy treatment. Those who needed treatment were to be referred to Health centres or Sub County Hospitals (MoH, 2005). The current situation is different as almost all dispensaries do not offer the screening services. This should be rectified to avoid missed opportunities and increase cancer of the cervix screening coverage. Screening should be free or at subsidized cost. Training and retraining of health workers to provide services is important. Health workers should recommend the policy guideline on the screening frequency.

5.1.4 Health care facility and providers factors
Most of the respondents, 85%( n=315) had physical access to public health facilities because the facilities were five kilometers or less from their homes. The distance to health facility was estimated by asking the respondents the village or the sub location she came from and the researcher could approximate the distance from there using a map of the area. (85% were using an hour or less to get to their nearest health facility.)

Nwanko et al, (2011) in their study on" Knowledge attitudes and practices of cancer of the cervix screening among urban and rural Nigerian women," described location of health facility and its accessibility as one of the factor that affects utilization of health services. A study done by Prosannajid Sarkar et al, (2009) in their paper on “Situation of maternal health care in Bangladesh" also revealed that physical distance to the nearest health facility influences health seeking behavior among women.

The Health Centres were not well equipped in terms of materials, reagents and equipments. The reagents were not replenished on time and in all the Health Centres the cryotherapy machine, which is used for treatment of the appropriate lesions, were not working. This affected the single visit approach because the VIA positive clients could not be treated at the site or the same day. Lack of some of essential supplies and equipment also meant missed opportunities could arise. Staci et al, (2013) in their paper on "Knowledge, Attitudes, Practice and perceived risks of cancer of the cervix among Kenyan women," concluded that." Challenges to cancer of the cervix screening
programmes included low public awareness, cost and access to services, shortage of equipments and supplies, trained personnel’s and lack of clinics and laboratory space which results in delays in service provision and general lack of screening coverage among the eligible women".

Forty seven percent (n=14) health care providers were trained on VIA/ VILI screening process, while 53% (n=16) were not. Among the trained were 10 nurses and four clinical officers.

For the screening services coverage to increase the number of the staff trained on VIA/VILI should also increase. The trained staff is supposed to attend refresher courses regularly to get updated on the screening services. This was not the case as staff only went for the courses when funds were available. Staci et al (2013) concluded that "for proper implementation and acceptability of cancer of the cervix screening, health care providers and women need more health education about who is at risk of cancer of the cervix and the importance of routine screening for cancer of the cervix prevention and control".

Fifty five percent (n=17) of the health care providers interviewed felt that they were not getting enough support from the relevant authorities i.e. the Sub County Hospital and the division of reproductive health. The authorities were more concerned with reports instead of providing the necessary resources including more trained staff. Support involves ensuring there are adequate resources in terms of manpower, material and time. Also staff needs to be motivated through incentives like further training and appreciation when they perform their duties well.

Eighty percent (n=24) of the health workers referred their clients who required further investigation or treatment to level 5 hospitals compared to 20% (n=6) of them who referred them to other healthcare facilities. Depending on the results after screening the woman can be released to go home (if the results are negative) or undergoes treatment of precancerous lesions of the cervix. If the cancer has become invasive or the lesions cannot be treated locally the client is referred for further investigations and treatment. Uniformity and organized and systematic referral system is essential for quality care and follow up purposes.
According to the key informants due to staff shortage and overlap of duties especially on market days when the MCH/FP clinics has so many clients, it is extremely hard to offer all the services and more often than not screening of cancer of the cervix is not priority leading to lack of the services and missed opportunities. The major challenges that were experienced by the health care providers were shortage of trained personnel while offering screening services, lack materials and instruments during the exercise, lack of support from their respective supervisors, work overload and non cooperating clients.

Eighty percent (n=24) of the health workers interviewed stated that lack of awareness was the major hindrance to utilization of VIA/VILI screening services while 20% (n=6) of them said negative cultural practices/ beliefs affected utilization.

5.2 Conclusions
Based on the findings of the study, the following conclusions were reached;

1. The level of awareness on cancer of the cervix prevention among eligible clients in Kitui Central Sub county was low 53.8% (n= 199) compared to national target of over 90% and awareness on existence of cancer of the cervix and its prevention services greatly influenced the decision to utilize the availed cancer of the cervix screening services.

2. Level of education, main source of income and average monthly income significantly influenced VIA/VILI cancer of the cervix screening services uptake. Cultural factors such as who decides on matters regarding health in the family also statistically influenced the uptake of the screening services. Clients age, marital status, parity, religion and main income earner were not statistically significantly associated with utilization of VIA/VILI screening services.
3. The public health facilities were not adequately staffed and equipped to handle the VIA/VILI Cancer of the cervix screening services effectively. This had an influence in the overall uptake of VIA/VILI cancer of the cervix screening services.

5.3 Recommendations

1. Strategies should be put into place to increase awareness on available methods of screening and importance of being screened for cervical cancer.

2. Women should be empowered educationally and economically for uptake and coverage of screening services to increase.

3. The County Government should provide public health facilities with adequate human and material resources for cervical screening purpose and together with National Government increase health care provider knowledge and skills.

5.4 Suggestions for Further Research

The following are some of the areas recommended for further studies:

- National wide review of the National Cancer of the cervix Prevention Program (NCCPP) with emphasis on VIA/VILI Cancer of the cervix Screening Methods.
- Research to establish the most effective method/media to educate/create awareness on cancer of the cervix screening.
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APPENDICES

APPENDIX I: CONSENT FORM

Hello, my name is ………………………………………………………………………… I am interviewing study participants on behalf of John Hiuhu Mwangi. He is a Master of Public Health (Monitoring and Evaluation) Student at Kenyatta University, Nairobi. The purpose of the study is to establish factors influencing utilization of visual inspection method of cervical cancer screening among women of reproductive age in Kitui Central Subcounty. There are no direct benefits to you or any risks posed to you during the study. If you decide to participate, I or and/or a research assistant will interview you just once. Any information that is obtained in connection to this study will remain confidential as it will not be traced back to you since names or tags will not be used. If you give your permission by signing this document, I plan to submit the findings to Kenyatta University for the purposes of the award of Master's degree, to NACOSTI as a requirement of all such academic studies, the division of RH stakeholders and to the ministry of Health for Strategizing interventions to prevent and control cervical cancer.

If you have any questions, please ask. Thank you very much.

You are making a decision whether or not to participate. Your signature indicates that you have decided to participate, being aware of the information provided above.

If Yes,

Signature/Thumb print…………………………………………………………Date………………
Signature of Investigator………………………………………………………… Date………………
APPENDIX II: QUESTIONNAIRE

A QUESTIONNAIRE ON UTILIZATION OF VISUAL INSPECTION SCREENING METHODS OF CANCER OF THE CERVIX IN KITUI CENTRAL SUBCOUNTY KENYA

Dear Respondent,

This questionnaire is an attempt to gather important information about factors influencing screening practices of cancer of the cervix among women in Kitui Central Sub County.

YOU SHOULD NOT WRITE YOUR NAME anywhere on the questionnaire. Your participation in this study is very important as it would help the researcher to better understand the health behavior process, particularly cancer of the cervix awareness and screening practices among women in the district. There is no right or wrong answers to the questions asked or the statements made; instead, what are desired of you are your truthful and honest responses.

Please note that the completion of this questionnaire is entirely voluntary. All information gathered as a result of your participating in this study will be treated with utmost confidentiality. Your willingness to complete the questionnaire implies you have given consent to participate. Thank you for cooperating.

(1) Basic Information
1.1 Date of interview.................................
1.2 Study site........................................
1.3 Code of the interview ..............................

(2) Socio-Demographic Information
2.1 Age in years.
   1) < 20 years [ ]
   2) 20-29 years [ ]
3) 30-39 years [ ]
4) 40-49 years [ ]

2.2. What is your current marital status?
1). Single [   ]
2) Married [   ]
3). Not living with partner [   ]

2.3. Number of children…………………………….
1) 1 [   ]
2) 2-3 [   ]
3) 4-5 [   ]
4) >5 [   ]

2.4 Age of the last born……………………..
1) < 5 year [   ]
2) 5-10 years [   ]
3) 11-15 years [   ]
4) 16-20 years [   ]
5) >20 years [   ]

2.5 What is the highest level of education attended?
1) Primary education [   ]
2) Secondary education [   ]
3) Tertiary(College/University) education[   ]
4) No formal education [   ]

2.6 What is your religion?
1) Roman Catholic [   ]
2) Protestant [   ]
3) Muslim
4) Other specify [ ]

2.7 How far from here (health facility) is your home (Village/Location point the respondent comes from)
1) Less than a kilometer [ ]
2) 1-3 Km [ ]
3) 3-5 Km [ ]
4) >5km [ ]

(3) Socio-Economic Information

3.1). Which is your main source of income?
1) Farm produce [ ]
2) Business/self employed. [ ]
3) Employed /Salaried [ ]
4) Others (specify)……………………………………..

3.2 Who is the main income earner?
1) Myself [ ]
2) My husband/partner [ ]
3) Others specify ………………

3.3 What was the average income (in Kenyan shillings) in the last month?
1) < 2500 [ ]
2) 2500-5000 [ ]
3) 5000-10000 [ ]
4) 1000-20000 [ ]
5) >20000 [ ]
(4) Awareness of cancer of the cervix and cancer of the cervix screening

4.1 Have you heard about cancer of the cervix? 1. Yes [ ] 2.No [ ]

4.2 Do you know anyone that has had cancer of the cervix before? 1. Yes [ ] 2.No [ ]

4.3 Have you ever received information related to cancer of the cervix?
1. Yes [ ] 2.No [ ]

If yes from who/where
................................................................................................

4.4 Are you familiar with health problems related to cancer of the cervix?
1. Yes [ ] 2.No [ ]

4.5 Which of the following factors could make a person more likely to develop cancer of the cervix?
1) Family history of the disease condition [ ]
2) Multiple sexual partner [ ]
3) Age [ ]
4) Don’t know [ ]
5) Others specify………………………………..

4.6 Are you aware of screening for cancer of the cervix? 1. Yes [ ] 2.No [ ]

4.7 If yes, how did you get to know about it?
1) Relatives [ ]
2) Friends [ ]
3) Doctor /Nurse/my health provider [ ]
4) Media(Radio,TV.Newspaper) [ ]
5) Others specify ……………………………..
6) Not applicable [ ]
(5) Screening practices

5.1 Have you been screened for cancer of the cervix within the last one year?
1 Yes [   ] 2 No [   ]

5.2 If yes what did the Clinician do to you
1). Smeared some chemicals on my cervix and visualized [   ]
2). Collected some samples from my cervix and send them for analysis [   ]
3). Others specify…………………………

5.3 Did the Clinician explain the result after the test? 1 Yes [   ] 2 No [   ]

5.4 What happened after the test?
1) I was referred to a bigger hospital [   ]
2) I was referred to a gynecologist [   ]
3) I was admitted in the hospital [   ]
4) I was counseled then went home [   ]
5) Nothing happened [   ]
6) Others specify ………………

5.4 If you have not been screened what is the reason
1) Was not aware am supposed to be screened
2) Lack of time [   ]
3) Didn’t get the serviced when i wanted to be screened [   ]
4) Don’t think am susceptible to cancer of the cervix [   ]
5) Embarrassed being examined in the private parts [   ]
6) Worried that I can be told I have cancer of the cervix [   ]
7) My husband/partner will not approve [   ]
8) Had not thought about it [   ]
9) Others specify ……………………………
5.6 Do you have any intention of getting screened within the next five years?  
1 Yes [ ]
2 No [ ]

5.7. If no give reason(s)………………………………………………………………………………
………………………………………………………………………………
………………………………………………………………………………

(6) Social cultural factors

6.1 Who decides who and where to go to hospital/clinic in your family
1) My Husband/partner [ ]
2) Myself [ ]
3) Others (specify)…………………………………………

6.2 What is your perception on cancer of the cervix?
1) It is a disease caused by witchcraft [ ]
2) It is a curse [ ]
3) It is killer disease [ ]
4) It is non curable disease [ ]
5) Have never heard people discussing it [ ]
6) Others (specify)…………………………………………

Thank you for taking time to participate in this interview
APPENDIX III: HEALTH FACILITY SURVEY TOOL

A) IDENTIFICATION

Name of health facility .................................................................

Type of health facility

   a) Sub County Hospital [ ]  c) Health center [ ]

Officer in charge of health facility

Medical Doctor [ ] 1
Clinical Officer [ ] 2
Registered Nurse [ ] 3

Number of health workers at the health facility

Medical doctors
Clinical Officer
Nurses
B) TRAINING AND SUPPORT

1. Have you been trained on VIA/VILI related course?

<table>
<thead>
<tr>
<th>TRAINING</th>
<th>YEAR</th>
<th>WHERE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Counseling on VIA/VILI</td>
<td></td>
<td></td>
</tr>
<tr>
<td>VIA procedure</td>
<td></td>
<td></td>
</tr>
<tr>
<td>VILI procedure</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cryotherapy</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Referral and follow up process</td>
<td></td>
<td></td>
</tr>
<tr>
<td>VIA/VILI data management</td>
<td>data</td>
<td></td>
</tr>
</tbody>
</table>

2). Are there adequate instruments, training or reference materials and other supplies?
1    Yes (  )  2 No (  )

3) If no explain …………………………………………………………………………………………………………………
………………………………………………………………………………………………………………………………………………
…………

4). How often do supervisors from the district headquarter or division of reproductive health visits the facility?
1    Monthly (  )
2    Quarterly (  )
3    Semi annually (  )
4    Annually (  )
5    Never visits (  )
6    Others specify……………..

5) Do you feel they adequately support you in implementing VIA/VILI screening processes?
1...Yes (  )  2 No (  )
6) Do you create awareness and mobilize women in the community for cancer of the cervix screening?
1...Yes ( )          2 No ( )

7). If yes above what mechanisms or methods are used to mobilize eligible women in the community
1. Print media ( )
2. Electronic media ( )
3. Direct verbal communication ( )
4. Community leaders including religious and social group leaders ( )
5. Others specify

8). Where do you refer clients who requires further investigation or treatment.
1. Level 5 hospitals ( )
2. Level 6 hospital ( )
3. Private clinics/hospitals ( )
4. Mission hospitals ( )
5. Others specify……………………………………………………………………………………………………

9) Explain briefly the referral process………………………………………………………………………………

C) ESSENTIAL SUPPLIES

Essential supply needs for VIA and Cryotherapy service provision.

<table>
<thead>
<tr>
<th>SUPPLY/EQUIPMENT/</th>
<th>YES</th>
<th>NO</th>
<th>REMARKS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Room (privacy)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Table for writing</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Chairs</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Gynecology examination couch</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Light source (Torch or Halogen lamp)</td>
<td></td>
<td></td>
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<tr>
<td>6 Instrument Tray</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>SUPPLY/EQUIPMENT/</td>
<td>YES</td>
<td>NO</td>
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<td>----</td>
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</tr>
<tr>
<td>7</td>
<td>Instrument Trolley</td>
<td></td>
<td></td>
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<tr>
<td>8</td>
<td>Stool</td>
<td></td>
<td></td>
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<tr>
<td>9</td>
<td>Privacy screen</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Sheets and gowns</td>
<td></td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>Mackintosh</td>
<td></td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>Waste segregation bins</td>
<td></td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>IP Bucket</td>
<td></td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>0.5% Chlorine</td>
<td></td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>90% Isopropyl ethyl Alcohol</td>
<td></td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>Utility gloves</td>
<td></td>
<td></td>
</tr>
<tr>
<td>17</td>
<td>Plastic Aprons</td>
<td></td>
<td></td>
</tr>
<tr>
<td>18</td>
<td>Autoclave sterilizer</td>
<td></td>
<td></td>
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<tr>
<td>19</td>
<td>Soap or Hand sanitizer</td>
<td></td>
<td></td>
</tr>
<tr>
<td>20</td>
<td>Bivalve speculum</td>
<td></td>
<td></td>
</tr>
<tr>
<td>21</td>
<td>Non sterile gloves</td>
<td></td>
<td></td>
</tr>
<tr>
<td>22</td>
<td>5% acetate</td>
<td></td>
<td></td>
</tr>
<tr>
<td>23</td>
<td>Lugol's iodine</td>
<td></td>
<td></td>
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<tr>
<td>24</td>
<td>Normal saline</td>
<td></td>
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<tr>
<td>25</td>
<td>Formaline solution</td>
<td></td>
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<tr>
<td>26</td>
<td>Large cotton roll</td>
<td></td>
<td></td>
</tr>
<tr>
<td>27</td>
<td>Orange sticks or wooden sticks</td>
<td></td>
<td></td>
</tr>
<tr>
<td>28</td>
<td>Galley pots</td>
<td></td>
<td></td>
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<tr>
<td>29</td>
<td>Kidney dish</td>
<td></td>
<td></td>
</tr>
<tr>
<td>30</td>
<td>Specimen container with lids</td>
<td></td>
<td></td>
</tr>
<tr>
<td>31</td>
<td>Masking tape/labels</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SUPPLY/EQUIPMENT/</td>
<td>YES</td>
<td>NO</td>
<td>REMARKS</td>
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<tr>
<td>32 Non sterile gauze</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>33 K-Y jelly</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>34 Condoms</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>35 Timer or watch</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>36 Sponge holding forceps</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>37 Cancer of the cervix screen map forms</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>38 Register or Log book</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>39 Pathology forms</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>40 Client cards</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>39 Pathology forms</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>41 NO2 or CO2 gas cylinder (with gas)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>42 Appropriate cryotherapy unit with cryotips</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>43 Adjustable Spanner</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>44 Gas cylinder adapter.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>45 Monsel's paste or silver nitrate sticks</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>46 Glutaraldehyde (Cidex)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: MoMs/MoPHS 2012, National RT Cancer guidelines Feb 2012.
APPENDIX IV: KEY INFORMANT INTERVIEW SCHEDULE

1. Are you readily available to offer VIA/VILI screening services?
2. What is your role in the provision of VIA/VILI screening services?
3. What are the constraints you encounter while offering cancer of the cervix prevention services?
4. What do you think hinders clients from utilizing VIA/VILI screening services?
5. What is your view on VIA/VILI cancer of the cervix screening services?
6. What would you like improved in the provision of cancer of the cervix prevention and control services?
APPENDIX V: MAP OF KENYA SHOWING KITUI CENTRAL SUB COUNTY
APPENDIX VI: RESEARCH APPROVAL LETTER

KENYATTA UNIVERSITY
ETHICS REVIEW COMMITTEE

Our Ref: KU/R/COMM/51/176

John Hiulu Mwangi
School of Public Health
Kenyatta University
P. O. Box 43844, Nairobi.

Dear Mr. Hiulu,

APPLICATION NUMBER PKU/117/1103 OF 2013 – “UTILIZATION OF VISUAL INSPECTION SCREENING METHODS OF CERVICAL CANCER IN KITUI CENTRAL DISTRICT, KENYA.”

1. IDENTIFICATION OF PROTOCOL

The application before the committee is with a research topic, “Utilization of visual inspection screening methods of cervical cancer in Kitui Central District, Kenya” received on 3rd May, 2013.

2. APPLICANT

John Hiulu Mwangi
School of Public Health
Kenyatta University
P. O. Box 43844, Nairobi.

3. SITE

Kitui Central District, 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 is of the view that against the following elements of review,

(i) Scientific design and conduct of study,
(ii) Recruitment of research participant,
(iii) Care and protection of research participants,
(iv) Protection of research participant’s confidentiality,
(v) Informed consent process,
(vi) Community considerations.

AND APPROVED and that the research may Proceed ON CONDITION that you incorporate its advise below.
5. **ADVICE/CONDITIONS**

With respect to matters of scientific design and conduct of study and recruitment of research participants, the following specific conditions must be fulfilled in writing before an approval can be granted. The manner of fulfilling these should be outlined and submitted to KU-ERC as soon as possible.

i. Revise title to read “determinants” instead of “Utilization”

ii. Participants between 15-18 years are minors and cannot give consent. Get proper consent for these minors.

iii. Include a proper consent form according to KU-ERC guidelines.

iv. Update work plan.

v. Avoid use of abbreviations in the questionnaire and consent form.

vi. Modify question 4.6 page 28 to be a follow up of question 4.5

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: KENYATTA UNIVERSITY ETHICS REVIEW COMMITTEE

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

Signature: [Signature]

Dated this day 19th of July 2013

cc. Vice-Chancellor
Director: Institute for Research Science and Technology
APPENDIX VII: RESEARCH AUTHORIZATION LETTER

NATIONAL COMMISSION FOR SCIENCE, TECHNOLOGY AND INNOVATION

Telephone: +254-20-2241349, 20-267 3550,
0713 788 787, 0735 404 245
Fax: +254-20-2213215

Email: secretary@nacosti.go.ke
Website: www.nacosti.go.ke

When replying please quote
Our Ref: NCST/RCD/12A/013/139

John Hiiju Mwangi
Kenyatta University
P.O.Box 43844-00100
Nairobi.

RE: RESEARCH AUTHORIZATION

Following your application dated 19th August, 2013 for authority to carry out research on "Determinants of visual inspection screening methods of cervical cancer uptake in Kitui Central District, Kenya," I am pleased to inform you that you have been authorized to undertake research in Kitui County for a period ending 28th February, 2014.

You are advised to report to the County Commissioner, the County Director of Education and the County Coordinator of Health, Kitui County before embarking on the research project.

On completion of the research, you are expected to submit two hard copies and one soft copy in pdf of the research report/thesis to our office.

Said Hussein
For: Secretary/CEO
National Commission for Science, Technology & Innovation

Copy to:

The County Commissioner
The County Director of Education
The County Coordinator of Health
Kitui County.