UPTAKE OF HPV VACCINE AND SCREENING FOR CERVICAL PRECANCEROUS LESIONS AMONG ATTENDEES OF MCH CLINIC AT THIKA LEVEL 5 HOSPITALS, KIAMBU COUNTY

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P/57/12161/09

A Research Thesis submitted in partial fulfillment of the requirement for the award of the degree of Master of Public Health in the School of Public Health of Kenyatta University

NOVEMBER, 2014

DECLARATION

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

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DEDICATION

To Mr. Kavoo former Nursing Officer Thika District Level 5 Hospital who encouraged me to enroll in the masters programme, Mr. Muigai from records for his consistent support during this study, my mother Gladys and my brother Samuel for their continued support.

ACKNOWLEDGEMENTS

The development of this thesis is the product of the efforts of many people. I thanks all those who contributed towards the successful completion of the report in one way or the other. I am very grateful to my supervisors, Dr. Peter Mwaniki of Jomo Kenyatta College of Agriculture and Technology and Dr. Albert Gachau of Kenyatta University who made time in their busy work schedule to guide me through reviewing many successive draft versions and were valuable source of information and advice in the development ofthis thesis overall work. I gratefully acknowledge the Department of Public Health under the auspices of Dr.I. Mwanzo of Kenyatta University, for the immense support and management of the entire process and ensured that communication was timely. I also recognize Thika District Hospital Medical Superintendent Dr.Jonah Mwangi, Nursing Officer in charge, for supporting me during this study and the entire MCH staff that provided me with whole-hearted co-operation during data collection period. I am indebted to the women who participated in the study for without them this study would not have been a reality. I acknowledged the Ministry of Health for granting me study leave. Above all, I give God all the glory for giving me strength and peace of mind to complete my work.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

DEFINITION OF TERMS

Aceto-white: well-defined abnormal white lesions that appear on the cervix after application of 3-5% of acetic acid

Adenocarcinoma: Invasive tumor with glandular and squamous elements intermingled.

Attitude: Feelings towards a subject, preconceived ideas that one may have and influence ones behavior.

Biopsy: A small tissue removed from the body examined in a microscope to aid in diagnosis of disease

Cancer: This is the name for a group of diseases in which certain cells in the body have changed in appearance and function, instead of dividing and growing in a controlled and orderly way; these abnormal cells can grow out of control and form a mass or tumor and thereby spreading to other areas of the body (metastasis) (Mosby's Medical, Nursing and Allied Health Dictionary 2002).

Carcinogenesis: The process of altering normal cells to cancer cells.

Cervical: Pertaining to the neck or the region of the neck or the restricted area of a neck like structure e.g. the cervix of the uterus.

Cervical Intraepithelial Neoplasia (CIN) / Squamous Intraepithelial Lesions (SIL): These are two commonly used terms to describe precancerous lesions or the abnormal growth of squamous cells observed in the cervix. SIL is an abnormal result derived from cervical cytological screening or Pap smear testing. CIN is a histological diagnosis made upon analysis of cervical tissue obtained by biopsy or surgical excision.

Cervical transformation zone: the area of the cervix where columnar type of epithelium is transformed to squamous type epithelium. This is part of the cervix where abnormal cells occur

Culture: A people's way of life

Cytology: a method of examining cells using a microscope

Dysplasia: abnormal growth of body tissue

Early marriage: marriage before the age of 18 years

Early sexual debut: sexual intercourse before age 18 years

Gender based violence: any harm that is subjected against a person's will due to inner sense of maleness or femaleness and has a negative impact on health.

Genital mutilation: The cutting of female genital parts like clitoris, labia majora and other areas to fulfill cultural obligations

Genital warts: Form of benign tumor caused by HPV virus

Health Education: Consciously constructed opportunities for learning improvement

High-grade cervical lesions (HSIL/ CIN-2 / CIN-3 / CIS**):** High-grade cervical lesions are defined by a large number of precancerous cells on the surface of the cervix that are distinctly different from normal cells. They have the potential to become cancerous cells and invade deeper tissues of the cervix. These lesions may be referred to as moderate or severe dysplasia, HSIL, CIN-2, CIN-3, or cervical carcinoma in situ (CIS).

Histology: The examination of tissue under the microscope.

Human Papilloma viruses: A virus that is the cause of common warts of the hands and feet as well as cervical precancerous and cervical cancer. There are over 100 types of Papilloma viruses.

Hypothesis: A statements that makes a future prediction

Invasive cervical cancer (ICC) / cervical cancer: If the high-grade precancerous cells invade deeper tissues of the cervix or to other tissues or organs, then the disease is called invasive cervical cancer or cervical cancer.

Invasive squamous cell carcinoma: Invasive carcinoma composed of cells resembling those of squamous epithelium.

Knowledge: Understanding of any given topic

Low-grade cervical lesions (LSIL/CIN-1): Low-grade cervical lesions are defined by early changes in size, shape, and number of abnormal cells formed on the surface of the cervix and may be referred to as mild dysplasia, LSIL, or CIN-1.

Metaplasia: The changing of one type of epithelium tissue to another.

Practice: Refers to the ways knowledge is demonstrated through actions.

Policy: A formal statement, usually written down, of the general goals and acceptable procedures of Government or an organization in a particular area

Precancerous lesions: Benign growths which are not cancerous but have the potential to become cancers.

Screening: A preliminary procedure, such as a test or examination, to detect the most characteristic sign or signs of a disorder that may require further `investigation.

Sexual debut: The very first time an individual engages in heterosexual act.

Sexually transmitted diseases: Diseases acquired through sexual contact.

Squamous intraepithelial lesion: Cellular changes in squamous type of epithelium detected by microscopic examination of cells.

Vaccination: Any injection of attenuated or killed microorganisms, such as bacteria, viruses, administered to induce immunity or to reduce the effects of associated infectious disease.

ABBREVIATIONS AND ACRONYMS

ACIS..... Adenocarcinoma in Situ

CACX.....Cancer of the Cervix Uteri

CDC..... Center for Disease Control

CI..... Confidence Interval

CIN..... Cervical Intraepithelial Neoplasia

DNA.....Deoxyribonucleic Acid

FDA.....Food & Drug Administration of the USA

GAVI ..... Global Alliance for Vaccine Initiative

HC Test..... Hybrid Capture Test

HPV..... Human Papilloma Virus

HSIL..... High Grade Squamous Intraepithelial Lesion

IARC ..... International Agency for Research on Cancer

ICDC..... International Center for Disease Control

KAP..... Knowledge, Attitudes and Practice

KDHS ..... Kenya Demographic and Health Survey

KNBS..... Kenya National Bureau of Statistics

KEMRI..... Kenya Medical Research Institute

LEEP..... Loop Electrosurgical Excision Procedure

LSIL..... Low grade Squamous Intraepithelial Lesion

MOH..... Ministry Of Health

MOMS ..... Ministry Of Medical Services

MOPHS	Ministry of Public Health and Sanitation
MCH.....	Maternal and Child Health
PAP Smear.....	Papanicolaou Smear
SIL.....	Squamous Intraepithelial Lesion
STI.....	Sexually Transmitted Infections
UNDP	United Nations Development Fund
USA.....	United States of America
VIA.....	Visual Inspection with Acetic Acid
VILI.....	Visual Inspection with Lugol's Iodine
WHO	World Health Organization

ABSTRACT

Cervical malignancy is a disease of public health importance. It is one health condition that, in its prevalence and outcome clearly depicts the disparity between the health care systems of developed and developing countries. About 80% of the morbidities and mortalities resulting from cervical cancer occur in developing countries. This is further compounded by the fact that 75% of patients in developing countries present with advanced stage disease when only palliative treatment is possible. High risk human papilloma virus serotypes are implicated in the development of cervical intraepithelial neoplasm and cervical cancer. Sexual behavior has been identified as the major risk factor for cervical cancer. Although largely preventable, cervical cancer remains a common worldwide malignancy. Globally 500,000 new cancers occur annually. Screening and immunization have been documented to greatly reduce cervical cancer in most developed countries but those strategies are poorly implemented in developing countries. The objective of this study was to assess the factors influencing uptake of HPV vaccine and screening for cervical cancer. This was a cross sectional study of maternal child health clinic attendees, between February and mid June 2011 at Thika level 5 hospital. By simple random sampling technique 290 mothers were interviewed after observing the necessary ethical requirements. Data analysis was done by predictive analytical software and presented in frequency tables, percentages and means. Inferential statistics was done using chi-square to test for association among research variables, statistical significant was calculated at 5% level of significance and 95% confidence interval. The results of the study showed that less than half of the respondents (40.3%) had knowledge on the causes of cervical cancer. While majority (79%) of the respondents stated that cervical cancer was a very serious disease, only 24 (8.3%) of the total respondents (290) had been screened. Although 39(13.4%) had heard about a vaccine to protect against infection with human papilloma virus (HPV), none of the respondents had been vaccinated. Educational level was positively correlated with knowledge of cervical cancer, (χ^2 =14.949,df=3, p=0.002). Higher education attainment led to the delay in sexual debut. More than half of the respondents (63%) were at an increased risk of developing cervical cancer. This study recommends integration of HPV vaccine with Kenya National Immunization Vaccine programme and education curriculum to be modified to include diseases of public health importance such as cervical cancer at all levels of education.

CHAPTER ONE: INTRODUCTION

1.1 Background to the study

Infection with Human papilloma virus is the main causative agent for Cancer of the uterine cervix which is the second most common cancer among women in the world preceded only by breast cancer (IARC, 2009).Every year approximately, 530,000 new cases are diagnosed with cervical cancer globally and about 274,000 die from the disease (WHO, 2010a).There are wide variations between different countries in the incidence of cervical cancer in the world (Ansink, 2007).More than 85% of the global burden occurs in developing countries, where it accounts for 13% of all female cancers (WHO, 2008).High incidence regions are Eastern and western Africa (age standardized rates greater than 30 per 1000, 000). South Central Asia (24.6 per 100,000).South America and Middle Africa (ASRs 23.9and 23 per 100,000 respectively).Rates are lowest in western Asia, Northern America and Australia /New Zealand (ASR less than 6per 100,000) (Anorl, 2008) (Appendix IV).

Overall, the mortality incidence ratio for cervical cancer is 52%(HPV Information Center, 2011).In Africa there were 53,000 deaths, Latin America and the Caribbean 31,700 and in Asia 159,800 accounting for 86% of the global mortality(WHO,2007).

In Kenya Cancer ranks third as a cause of death after infectious and cardiovascular diseases with a rate of 18,000 deaths, accounting for 7% of total national mortality every year (Kenya Ministry of Public Health, 2009).Based on 2009 data from the Nairobi Cancer Registry approximately 2,635 women were diagnosed with cervical cancer

accounting for 20% of national cancer cases and 2111 (65%) died from the disease (Nairobi Cancer Registry, 2009), (Appendix v).

The low cervical cancer rates in developed countries have largely been attributed to their well-designed educational curriculum which includes diseases of public health importance, health education and health promotion programs, and high quality cytology-based screening programs (NHS, 2009).These programs require well planned health infrastructure, financial and human resources (Kenya Department Committee on Health, 2011).Kenya being a low income country lacks the necessary financial and human resources to establish similar programs (UNDP, 2009).

Deaths from cervical cancer are projected to rise to 320,000 in 2015 and to 435,000 in 2030 if respective governments fail to put in measures to combat this killer disease(Ault, 2006).

1.2 Statement of the problems

Although cervical cancer disease ranks among the leading cause of cancer related deaths in Kenya, it is preventable through public health measures which include; immunization with HPV vaccine, treatment of cervical precancerous lesions identified through screening and health education (ASC, 2011).There is evidence that treatment of cervical precancerous leads to low mortality and low incidence cervical cancer (Kenya Departmental Committee, 2011).

Lack of effective cancer registries in Kenya have led to under reporting of the disease resulting to under prioritization of cervical cancer by the government leading to low resource allocation (McKenzie *et al.*, 2011). This problem is compounded by limited

research on the subject and lack of enough trained oncologists in the country and the few available being concentrated in the urban center particularly Nairobi (Musibi, 2008).

The problem with Kenya in addressing cervical cancer disease is; under-documentation of the incidence and mortality of cervical cancer cases, no clear policy offering guidelines for the prevention of cervical cancer which includes; screening interval, HPV vaccination, age at commencement of screening (Gichangi *etal.*, 2003).There are no local studies to determine the low uptake of screening, unavailability of screening programs in all the health facilities (Jamieson *et al.*, 2008). Screening for cervical pre-cancerous lesions has been the mainstay of cervical cancer prevention globally. In Kenya screening has been opportunistic and has been offered only at family planning clinics. A study done in East Africa showed this to be ineffective as majority of women who attend family planning are below 25 years a group considered to be at low risk of cervical cancer(Frazer *et a*l., 2007).

Studies done in Kenya have shown that screening for cervical precancerous lesions is deplorably low. Current estimates indicate that only about3.2% of all eligible women aged between 18-69 years are screened every 3 years. Urban women have higher screening rates of about 4% compared to their rural counterparts at 2.6 % (Mitchel *et al.*, 2011).

Thika level 5 hospital was identified as an ideal reference center for the study due to its high attendance of mothers seeking MCH services due to the sub counties high population density and dedication of hospital management in supporting studies.

Average daily attendance of mothers seeking MCH services at Thika level 5 hospital is about 200 mothers and in one month approximately four thousand mothers are recorded

as having received MCH services. This is the number targeted for screening and only a small proportion of mothers undergo screening as indicated in Table 5.This statistics show that there is low uptake of screening with VIA/VILI despite the high population of Thika. The other problem in Thika Level 5 Hospital is that screening for cervical precancerous lesion is only done with VIA/VILLI a method that has low specificity in detecting cervical precancerous lesions (Goldie,2005) This data on the screening practices is a reflection of the whole country (Gatune, 2005). Failure to offer screening service on time is attributed to the mothers' lack of awareness of the dangers of cervical cancer. Thika District has a population of 650,000 (Kenya Bureau of Statistics, 2009), and women in the reproductive age (15-49 years) which constitute a quarter of the whole population (162,500). Data from the clinic show that in the year first January, 2010 to March 31, 2011, 680 mothers were screened, 39 had cervical precancerous lesions. From the above twelve (12) patients were admitted at Thika level 5 Hospital with advanced cervical cancer (THIS, 2011). All of these patients had varied complications of Liver failure, Anemia, deep venous thrombosis, local and distant Metastasis, leading to organ failure. Four of the patients were referred to Kenyatta National Hospital for specialized treatment while the others were discharged after treatment (Thika level 5 Health Information Systems March, 2011).This is an indication that cervical cancer is present in the study area and there is need to intervene in increasing the number of mothers enrolled in the screening program (THIS,2007).

Thika level 5 hospitals does not offer comprehensive diagnosis and treatment of cervical cancer as it refers most of such patients to Kenyatta National Hospital where there is congestion of cancer patients and hence delay in treatment. Kenya does not have enough

oncologists or infrastructure to adequately deal with all cases of cancer so prevention remains the only viable option to control this disease and reduce suffering among Kenyan women (KMOH, 2008).

1.3 Justification of the study

Kenya is within a demographic region with the highest A.S.I.R and there is no formal based cervical cancer prevention program (Wamai, 2009).Screening can be improved in Kenya with VIA/VILI since it is a low resource country. Developed countries with National cervical cancer prevention programs have recorded low A.S.I.R and low mortality (WHO 2010a). There is no official documented Report yet on the uptake of screening for cervical precancerous lesions among mothers attending MCH clinic at Thika level 5 hospital (THIS, 2011).Research is needed in all health care settings for cancer surveillance and to serve as the basis for effective control and prevention of cervical cancer (Matthers *etal.*, 2006).There is evidence from the developed world that screening for cervical precancerous lesion reduces mortality in the long run.

There is need to study the factors influencing the uptake of cervical cancer screening as not all mothers seeking maternal health services are screened for this killer disease even though this service is offered free at the study area and to establish the proportion of mothers that are at an increased risk for cervical cancer. The study needs to focus on the prior utilization of HPV vaccine among the respondents and the level of knowledge among the respondents on its importance in the prevention of cervical cancer (Ctelande*t al*, 2006).

There is need to reduce the number of mothers who seek treatment for cervical cancer at advanced stages at (Thika level 5) hospital by creating awareness in the community so that they can utilize screening and vaccination for effective prevention of the diseases (WHO,2010b).

1.4 Research Questions

i) What proportion of mother's seeking MCH services has had screening for cervical precancerous lesions?

ii) What proportion of mother's seeking MCH services has had immunization against HPV?

iii) What is the proportion of mothers attending MCH clinic with knowledge of the existence of HPV Vaccine.

iv) What is the proportion of mothers' attending MCH clinic that is at an increased risk of developing cervical precancerous lesions?

1.5 Hypothesis

1.5.1 Null hypothesis

Screening for cervical precancerous lesions and immunization with HPV vaccine has no impact on the incidence of cervical cancer.

1.6 Objectives

1.6.1 Broad Objectives

To determine the factors that influence uptake of HPV Vaccine and screening for cervical precancerous lesions among mothers attending MCH clinic.

1.6.2 Specific Objectives

i) To determine the proportion of mothers' attending MCH who undergo screening for cervical precancerous lesions.

ii) To determine the proportion of mothers attending MCH who have had immunization against HPV.

iii) To determine the proportion of mothers attending MCH with knowledge on the existence of HPV Vaccine.

iv) To determine the proportion of mothers who are at an increased risk of developing cervical precancerous lesions among mothers attending MCH clinic.

1.7 Significance and Anticipated Output

It is hoped that the findings of the study will be used to design health education programs aimed at raising awareness on the causes of cervical cancer and increase the number of mothers screened for cervical precancerous lesions at close intervals. The study results will help program organizers to commence HPV vaccine program at the hospital. The results of the study will establish a mechanism for coordinated and timely referrals for all patients with cervical precancerous lesions. This is hoped to reduce significantly the

number of patients who present at Thika Hospital with late diagnosis of cervical cancer at stage II and IV.

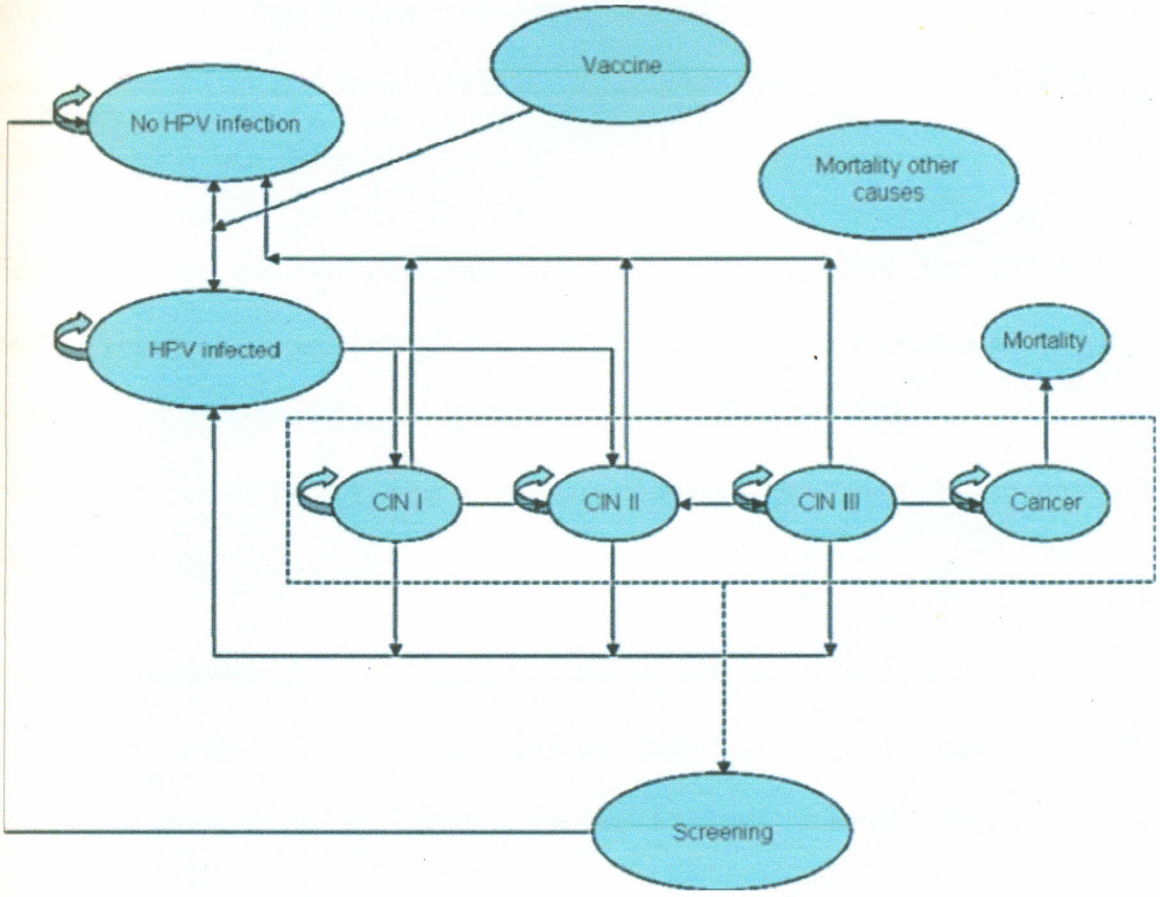
The findings will increase on the pool of studies and thus contribute to knowledge. The results of this study will shed light on the magnitude of cervical cancer in Kenya and, hence assist mangers in implementing strategies to treat cervical precancerous lesions. The results will contribute to the field of knowledge and act as a basis for future research and aid in publication of journals.

1.8 Limitation of the study

A community based study would have been preferred to include all the women in the study area but this could not have been possible due to the financial constraints. Time was also limited as the study was done during the regular working time thus the study took more time than was anticipated.

1.9 Conceptual Model for the Study

Markov Model showing progression of HPV infection to cervical cancer, cervical cancer prevention through screening and vaccination with HPV vaccine (Rogoza*etal.*, 2009*)*.



CHAPTER TWO: LITERATURE REVIEW

2.1 Causes of cervical cancer and its prevention

Cervical cancer is a disease characterized by uncontrolled growth and spread of abnormal cells (America, Cancer Treatment Center, 2012).If the spread is not controlled it can result in death (CDC, 2007).

The second most prevalent cancer among women is cervical cancer(Ferlay,2009).This scenario is different in many developed countries where the incidence is decreasing due to widespread implementation of screening programs (Khan,2005).The disease becomes nearly eradicated if precancerous lesions are identified early through screening and treated effectively (ACS,2005).

The high incidence of cervical cancer in Kenya can be reduced drastically by the government's efforts of implementing national cancer screening programs and launch surveillance programs and avail funds for treatment across all treatment centers (Yamada *etal*, 2008).

Many forums have been convened to address the effects of cervical cancer. In2009; there was an international conference at Oxford University to discuss; cervical cancer in Kenya and find ways to prevent cervical cancer in Kenya as well as in Africa (MOM, 2008, MOPH, 2009). This conference assembled health professionals from World Health Organization, pharmaceutical representatives and international oncologists and other cancer agents. The aim of the conference was to solicit global financial support to reduce

the prevalence of cervical cancer in the underdeveloped countries in Africa; Kenya included (Kerr, 2009).

Human papilloma virus (HPV), a sexually transmitted infection is the necessary but insufficient cause of cervical cancer (MCAlpine *et al.*, 2010). Studies have shown that over 99.7 percent of all cases of cervical cancer are due to infection with human Papilloma virus (American Cancer Society, 2012). Thirty nine (39) percent of Kenyan women have harbored an HPV infection at some time in their lives (Ctlend *et al*, .2006).More than 120 HPV types have been described. Some strains of HPV lead to cervical cancer, other strains may cause genital warts, while others do not cause any problems at all, (IARC, 2009).About 40 strains of HPV can infect the genital tract (De Vuyst *etal.*, 2007).Genital HPV types are categorized according to their association with cervical cancer. About 20 are classified as high risk HPV (HR HPV) and are associated with cervical cancer and precancerous lesions, as well as low grade cervical pathology (Suba, *et al.,* 2011).Low risk HPV (LR HPV) cause low grade cervical lesions, genital warts and recurrent respiratory papillomatosis (Cuzick *etal.*, 2006).Human papilloma virus types 16 and 18 are responsible for approximately 70% of cervical cancer cases. Human papilloma virus types 31, 33, 35, 42, 52 and 58 account for an approximately 20% of the cervical cancer cases (Huchko, 2011). Human Papilloma viruses 16 and 11 have been shown to be responsible for over 90% of genital warts (Bosch, 2007).

2.2 Predisposing factors for cervical cancer

Multiple sex partners and early sexual debut are the main risk factors for HPV infection. Key co-factors for cervical cancer in Kenya include co-infection with Human Immune

deficiency Virus (KMOH,2005).Human papilloma virus progresses faster to cervical cancer in women infected with HIV (Brown.,*etal.*, 2008).It would be cost effective to combine HIV testing with cervical cancer screening due to the high incidence of HIV infection in Kenya (Huchko *etal*,2011).Other predisposing factors include infection with genital ulcer disease for example, herpes simplex type 2,syphilis,chlamydia among others (Ahdier-Grant,2004). Health education on the prevention of STIs and prompt treatment is essential to prevent persistence of HPV (Wamai,2009).Smoking, polygamy, poverty, illiteracy among women and inadequate health system have been identified as some of the risk factors for cervical cancer (UN,2009). Multiple births of more than 5 children and prolonged use of oral contraceptives more than 12 years are also some of risk factors for cervical cancer (Louie *etal.,* 2009).Kenyan studies have shown that 17-18% of births are to women under the age of 20 years (KNBS,2009). Many studies that have been done have revealed the evidence of the effect of diet on risk of cervical cancer. A high intake of foods containing beta carotene and vitamin C, vitamin A may reduce the risk of cervical cancer. The results from studies using diet recall methods have generally been corroborated by laboratory surveys assaying dietary constituents in plasma (Baseman *etal.*,2006).As with reproductive factors, it is likely that diet may influence between country differences in cervical cancer incidence rates (HPV information center, 2009).

2.3 Primary prevention of cervical cancer

Cervical cancer can effectively be controlled through vaccination with HPV vaccine(lacey, 2006).The vaccines which targets HPV 16 and 18 serotypes have 100% efficacy and can reduce up to 70% of all cervical cancers (Brissom *et al.*,2007).The

hallmark of any disease prevention is through vaccination more than 2.5 million deaths globally were prevented through vaccination (WHO,2008).The American Food and Drug Administration (FDA) has approved two vaccines, Gardasil® and Cervarix, manufactured by GlaxoSmithKline (GSK) and Merck and are highly effective in preventing persistent infections with HPV types 16 and 18, the two high-risk HPV types that cause the majority of cervical cancers. Gardasil also protects against infection with HPV types 6 and 11, which cause about 90% of genital wart (Anonychuk, 2009). In Kenya the vaccine was licensed in 2007 for primary prevention by GlaxoSmithKline (Khan *etal.,* 2009). Prophylactic vaccine focuses on the induction of effective humeral and cellular-immune responses that are potentially protective against subsequent HPV infection (Kane *etal.*, 2006). Few data are available on vaccine acceptability, health system preparedness and vaccine cost effectiveness and long term impact (Clifford *etal.*, 2005). Additional data are needed to strengthen invasive cervical cancer as a public health priority to introduce, implement and sustain effective cervical cancer control in Africa. Vaccination reduces cervical cancer deaths around the world by as much as two thirds (Gaillard*et al*, 2008).Therefore prevention of HPV by vaccination may be a more effective way of lowering the disease burden in developing countries than screening alone (Kerr,2009).

However, individuals in many resource limited nations, Kenya for example, are unable to afford the vaccine necessitating the government to integrate the vaccine with other vaccines and make the HPV vaccine available in all Government hospitals (Muchiri *etal.*, 2010). New evidence suggests that all Human Papilloma Virus (HPV) vaccines are effective in preventing cervical cancer for women up to 45 years of age. Gardasil reduces

incidence of HPV types 6, 11, 16 and 18 related persistent infection and disease in women through age 45 (Goldie *etal.*, 2008).Industrialized countries have taken important steps to protect their citizens by providing HPV vaccines but women from developing countries are still dying from cervical cancer (WHO,2009). This kind of inequality can be prevented. Global alliance for vaccine and immunization (GAVI) is sourcing for funds to make HPV vaccine available in poor countries. This could save 700,000 women from painful and premature deaths (Goldie, 2008).

A free HPV vaccination program implemented in Uganda to simulate a national program to provide policy makers a basis for funding showed that government supported HPV vaccination program can attain high coverage as well as being feasible (PATH, 2004a).

A survey conducted in Kenya on HPV acceptability revealed that 95% of women were willing to have their daughters vaccinated. This demonstrated that HPV vaccination program could be successful in Kenya though further studies are needed to confirm these findings (Becker-Dreps, 2010).

Human papilloma virus vaccine is also beneficial in controlling other cancers attributed to HPV infection like anal, vulvar, penile and vaginal cancer (HPV Information Center (2009).

2.4 Secondary prevention of cervical cancer

A study carried out at Kenyatta National Hospital revealed that only 51 per cent of the women participants knew what cervical cancer was, 32 per cent had knowledge on what pap smear entailed and 22 per cent had been screened using the method before (Gichangi

etal., 2003).Some of the common barriers to cervical cancer screening are lack of finances and fear of abnormal results (Ngigi, 2006).Screening for cervical precancerous lesions should be initiated within 3 years of vaginal sexual activity. After three consecutive annual normal pap tests, screening should continue every 2-3 years (Cancer Care Ontario, 2010).Immunocompromised HIV positive women should be screened annually (Kwonga, 2010). In North America screening is done annually while the other European countries adopt a 3-5 year screening interval. Kenya needs to develop guidelines on the screening interval (Sasieni, 2010).All experts agree that cervical cancer screening is effective for the control of the disease.

Sustainable screening programs for cervical precancerous lesions have been very effective in the Nordic countries. These countries include Denmark, Finland, Iceland, Sweden and Norway. In Iceland, mortality fell by 80%.Finland and Sweden has sustainable nationwide programs and they have had mortality fall by 50% and 34% respectively (Goldie, 2005). In Denmark where about 40% are covered by organized programs mortality fell by 25%, but in Norway, with only 5% of the population the mortality fell by only 10%, the results support the conclusion organized screening programs have had a major impact on the reduction in mortality from cervical cancer in the Nordic countries (IARC, 2009).Programmed screening for cervical precancerous lesions dramatically reduces the incidences of cervical cancer (Myung *etal.*, 2011).

The countries with high rates of cervical cancer have low coverage of screening services (Kawonga, 2008). In Congo cervical cancer screening coverage was at best 20.2% of urban and 14.0% of rural areas. In Ethiopia screening is 1.6% of urban and 4.0% of rural areas (WHO, 2008). South Africa is the only country in sub-Saharan Africa to have

established a national cytology-based cervical screening program as from 2007 (Parkin, 2010). Kenya also lacks the same preventive models as the advanced countries (PATH, 2004b). The country lacks the necessary financial and human resource needed to establish similar preventive programs. Low cost and effective cervical cancer screening projects need to be established to reduce the numbers attributed to cervical cancer morbidities and mortalities (Nairobi Cancer Registry, 2011). In low –resource settings, the optimal age-group for cervical cancer screening to achieve the greatest public health impact is 30-39 year-olds. Screening is considered optimal when the smallest amount of resources is used to achieve the greatest benefit (Sankaranarayan etal, 2007).

There are a number of tests used for cervical cancer screening. The Pap test, the HPV DNA test (Deoxy ribonucleic acid,) and visual inspection with acetic acid and Lugols iodine test among others can find early cell changes and treat them before they become cancer (Ferlay *et al.*, 2009).Visual inspection with acetic acid (VIA) and visual inspection with Lugol's iodine (VILI) are less laboratory dependent strategies and have been advocated as screening alternatives in developing countries (Denny *et al.*, 2006). In various evaluation studies, VIA has shown to have a sensitivity and specificity of 60-94% and 74-94%,respectively, to detect high-grade lesions in Africa; and VILI has shown to have a sensitively and specificity of 90-97% and 73-91%, respectively (Sankarayanan *et al,* 2008). The specificity of VIA is however lower among HIV positive women, which may be attributed to high rates of co infections in the lower genital tract (Braaten *et al.*, 2008) Most screening programs in sub-Saharan Africa have been initiated as research or pilot projects (Bratcher *et al*, 2010).A more objective and reproducible screening test is testing for HPV DNA that has shown to be more sensitive than cervical cytology in

detecting high-grade lesions (Dillner et al., 2008). A screening trial using HPV testing for 6553 unscreened women (35-65years) in south Africa showed an 80% reduction among HIV uninfected women (Kuhn *et al.*, 2010).Due to the high sensitivity of the HPV testing there has been a reduction of mortality in women because of the timely interventions for those who test positive (NHS,2011).However, cytology testing which has only moderate sensitivity in detecting the more advanced precursors is used by many countries to detect the precursors of cervical cancer, termed cervical intraepithelial neoplasia (CIN). Women screened with this method of cytology require more regular screening than the former group screened with HPV testing for the effectiveness of the program (Mitchel *et al.*, 2011). The sensitivity of HPV DNA tests for detecting CIN2-3 ranges from 66% to 95%, with most studies reporting values greater than 85% among women aged 30 or older. These tests are most effective among women at the highest risk for precancerous lesions because of the greater likelihood that a positive result at that age signals a persistent HPV infection that could progress to cancer (Devust, 2007).

2.5 Treatment for cervical precancerous lesions/cervical cancer

Management for cervical lesions depends on the extent of abnormal cellular changes (Thackery, 2002). In mild dysplasia, cells usually revert to normal and only subsequent follow-up is scheduled (Parkin, 2008). Treatment considerations; include cryosurgery , LEEP, "Cold knife cone biopsy, cauterization, and laser surgery are treatment for superficial carcinomas and other early phases of cervical malignancies (Denny *et al.*, 2008). Treatment of cervical cancer ranges fromsimple to radical hysterectomy, chemotherapy, radiation therapy, and other complementary therapies. Factors to consider before treatment options are made are; clinical stage of the disease, a woman's age,

general health, and individual preferences may influence the choice of treatment (Jenkins *etal.,* 2008).

CHAPTER 3: MATERIALS AND METHODS

3.1 Introduction

The minimum sample size calculated was 288, but this was increased to 300 in order to increase the level of precision and enhance generalization of the results. Ten (10) respondents declined to answer all the questions citing embarrassment; however they were allowed to opt out of the study giving a response rate of 97.7%. Quantitative data was obtained by use of questionnaires. Four focus group discussions each comprising of 12 mothers were held and were designed to collect mainly qualitative data. Socio demographic characteristics of the respondents were obtained together with outlining respondents' knowledge on the causes of sexually transmitted diseases, age at first sexual debut, and knowledge on the availability of the vaccine (appendix 1). Clinic records were perused to show the pattern of screening at the clinic during the period of the study. Data was analyzed through predictive analytical software. The results are presented in texts, pie charts, frequency tables and histograms. Association between variables was tested using chi-square; with significance level set at 0.05.

3.2 Research Design

This was a cross-sectional descriptive study which investigated factors determining uptake of immunization and screening for cervical precancerous lesions. This study used both qualitative and quantitative methods. Questionnaires were constructed to capture all the required variables which the respondents were to complete by self and assistance was offered by the trained study assistants whenever need arose. Interview guide was

designed for focus group discussions. Baseline assessment of health records for patient diagnosed with cervical cancer at Thika level 5 hospital was also done. Each item in the focus group discussion guide was posed before the discussion group.

3.3 Research variables

3.3.1 Independent variables

i. Screening for cervical precancerous lesions

ii. Immunizations against HPV.

3.3.2 Dependent variables

i. Knowledge on the causes of cervical cancer

ii. Socio-demographic factors - Age, Religion, Level of education, marital status, occupation.

3.4 Location of the Study

The study was conducted at the Maternal and Child Health clinic, Thika level 5 hospitals. Thika district is one of the seven districts that form the central province. It was curved out of the larger Kiambu and Muranga district in 1995(Appendix II).It borders Nairobi city to the south, Kiambu district to the west, Maragwa district to the north and Machakos to the east. The district is divided into six administrative divisions, Ruiru, Gatundu South, Gatundu North, Kakuzi, Gatanga and Thika Municipality, Ruiru being the largest and Gatundu south the smallest.

The catchment area of Thika has a dense population of about 650,000. Thika municipality has a mixed population with a mixture of diverse cultures. Thika is an industrial town hence attracting many workers. There are farms which grow commercial crops like pineapples for export and for local market. There are also coffee plantations, horticultures and hence Thika hospital serves a big population.

3.5 Target Population

These were women of reproductive age who lived within Thika, district. Total population in Thika district is estimated to be 650,000. Women within reproductive age (15-49) consist a quarter of the total population 162,500 (KNBS, 2009). Maternal child health clinic was well suited to capture the study population. The women usually attend the clinic to seek services such as family planning and they also bring their children for immunizations and well baby clinics. This area was ideal to capture all variables that were of interest to the study and recruit a sample size suitable the study. The results would be generalized to the target population.

3.6 Study Population

Mothers who sought MCH clinic services met entry criteria of 15 – 49 years. The minors less than 18 years had their consent forms completed by their guardians.

3.7 Inclusion criteria

Mothers who attended MCH clinic (15-49) years. Respondents who gave written consent were included in the study after full disclosure on the nature and purpose of the study and

their liberty to opt out of the study without negative implications on the services they were in need of.

3.8 Exclusion criteria

Mothers who were above 49 years and below 15 years

Women who met all the criteria but declined to give consent

3.9 Sampling procedure and sample size determination

This was a cross sectional study and mothers filled the questionnaires only on clinic days and the others were included in focused group discussions as they waited for the delivery of the services that they sought.

Simple random sampling technique was carried out by giving the mothers a chance to randomly select folded pieces of paper from a container. The respondents who picked papers with Yes were included in the sample. The respondents with papers written No were not included. This procedure ensured that all clients had an equal chance of being included in the sample. This procedure was carried out throughout the data collection period until the desired sample size of 300 mothers attending Maternal Child Health services clinic was achieved. After appropriate ethical consideration, the 300 mothers were requested to complete a designed questionnaire. The same sampling procedure was used to obtain 4 focus groups discussions each of 12 mothers.

3.9.1 Sample size determination

Sample size (Fisher *et al.*, (1999)

$$n=\frac{z^2pqs}{d^2}$$

where n= desired sample for population > 10,000

z= Standard normal deviate set at 1.96 confidence interval levels

p= the proportion in the target population (0.25%) number of women within reproductive years in the study population (KNBS, 2009).

q =1.0 –P

d = degree of accuracy desired 0.05 (95%)

$$n=\frac{(1.96)^2x0.25x0.75}{(0.05)^2}$$

n = 288 (minimum).this sample was increased to 300 to cater for attrition.

3.10 Construction of research instruments

A structured interview schedule with mostly closed ended questions was designed. A question guide for focus group discussion was constructed for the interview. The two instruments were pre-tested among patients in gynecological ward before the actual study commenced and necessary changes were then implemented. The questionnaire collected information on the socio-demographic characteristics of respondents, sexual activity, knowledge of HPV infection, awareness of cervical cancer risk factors. The respondents were required to indicate whether they knew how cervical cancer can be prevented via screening for precancerous lesions and immunization. The questionnaires also required the participants to indicate how many times they had the Pap smear test. The

questionnaire also sought to obtain data on issues that had direct influence on development of cervical cancer for example, use of contraceptives for family size control, individual or partner smoking status, use of condoms to prevent sexually transmitted diseases among other variables.

3.11 Pretest

The questionnaire was pretested with 20 mothers admitted at gynecological ward to ensure that it was ideal for the study and all variables of interest for the study were captured one week prior to the study. The questionnaires were corrected after the pretest. The participants in the pretest were not included in the main sample.

3.12 Validity

Study assistants were trained to ensure they fully understood the nature of the study and they also understood all aspects of the pretested questionnaire. During focus group discussions, the three assistants took the main points which were cross checked at the end of every group discussion. This guaranteed that the instruments measured what they were intended to measure.

3.13 Reliability

Pretested Questionnaires and interview guide were uniform for all participants. These guaranteed the consistency with which the instruments measured the attributes they were designed to measure.

3.14 Data Collection Techniques

i. Pre-tested questionnaires were administered to 300 mothers to capture required variables. The trained research assistants completed the research instrument as they interviewed the mothers. For mothers who could not understand English interpretation was done in Kiswahili and other native languages.

ii. Four focused groups' discussions each of 12 mothers were held using interview guide to capture required data. Each participant was given time to respond in discussion fashion, responses from participant were recorded, back-up notes were taken by the research assistants and the principal investigator. This was done in order to minimize bias in the study as all the participants were given equal chance of being included in the study.

3.15 Data Analysis

All questionnaires were coded before data entry. The data from the questionnaire was checked and cleaned then entered into the computer using predictive analytical software for windows (version 12.0). Data entry program PAS computer package not only gives accurate information but also allows coding and recording. The qualitative data from focus group discussions was transcribed, coded and translated and used to explain the quantitative data collected using the questionnaire. Similarities and disparities were described. Descriptive statistical analysis was used to describe the variables under study in , percentages, pie charts ,bar charts and frequency tables were used to communicate the findings .Inferential statistical analysis was used to describe the sample cross tabulation to assess association between variables and chi square to determine significant

association between the variables under study. All analyses were set at 5% significance level and 95% confidence interval.

3.16 Logistical and Ethical Consideration

Permission to conduct research was sought from Kenyatta University School of Health Sciences, Department of community Health, and Graduate School of Kenyatta University (appendix ix), Ministry of Higher Education Science and Technology(appendix vii), Medical Superintendent Thika Level 5 hospital (x), Mothers seeking MCH services were counseled about the study and their written consent was sought prior to the data collection (appendix xi).

CHAPTER FOUR: DATA ANALYSIS, RESULTS AND DISCUSSION

4.1 Introduction

This chapter outlines the results of 290 respondents who met the eligibility criteria for the study. The results are presented in texts, pie charts, frequency tables and histograms. Association between variables was tested using chi-square; with significant level set at 0.05.

4.2 Demographic characteristics of the respondents

Majority of the respondents (60%) were aged between 20-29 years, while twenty one percent (21%) were between the ages of 30-39 years, twelve percent (12%) were within the age bracket of 15-19 years and those who were between the ages of 40-49 were seven per cent (7%) (Figure 4.1).

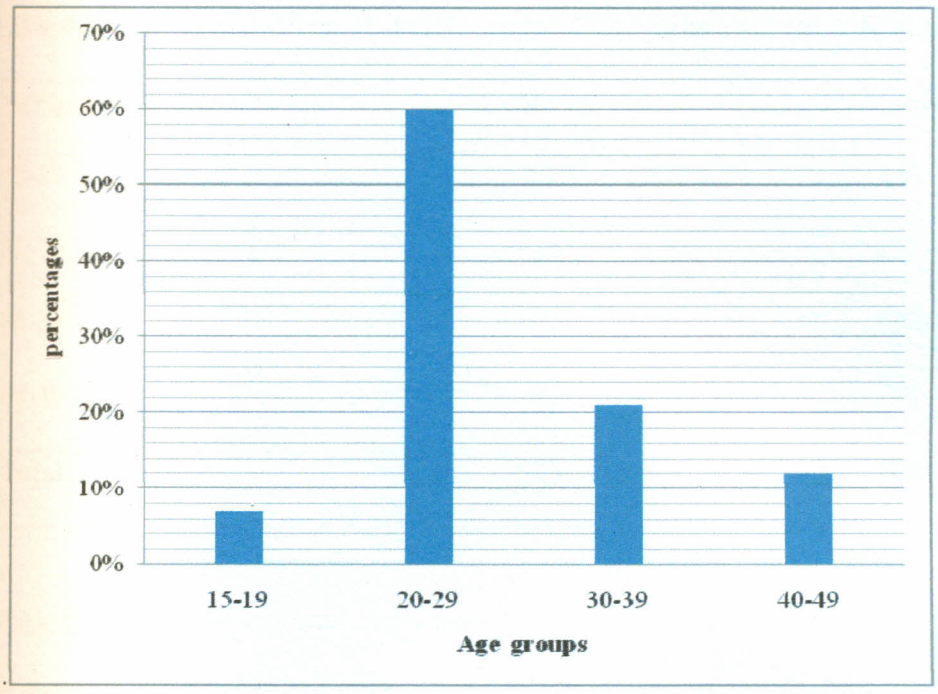


Figure 4.1: Distribution of respondents by age groups

Majority of the respondents 124(53%) delivered their first child between the ages of 20-29 years old. The respondents who delivered their first child between the ages of 15-19 were 20(4%) and this was the least group among the respondents. Those who delivered their first child between the ages of 30-39 were 100(34%) while those who delivered at ages 40-49 were 46 (9%) as indicated in Table 4.1.

Table 4.1: Age distribution at which respondents delivered their first child

Age group in years	Frequency	Percentage
15-19	20	4%
20-29	124	53%
30-39	100	34%
40-49	46	9%
Total	**290**	**100**

Majority of the respondents were married 243 (83.8%), 42 (14.5%) were single. The divorced and the widowed formed the least groups consisting of 1.4% and 0. 3 % respectively (Table4.2).

Table 4.2: Distribution of Respondents by Marital status

Marital status	Frequency	Percentage
Single	42	14.5%
Married	243	83.8%
Widowed	1	0.3%
Divorced	4	1.4%
Total	**290**	**100**

4.3 Religious Affiliations

The most dominant religion for most of the respondents was Christianity taking a chunk of 97.2 % followed by Muslims which had 1.4 % while Hindu and others had a paltry following of 0.7 % each as shown in Figure 4.2.

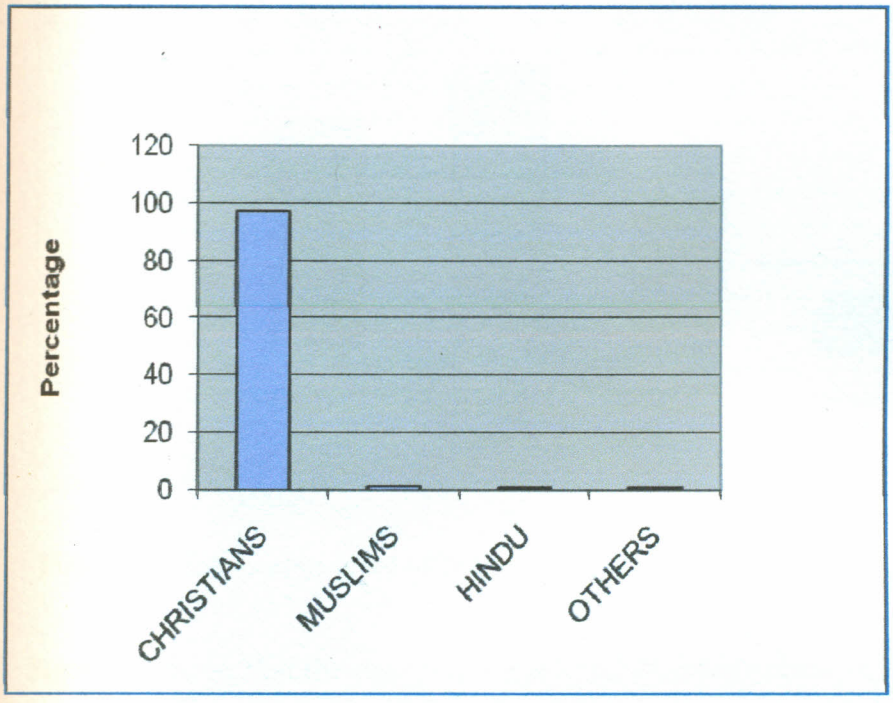


Figure 4.2 Distribution of respondents by religion

4.4 Distribution of respondents by Occupation

As shown in Table4.3, one hundred and sixteen (40%) of the respondents were unemployed, 64 were farmers (22%) while 78 (27%) of them were small scale traders and only 32 (11%) of the respondents were in gainful employment.

Table 4.3: Distribution of respondents by occupation n=290

OCCUPATION	Frequency	Percent
Housewives	116	40%
Farmers	64	22%
Small scale business	78	27%
Salaried employment	32	11%
Total	**290**	**100**

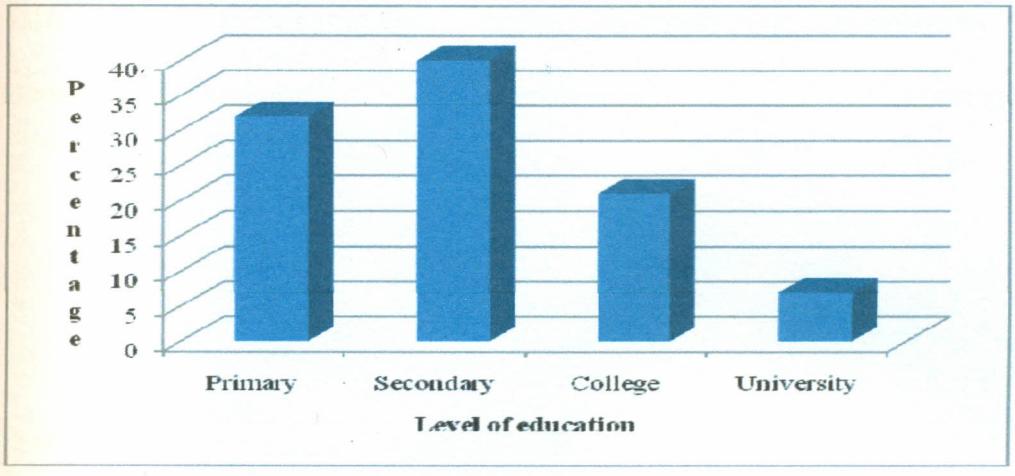


Figure 4.3: Education level of the respondents

Figure 4.3 shows that the respondents who had attained primary education were 93 (32%) those that had attained secondary education formed the bulk of the respondents at 116(40 %), however, only 62 (32%) had attained college education and 19 (7% university education.

Majority of the respondents 266 (91.7%) had never been screened for cervical precancerous lesions. The respondents that had been screened 24 (8.3%) were not enrolled in any program as the screening had been opportunistic. Eight (8) (2.8%) of the respondents had been screened only once, 6 (2.1%) of the respondents had been screened twice; five (1.7%) of the respondents had been screened three times while only five (1.7%) of the respondents had been screened more than three times. All these respondents had been screened opportunistically as they were not enrolled in any of the screening program (Table 4.4).

Table 4.4: Respondents frequency of screening for cervical precancerous lesions

Frequency for screening	No. screened	Percentage
1	8	2.8
2	6	2.1
3	5	1.7
>3	5	1.7
Total	**24**	**8.3**

Table 4.5 shows the screening trends for two years at Thika level 5 hospital, 2010-2011.The clinic data shows that not all mothers that are eligible for screening receive the service. An average of 200 mothers attend MCH clinic every day thus many clients are missed out on screening. Screening took place in the family planning room and the women who requested to have intrauterine device (IUD) for contraceptive used to be screened or any other woman who required examination with a speculum. In the years 2010 and 2011 only 338 and 342 mothers were screened respectively and 19 and 20 mothers were found to be positive respectively. The visual screening with VILL and Lugo's iodine was started in 2007.the columns indicated that the transformation zone of the cervical epithelium of the mothers appeared aceto white after application of the acetic acid and banana yellow with Lugo's iodine. All the mothers that turned positive were sent for a second screening test. The test was Pap smear. The mothers were eventually referred to the gynecologist for further evaluation and treatment. The mothers that had sexually transmitted diseases were treated symptomatically with antibiotics. The other mothers were treated according to the stage of the disease after a cervical biopsy was taken in theatre under examination with general anesthesia (THIS, 2010).

Table 4. 5: Screening Practices at MCH Clinic Thika Level Hospital

MONTHS 2010-2011	Number screened (2010) (frequency)	Number positive (2010) (frequency)	Number1 screened (2011) (frequency)	Number positive (2011) (frequency)
JAN	30	2	23	0
FEB	30	3	25	2
MAR	31	2	21	0
APR	22	1	39	1
MAY	13	5	28	3
JUN	12	0	42	0
JUL	10	0	26	4
AUG	16	1	12	3
SEPT	37	1	19	2
OCT	41	1	61	5
NOV	50	3	25	0
DEC	46	0	21	0
TOTAL	338	19	342	20

None of the respondents had been vaccinated with HPV vaccine. However some of the respondents had knowledge on its importance in the prevention of cervical precancerous lesions. There were only thirty nine (39) representing 13.4 % of the respondents who had knowledge of existence of HPV Vaccine among the total 290 respondents who were interviewed. However none of the respondents had been immunized or recommended for immunization. The respondents who had knowledge on the vaccine existence (Table 4.6), said they obtained the information from television, radio, journals and the internet. There was a significant relationship between educational attainment and knowledge of HPV Vaccine (, χ^2=14.94, p=0.002, df=3). Most of the respondents affirmed that teachings from the medical personnel targeted many other diseases but not cervical cancer or the vaccine. From the focused group discussion some women explained that they never knew

cervical cancer was sexually transmitted. They thought this disease is genetically acquired like many of the other cancers. The respondents reported that they could have been vaccinated and advised other people had they known its cost.

Table 4.6: Knowledge of existence of HPV vaccine among the respondents

Knowledge of existence of HPV vaccine	Frequency
No knowledge about HPV Vaccine	251 (86.6%)
With knowledge about HPV Vaccine	39 (13.4%)

Of all the respondents, 119 (40.3%) had knowledge of the pre disposing factors for cervical cancer, 171 (59.7%) of the respondents did not know the predisposing factors for cervical cancer. Although many respondents, did not know the causes of cervical cancer, 229 (79%) nevertheless concurred that cervical cancer is a serious disease, however 61(21%) did not think cervical cancer was a serious disease. Several parameters were considered in order **to** determine the level of knowledge of the causes of cervical cancer among the respondents. The parameters included signs and symptoms of the commonest sexually transmitted diseases like gonorrhea, syphilis, genital ulcer diseases among others. The other parameter was whether prompt treatment for sexually transmitted infections was important for reduction of incidences of cervical cancer. The respondents were also questioned on the importance of well-balanced diet to build immunity, whether lower age at first sex could contribute to the development of cervical cancer as well as multiple and frequent births.

Information on the predisposing factors for cervical cancer was obtained from the respondents, for example, pronged use of oral contraceptive for more than twelve years,

smoking, infection with sexually transmitted infections, multiple sexual partners, early sexual debut and multiple births among others. The study participants were questioned on whether screening for cervical precancerous lesions and vaccination could prevent cervical cancer. The respondents who correctly identified six causes and above for cervical cancer were considered to have adequate knowledge on the causes of cervical cancer and were conversant with preventive methods, for example screening and immunization for Human Papilloma Virus.

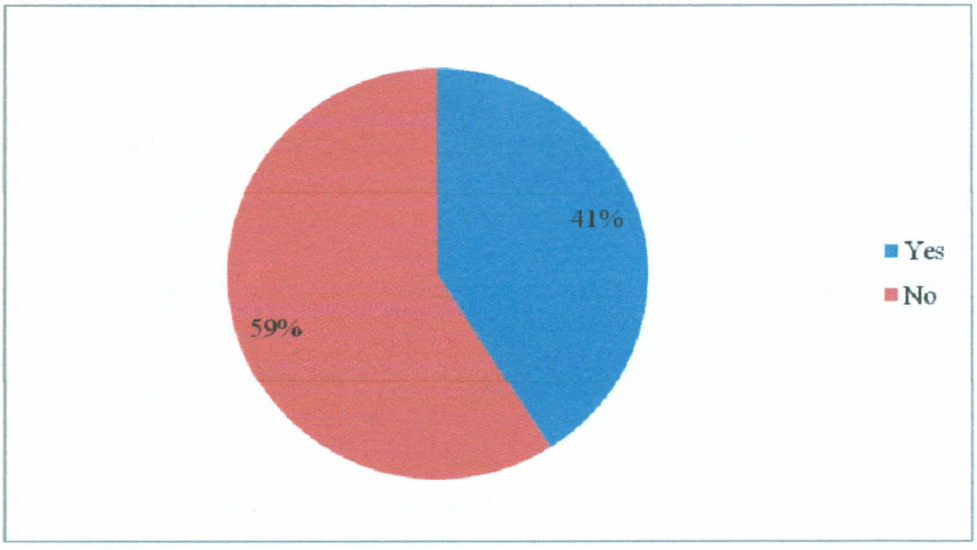


Figure 4.4: Knowledge of causes for cervical cancer

Table 4.7: Respondent's knowledge on classes of food that reduce the incidence of cervical cancer

Food category	Frequency	Percentage
Vitamins	74	25.6
Carbohydrates	114	39.3
Proteins	102	35.1
Total	**290**	**100**

Table 4.7 shows that twenty five point six percent (25.6%) of the respondents correctly stated that vitamins had a role to play in the prevention of cervical cancer and they gave examples of Vitamin C and B12found in vegetables and fruits. One hundred and fourteen (39.3) stated carbohydrates could prevent cervical cancer while 35.1% thought proteins had a role in cervical cancer prevention. The two last groups were not correct as carbohydrates and proteins have no immunity role (WHO, 2010).

One hundred and thirty-six (47%) of the respondents were pregnant for the first time. The respondents with one child were 86 (29.8), those with two children were 46 (15.9%) and those with three were 13 (4.5 %) while those with four children were 9 (3.1%) and those respondents who had five children and above were 13(4.5%) (Table4.8).The respondents who had delivered5 children and more were at an increased risk of HPV infections and persistence due to frequent birth canal lacerations which favor the infection (Harper, 2006).

Table 4.8: number of children per respondent

Number of children	Frequency	Percent
None	136	47%
1	71	24.5%
2	42	14.4%
3	19	6.5%
4	9	3.1%
≥5	13	4.5%
Total	**290**	**100.0**

Forty-six percent (46%) of the respondents reported having used family planning while fifty -four percent (54%) said they had never used any form of family planning. Among

the respondents who used the service fifty(50) of them had used injectable while sixteen (16) had used implants and thirty seven (37) had used various forms of the contraceptive pills for more than twelve years, (30) had used intra-uterine contraceptive device (IUCD).Among the fifty-four percent (54%) of the respondents who did not use family planning ninety (90) said they were not sexually active before their first pregnancy. Sixty seven (67) of them said they did not use the service for fear of side effect. The respondents who had used the contraceptive pill for more than 12 years were at a risk of developing cervical cancer as other studies have shown prolonged use of oral contraceptive as a risk factor for cervical cancer (Sankaranarayan, 2009).The IUCD carries a risk in that should one be infected with sexually transmitted infection the device acts as medium for transmission to most of the genital organs (Hebner *et al*, 2006).

The focused group discussions and knowledge index were quite consistent with the results obtained from the questionnaire on the knowledge of the causes of cervical cancer. Many respondents thought cervical cancer was genetically linked. All the respondents agreed that cervical cancer was a very serious disease as they all stated that it had no permanent cure. Very few respondents knew there was a vaccine to prevent cervical cancer. The respondents who knew of the existence of the vaccine said they had heard from the media while others stated that they had read in health journals.

From the FGD it emerged that some women had very little knowledge of modern contraceptive methods available. The women felt that more education on methods of contraception and their side effects is needed. Some women mentioned that their spouses did not encourage them to use family planning. Some of the respondents strongly felt that family planning was not a subject to be discussed with their spouses as they were the

ones responsible for rearing of the children hence faced difficulties associated with child birth. Most of the respondents reported that their spouses did not like to use condoms especially with their wives as they did not consider any danger of contracting any sexually transmitted disease the respondents who suspected their spouses to have multiple sexual partners reported that they faced difficulties persuading their husbands even when the risk of STI was eminent. The women were in agreement that men needed to be educated on health issues particularly sexually transmitted disease and family planning to be able to support their wives.

One hundred and thirty-seven of the (48%) respondents asserted that the only way one should protect from sexually transmitted diseases was by having one sexual partner. One hundred and twenty seven (44%) believed the use of condoms was the only way to protect themselves against sexually transmitted infections and so they occasionally used condoms as they claimed that it was not possible to use condoms consistently in a marriage relationship. The other category which comprised of 26 (8%) did believe that periodic abstinence was the best way, although they concurred that this was difficult in marriage. Some respondents among this category said their partners would never use condoms. Most of the respondents concurred that they did not visit hospitals for the screening of sexually transmitted diseases or any other medical condition as long as they did not have symptoms of the disease (Figure 4. 5).

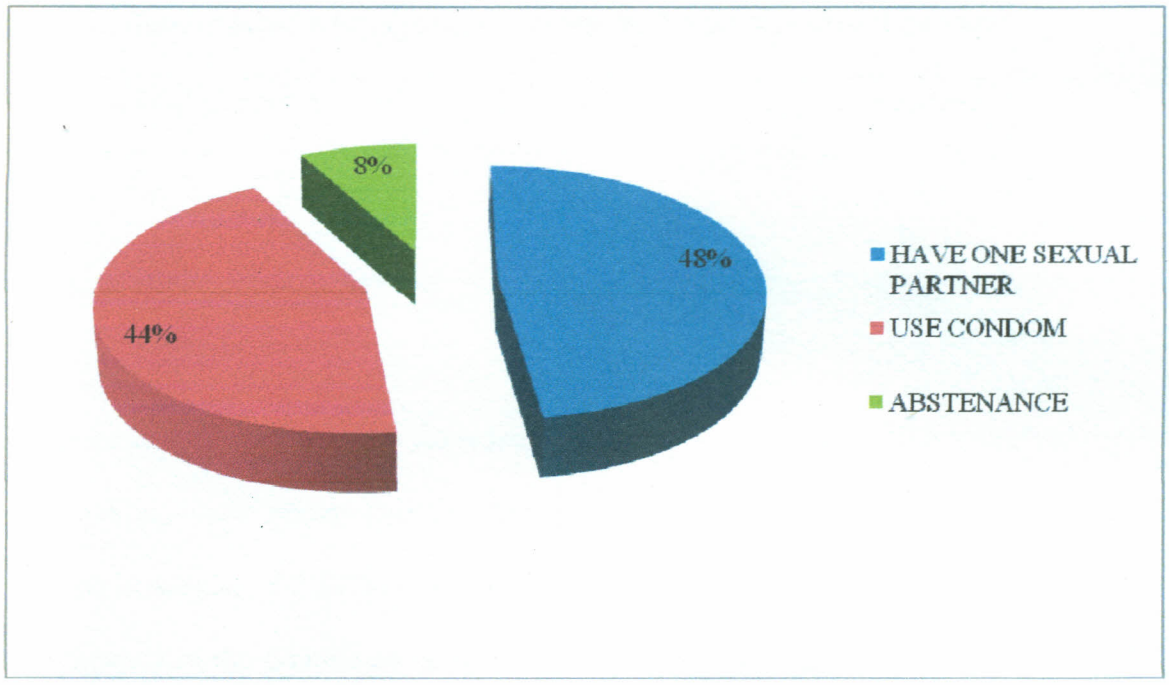


Figure 4. 5: Respondents perception on protection against S.T.I

Two hundred and forty (82.8%) of the respondents did not suspect their partners to have other sexual partners, while 50(17.2%) said they suspected their partners to have other sexual partners. The respondents who said that they did not suspect their sexual partners to have other sexual partners indicated that the scales they used were like, total family responsibility evidenced by provision of basic family needs for example food, clothing, school fees and going to church with the family among other characteristics. The respondents who believed their partners had other partners said their partners stayed out in the night with friends accompanied by suspected other women's strange phone calls or short messages on the phone. Some of these respondents also cited being abandoned economically and suspected the existence of other mistresses (Table 4.9).

Table 4.9: Respondents whose sexual partners had multiple sexual partners

Multiple sexual partners	Frequency	Percent
Yes	50	17.6
No	240	82.4
Total	**290**	**100**

Among the social habits cited by the respondents that they did not like from their partners were smoking, their sexual partners having other sexual partners and refusal to use condoms. However, 107 (37%) of the respondents said that their sexual partners had never engaged in the mentioned social habits. Fifty (17%) of the respondents suspected their partners to have other sexual partners, 55(19%) said that their partners were smoking while 46 (16%) said their male sexual partners refused to use condoms. Thirty two of the respondents (11%) had early sexual debut in their teens (Table 4.10)

Table 4.10: Selected risk factors for cervical cancer among the respondents

Risk factors	Frequency	Percentage
Smoking	55	19
Other sexual partners	50	17
Refusal to use condoms	46	16
Early sexual debut	32	11
None	107	37
Total	**290**	**100**

The study showed that only 6 (2.1%) of the respondents had commenced sexual activity below the age of 15 years. Twenty six (9%) of the respondents had sexual intercourse

between 15-19 years while majority 258 (88.9%) of the respondents had experienced sex at 20 years and above (Figure 4. 6).

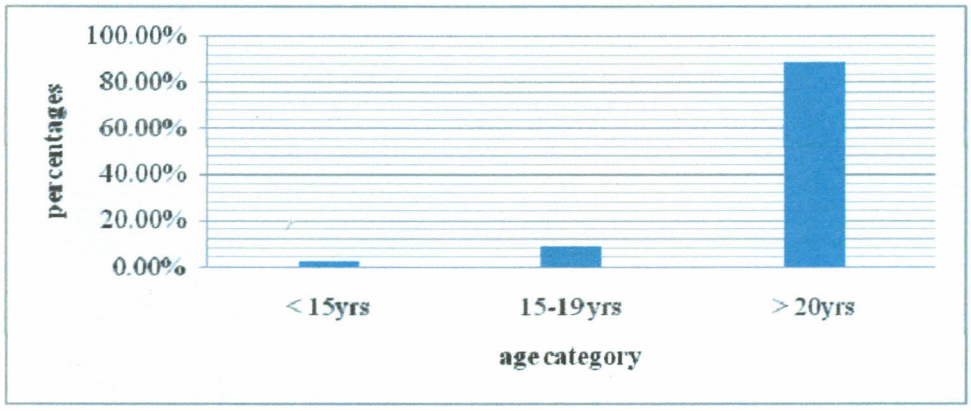


Figure 4.6: Age at first sexual debut

Majority of the respondents, 215 (74.1%) obtained health information from health workers, thirty-eight of the respondents (19%) received from the media while the rest received from a mixture of health workers and media while a small proportion was from friends. Information on the causes for cervical cancer and its prevention was however limited from health workers. Majority of the respondents said whenever they visited hospitals; other teachings were upheld to that of cervical cancer, the expectant mothers were given relevant information to their present condition while those who sought family planning received information related to family planning. Those who brought their children for well baby clinic received similar information pertaining to health of their children. Those that had knowledge on the causes of cervical cancer and its prevention got the information from the media and friends.

Table 4.11: Source of health information for respondents

Information sources	Frequency	Percentage
Health workers	68	23
Radio	50	17.5
Internet	11	3.9
Medical journals	35	12
Television	37	12.9
Church	35	12
Friends	29	10
Newspapers	25	8.7
Total	**290**	**100**

The socio economic level in this study was assessed by obtaining information from the respondents (290) on the type of housing, whether permanent or non permanent and the number of rooms that the families lived in. The ownership of the house was also an important factor. Those respondents who lived in their houses, which were permanent and had more than three rooms, were considered to be of moderate socio economic status. Individuals who were living in their own houses and were semi permanent were considered to be of low socio-economic status. Some of the respondents who fell in this category were living in the slums of Kiandutu which is an informal settlement. The other category that was considered was the respondents that were living in permanent rented house in semi-urban areas like Makongeni, Biafra and had rented a single room for an entire family. The other category considered to be living in permanent houses and had rented more than two rooms for their families. Two hundred and forty- five (245) of the respondents were considered to be of moderate socioeconomic status while 44, were of

low socio-economic status Respondents of moderate economic status had adequate knowledge on the causes of sexually transmitted diseases which are cofactors for cervical cancer.

The other index which was used to assess socio-economic status was occupation. One hundred and sixty three (56%) of the respondents had an independent source of income, 32 (11%) of the 290 respondents being in gainful employment, However, 127 (43.8%) of the respondents depended on significant others for survival. Most respondents asserted that they have received a lot of information on the importance of prevention of HIV from the media and health workers, they value life which is God given thus it is worthy to protect it using every available means. Most women believed that their sexual partners are doing a lot in the maintenance of their families but this should not be exchanged with unsafe sex as this is their responsibility. The respondents who were sure that their sexual partners had multiple sexual partners had diverse views. Some of these said they practice periodic abstinence while others used condoms frequently. There are others who however risked their lives because they feared their sexual partners would withdraw the financial support.

Majority of (98) the respondents total income for the family was below Kenya shillings 10, 000, followed by 65 of the respondents who had total family income of about Kenya shillings 11,000-15,000. Seventy eight (78) of the respondents lived on an income of about 16,000-20,000.The respondents who had the highest income among the group had an income of greater than 21,000.and they were only 49 (Table 4.12).

Table 4.12: Total family income for the respondents

Range of income	Number	Percentage
Ksh<10,000	98	33.8
Ksh11,000-15,000	65	22.4
Ks16,000-20,000	78	26.8
Ksh>21,000	49	17
Total	**290**	**100**

4.5 Statistical Analysis

In this section, Chi-square test was conducted to establish relationship between different variables such as occupation, level of education, age, sources of information on cervical cancer, housing status and family income level. The following are the results of the analysis obtained.

Table 4.13 shows that there was a significant positive relationship between respondents' occupation and protection against S.T.I, (χ^2 =36.970, df=6, p=0.000). The results revealed that majority of the housewives used condom as a way of protection against S.T.I compared to small scale business, salaried employment and farmers who engaged to only one sexual partner. Abstinence method was used by the least number of respondents.

Table 4.13: Respondents' occupation across protection against S.T.I

Occupation	Protection against S.T.I			Total	Chi-square statistics
	One sexual partner	Use of condom	Abstinence		
Housewives	37	66	13	116	χ^2=36.970
Small scale business	50	15	13	78	
Salaried employment	17	10	5	32	df=6
Farmers	40	15	7	62	
Total	**144**	**106**	**38**	**288**	P.=0.000*

*Significant at $p<0.05$ level

Chi-square results showed that education level had a significant positive influence towards respondents' knowledge of HPV vaccine, (χ^2 =14.949,df=3, p=0.002). This implies that the higher the level of education, the higher the knowledge of HPV vaccine.

Table 4.14: Education level across knowledge of HPV vaccine

Education level	Knowledge of HPV Vaccine		Total	Chi-square statistics
	Yes	No		
Primary	12	81	93	χ^2=14.949
Secondary	11	104	115	
College	8	55	63	df=3
University	8	11	19	
Total	**39**	**251**	**290**	P=0.002*

*Significant at $p<0.05$ level

Based on the Chi-square test, results presented in Table 4.15 revealed that there was a positive significant relationship between educational attainment and the age at which the respondents engaged in first sexual act, (χ^2 =29.168df=6, p=0.000). Among the 219 respondents who engaged in sex at the age of 20 years and above, 77 had attained primary education, 93 had secondary education, 43 had college qualifications while 6 were university qualifiers. Of the 33 respondents who engaged into sex at age of less than 15 years, 6 had primary education, 10 had secondary, 12 College while 5 had University qualifications. This implies that the number of respondents was significantly different from the four levels of education and age groups, where majority were in secondary schools, followed by primary, college and then University. This shows that level of education and age had a relationship with engagement into sex.

Table 4.15: Respondents' age at first sexual act across level of education

Age at first sex	Level of education				Total	Chi-square statistics
	Primary	Secondary	College	University		
Less than 15 years	6	10	12	5	33	χ^2=29.168
15-19 years	10	13	7	8	38	
20 years and above	77	93	43	6	219	df=6
Total	**93**	**116**	**62**	**19**	**290**	P=0.000*

*Significant at $p<0.05$ level

Table 4.16 illustrates that there was negative relationship between sources of information and knowledge of the causes of cervical cancer among the respondents, (χ^2 = 4.997, df=7, p=0.660). This shows that respondents' access to information from different sources did not influence their knowledge towards the cause of cervical cancer.

Table 4. 16: Source of information versus knowledge of the causes of cervical cancer

Source of information	Knowledge of the causes of cervical cancer		Total	Chi-square statistics
	Yes	No		
Health workers	27	41	68	χ^2=4.997
Radio	18	32	50	
Internet	6	5	11	
Medical journals	12	23	35	
Television	19	18	37	df=7
Church	15	20	35	
Friends	9	20	29	
Newspapers	11	14	25	
Total	**117**	**173**	**290**	P.=0.660

Not significant at $p<0.05$

Table 4.17 shows that housing status which was a measure of socio-economic status had a negative influence in respondents' knowledge of sexually transmitted infections (χ^2 =3.525, df=1 p=0.060). The table illustrates that majority of the respondents' living in permanent and semi-permanent housing did not have knowledge on sexually transmitted infections.

Table 4.17: Housing status versus knowledge of sexually transmitted infections

Housing status	Knowledge of sexually transmitted infections		Total	Chi-square statistics
	Yes	No		
Permanent	25	220	245	χ^2=3.525
Semi permanent	9	36	45	df=1
Total	**34**	**256**	**290**	P.=0.060

Not significant at $p<0.05$

Chi square test results illustrates that there was a significant positive relationship between family income and knowledge of cervical cancer, (χ^2 =43.236, df=3, p <0.000).As shown

in the Table 4.18, majority (63) of the respondents who had knowledge in cervical cancer reported that their family income was ranging at Ksh.16, 000-20,000. This shows that the higher the level of income, the higher the knowledge on cervical cancer. On the other hand, 62 respondents without knowledge on cervical cancer indicated that their family income was less than Ksh.10, 000. This therefore implies that family income significantly influences respondents' access to cervical cancer information.

Table 4.18: Family income across knowledge of cervical cancer

Family income in(Ksh)	Knowledge of cervical cancer		Total	Chi-square statistics
	Yes	No		
<10,000	32	62	94	χ^2=43.236
11,000-15,000	27	38	65	
16,000-20,000	63	15	78	df=3
>21,000	31	18	49	
Total	**153**	**133**	**286**	P<0.000*

*Significant at p<0.05 level

Based on the chi-square test, the results in Table 4.19 showed that there was a significant positive relationship between respondents' level of education and screening practices used to test cervical cancer, (χ^2=17.145,df=3 p=0.001). The study findings revealed that among the 24 respondents who were screened, 6 had attained university qualifications, 7 had college qualifications while 5 had attained secondary education. However, of the 266 respondents who were not screened, 87 had primary education, 111 had secondary education whereas 13 were university qualifiers. This implies that education level had a significant influence towards respondents' uptake of the screening services against HPV.

Table 4.19: Screening practices and educational level

Level of education	Screening practices		Total	Chi-square statistics
	Screened	Not screened		
Primary	6	87	93	χ^2=17.145
Secondary	5	111	116	
College	7	55	62	df=3
University	6	13	19	
Total	**24**	**266**	**290**	P.=0.001*

*Significant at $p<0.05$ level of significance

CHAPTER FIVE: DISCUSSION

This study looked at the determinants of uptake of screening and vaccination with HPV vaccine among mothers attending MCH clinic. The study results showed that only 24 (8.3%) of the respondents had been screened. Majority of the respondents 266 (91.7%) had never been screened. Those that had been screened were not on any screening program but it was mainly opportunistic. Eight (8) of the respondents (2.8%) had been screened once; six (6) (2.1%) had been screened twice. Five (5) of the respondents (1.7%) had been screened thrice and 5 respondents had been screened more than 3 times (1.7%).Screening for cervical precancerous lesions is very low in Kenya as several studies have shown that only about 6% of the eligible population have been screened at least once (Muchiri *et al.*, 2010).Other similar results were reported by researchers in the University of Nigeria among university students where only 6.4 percent of students reported having ever been screened (De Sanjose, 2009). Screening programs in the developing countries are not effective in reducing cervical cancer morbidity and mortality due to their inconsistency (Clifford*et al.,* 2006a). Studies done in the Nordic countries have shown that reduction in mortality and morbidity is directly correlated to the number of population covered (Sankaranarayan, 2008). These countries have had successes in reduction of mortality and morbidity related to cervical cancer. An effective cervical cancer screening program should target more than 80% of the eligible population (Sasieni*etal.,* 2010).

None of the respondents had been vaccinated with HPV vaccine. However, thirty nine of the respondents (13.4%) had knowledge on the importance of the vaccine in prevention of cervical cancer. These respondents who knew the importance of the vaccine were

willing to have the vaccine but decried the prohibitive cost. These results differ with the results of the Nigerian university students where the respondents who had knowledge of the vaccine were 100% and those who were willing to accept the vaccine were 74 % (Pruitt *et al.*, 2009). Reasons for vaccine rejection included: fear of side effects (11%), fear of the unknown (8%) and controversies surrounding the vaccines (7%).The level of HPV acceptance among Dutch students was 61% (Lenselink etal.,2008), but similar results reported from the USA (Dekker, 2006). Mexican women have been reported to have an acceptance rate of 83% (Moraros *etal.,* 2006).Vaccination with HPV vaccine can reduce the incidence of cervical cancer by as much as 70% (HPV Information Center, 2009). The American Cancer Society has recommended mass vaccination of pre-adolescent girls and boys in order to reduce viral pool within the community (WHO, 2008). Human Papilloma Virus was licensed in Kenya by the Pharmacy and Poisons Board in 2007. At present the vaccine is only available in the private sector. The government needs to integrate it with the other primary vaccines to be reached by the eligible population (Anonychuk *etal.*, 2009).

The respondents who were at a risk of developing cervical cancer were the respondents that had never had any form of screening (91.7%).These also included respondents who did not know the importance of HPV vaccine in the prevention of cervical cancer (86.6%).Fifty of the respondents (17.2%) reported that their sexual partners had other sexual partners. Several studies have shown that multiple sexual partners as a risk factor for HPV infection which is responsible for 97.9% of all cases of cervical cancer (HPV Information Center, 2009). These results are not consistent with other studies done in Zaria in Nigeria where university students were reported to have multiple sexual partners

at 81.63% (Campbell*et al.*, 2006).The respondents whose sexual partners were smoking in the house exposing them to carcinogens of smoke were 55 (19%).This results were similar to findings obtained from Bello University Teaching Hospital in 2003 where 15.09% were exposed to cigarette smoke (Jamieson*et al.*, 2008). The World Health Organization has warned against the carcinogens of cigarette smoke as it leads to high incidences of cancers (WHO, 2005). Carcinogens increase the risk of cervical cancer by thirteen fold (IARC, 2009).

From this study two point one percent (2.1%) of the respondents had a history of having had debut to sex very early. This study is similar to what was found by National Aids Control Programme in Kenya in 2007, that four in every ten Kenyan female will have experienced sexual relations before age 15 (NASCOP, 2007), some as early as twelve years (Nairobi women ,2005). The present findings are also similar to what was revealed by the Nigerian study which indicated low age at sexual debut at 17.5+_ 4.6 years. The problem with low age at sexual debut is that, should the minor be infected with HPV, the rate of progression from HPV infection is faster than an adult because the minors immunological system is not fully developed and they are likely to experience genital trauma than an adult (Clifford *etal.,* 2006a). In Nigeria the students who were sexually active 67.1 percent had one sexual partner, the rest 32.9 percent had between two and ten sexual partners (WHO, 2006).

Ninety -eight of the respondents' total income was below Ksh.10.000 per month. This amount indicates very low economic status. The United Nations economic analysis indicates that majority of Kenyans are living below a dollar per day which relegates many people as living below the poverty line (UNDP, 2009). A study done in India showed that

more than 80% of the respondents who had cervical cancer were in the lower economic levels. These are the respondents that cannot afford good personal hygiene and they rarely seek screening services (Sankaranarayan, 2009).

In this study, only forty four percent of the respondents with multiple sexual partners reported having used a condom. These findings were different to what was found in Nigeria where only fifteen respondents had consistently used condoms during sexual intercourse (Hebner *et al.*, 2006). Four (5.1%) of these respondents used a female condom while three respondents (3.8%) reported having used antibiotic prophylaxis to protect against sexually transmitted infections (Goldie *etal.*, 2008). There is conflicting reports on the value of condom in the protection against HPV infection. Some studies have shown the benefits while others have found no difference. Almost 100 % protections against sexually transmitted infections are achieved when condoms are used efficiently and effectively (KAIS, 2007).

The respondents who had used oral hormonal contraceptives for more than twelve years (12) were sixty two (62) of the total respondents. The KDHS, 2008-2009 found that majority of Kenyan women prefer oral contraceptives thaninjectable. Estrogen contraceptives have been found to be a risk factor for cervical cancer in a number of other studies done in India and Jimma hospital in Southwest Ethiopia (Clifford *et al,* .2006b).

This study found thirteen (4.5%) of the respondents had delivered more than five children. Multiple births increase the frequency of genital injuries that hasten the transmission of the Human Papilloma virus with subsequent cervical cells changes that

can progress to cervical precancerous lesions (Mitchel *et al.*, 2011). If these lesions do not regress, they can develop into cervical cancer (Blossom *et al*, 2007).

CHAPTER 6: SUMMARY, CONCLUSION AND RECOMMENDATIONS

6.1 Summary

This chapter highlights the main findings of the study. It makes recommendations on the Challenges that were identified in the study as the main hindrances for the uptake of screening and immunization with HPV Vaccine at Thika level 5 Hospital that mothers face in the reproductive age in the prevention of cervical cancer. The chapter makes recommendations which if undertaken can increase knowledge on the causes of cervical cancer and hence improve screening and avail vaccines which can go a long way in the prevention of cervical cancer and thus reduce the prevalence of cervical cancer.

6.2 Conclusions

i. This study found that screening for cervical cancer was very low in the study area at only 8.3% and it was opportunistic. For a screening program to be effective at least 80% of the eligible population should be enrolled in cervical cancer screening programs in order to have a significant reduction in the incidence of cervical cancer as was realized in most of the Nordic countries for example Finland and Iceland.

ii. None of the respondents had been immunized against HPV. This was attributed to the fact that the vaccine was not available at the MCH clinic.

iii. Although HPV vaccine was rolled out in 2007, information about its importance in reducing the incidences of cervical cancer is alarmingly low in the study area at only 13.4% of the total respondents.

iv. Sixty three percent (63%) of the respondents were at an increased risk of developing cervical cancer based on the information given on the risk factors for cervical cancer at the time of the study.

6.3 Recommendations

i. The government through the ministry of Health to initiate sustainable cervical cancer screening programs to cover all the eligible women in all the 47 counties and launch Health education programs to raise awareness on the importance of screening to detect cervical precancerous lesions.

ii. Government to avail HPV vaccine and integrate it with Kenya National Immunization Vaccine program and raise awareness on the importance of the vaccine in the prevention of HPV the main causative agent for cervical cancer.

iii. Policy makers and program managers to launch and sustain health education programs to include all sexually transmitted diseases including HIV and prompt syndromic treatment of all sexually transmitted infections at all the 6 levels of health care system in order to reduce some of the risk factors for cervical cancer.

6.4 Recommendation for Further Research

There is need for further research on:

i. Prevalence of high risk HPV among HIV infected women in Kenya

ii. The efficacy of the condom in the prevention of cervical cancer in Kenya

iii. HPV vaccine acceptance among mothers in the reproductive age in Kenya

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APPENDICES

APPENDIX I: CONSENT FORM

DEAR RESPONDENT

Primary prevention of disease is better and cheaper than treatment which is very expensive and sometimes has poor outcome. It is for this reason that you are kindly requested to participate in this study. You are encouraged to be as honest as possible. You are however not forced to participate. You are assured that all information will be held in confidentiality, your participation will help deal with the problem of cervical cancer in Kenya. Your views and participationare are highly appreciated.you are however allowed to opt out of the study if you change your mindconcrning this study without compromising your services in this hospital.

By Jane Mugwe

Student of Masters in Reproductive Health at Kenyatta University

Signature_____ Date_____

Signature of respondent_____ Date_____

APPENDIX 11 QUESTIONNAIRE

Section A

Tick the appropriate answer in the brackets provided

Socio- demographic data

1. Age (Years

   10-19 ☐ 20-29 ☐ 30-39 ☐

2. Marital status

   Single never married ☐ Married ☐ Divorced ☐ Widowed ☐

3. Religion: Christian ☐ Muslim ☐ Hindu ☐ Others ☐

4. Level of education: Primary ☐ Secondary ☐ College ☐

   University ☐ None ☐

5. Highest level of training: Certificate ☐ Diploma ☐ Higher Diploma ☐

   Degree ☐ None ☐

6. Occupation Housewife ☐ Farmer ☐ Small-scale ☐

   Business ☐ Salaried employment. ☐

7. How long have you been in your occupation

   Less than 1yr ☐ 5-9yrs ☐ 10-14 ☐ 15-19 ☐ 20yr or more ☐

8. Name present residence .....

9. Home district .....

Knowledge of cervical cancer

10. Have you ever heard of cervical cancer?

YES ☐ NO ☐ NOT SURE ☐

11. Do you think cervical cancer is associated by an individual's or a partner's reckless sexual behavior? For example multiple sexual partners

YES ☐ NO ☐ DON'T KNOW ☐

12. Do you think cervical cancer is a serious health condition?

YES ☐ NO ☐ DON'T KNOW ☐

13. Do you have a family members or a friend who has suffered or suffering from cervical cancer

YES ☐ NO ☐ DON'T KNOW ☐

14. Do you think maintaining high standards of hygiene and seeking treatment for sexually transmitted infections can help reduce cervical cancer?

YES ☐ NO ☐ DON'T KNOW ☐

14. Do you think a curse from a parent or from any other person can contribute to cervical cancer?

YES ☐ NO ☐ DON'T KNOW ☐

15. Kindly name one irresponsible socio behavior that can contribute to Cervical Cancer?

Socio-economic status

16. Kindly indicate by ticking your family's total income

(1)<Ksh 10,000 (2)ksh 11,000-15,000

(3) Ksh16000-20,000 (4) >Kshs.20, 000

(b)Indicate the diet that can help to prevent cervical cancer

[ ] Carbohydrates [ ] proteins [ ] vitamins

Prevention of cervical cancer

17. Have you ever had screening for cervical cancer?

YES ☐ NO ☐

18. IFNO WHY.....

19. If yes have you told someone of its importance?

YES ☐ NO ☐

Source of Health information for the respondents

20. Where do you get health information?

Hospital Staff ☐ Magazines ☐ Media ☐

others specify.....

21. Do you think screening for cervical cancer is offered at Thika for free?

YES ☐ NO ☐ DON'T KNOW ☐

22. If not have you ever requested for it YES ☐ NO ☐

23. If yes, can you have it when you request

YES ☐ NO ☐ NOT ALWAYS ☐

24. Have you ever had screening for cervical cancer outside government facility

YES ☐ NO ☐

25. If you had knowledge on the prevention of cervical cancer, would you be willing to share this information with others?

YES ☐ NO ☐ NOT SURE ☐

26. Do you know that there is a vaccine to protect against cervical Cancer?

YES ☐ NO ☐ DON'T KNOW ☐

27. If the vaccine to protect against cervical cancer is sold would you be willing to buy at around Ksh. 8,000/=

YES ☐ NO ☐

28. In your opinion which is cheaper?

The vaccine ☐ Treating cervical cancer ☐

Risk factors for cervical cancer among the respondents

29. At what age did you have first sexual intimacy?.....

30. If married at what age did you get married? .....

31. Do you think your husband has extra marital affairs?.....

32. How many children do you have? And how are they spaced

Two-four ☐ 5 years ☐ any other.....

33. Do you practice family planning?

YES ☐ NO ☐

34. If yes what method.....

PUT A TICK OR A CROSS AS A APPROPRIATE

35. If one's mother or sister had cervical cancer there is a chance of getting the disease

YES ☐ NO ☐ DON'T KNOW ☐

36. If one is a smoker there is a high chance of getting the disease

YES ☐ NO ☐ DON'T KNOW ☐

37. Multiple sexual partners is a risk factor for Cervical Cancer

YES ☐ NO ☐ DON'T KNOW ☐

38. Condoms do not protect 100% against Cervical Cancer

YES ☐ NO ☐ DON'T KNOW ☐

39. Regular screening for cervical cancer can help detect disease early

YES ☐ NO ☐ DON'T KNOW ☐

40. Vaccination may be expensive but it is cheaper than treating the disease

YES ☐ NO ☐ DON'T KNOW ☐

41. Having sexual relations at an early age exposes the risk for cervical cancer

YES ☐ NO ☐ DON'T KNOW ☐

42. Delivery of many children can increase ones risk for Cervical Cancer

YES ☐ NO ☐ DON'T KNOW ☐

43. Prompt treatment for sexually transmitted diseases reduces chances of getting the disease

YES ☐ NO ☐ DON'T KNOW ☐

44. More than 90% of Cervical Cancer is caused sexually through an infected partner.

YES ☐ NO ☐ DON'T KNOW ☐

Thank you for participating in the study

KNOWLEDGE INDEX

To determine knowledge of the causes for cervical cancer and the preventive Primary strategies, the following index were used for the purpose of this study; Likert scale for measuring level of knowledge among the respondents

Tick One (The most accurate)

1. Do you think cervical cancer is a serious disease?

   Strongly agree (3), agree (2) somewhat agree (1) disagree (0)

2. Do you think sexually transmitted infections can contribute to cervical cancer?

   Strongly agree (3) agree (2) somewhat agree (1) disagree (0)

3. Is cervical cancer necessarily inherited?

   Strongly agree (3), agree (2) somewhat agree (1) disagree (0)

4. Does good hygiene reduce chances of getting cervical cancer?

   Strongly agree (3), agree (2) somewhat agree (1) disagree (0)

5. Can a curse from a parent or one in authority make one to have cervical cancer?

   Strongly agree (3), agree (2) somewhat agree (1) disagree (0)

6. Dou you think a diet with vitamins and other essential food elements can reduce cervical cancer?

   Strongly agree (3), agree (2) somewhat agree (1) disagree (0)

7. Can poverty increase an individual's chance of getting cervical cancer?

   Strongly agree (3), agree (2) somewhat agree (1) disagree (0)

8. Do you think screening for cervical lesions can reduce incidences of cervical cancer?

   Strongly agree (3), agree (2) somewhat agree (1) disagree (0)

9. Can vaccination with HPV virus vaccine help reduce the chance of getting the disease?

   Strongly agree (3), agree (2) somewhat agree (1) disagree (0)

10. It is better to follow screening programmes that to get the disease

    Strongly agree (3), agree (2) somewhat agree (1) disagree (0)

11. Vaccination with HPV vaccine is cheaper than treating the disease

    Strongly agree (3), agree (2) somewhat agree (1) disagree (0)

12. Is early sex a risk factor for cervical cancer?

    Strongly agree (3), agree (2) somewhat agree (1) disagree (0)

13. Prompt treatments of sexually transmitted infections can help reduce cervical cancer?

    Strongly agree (3), agree (2) somewhat agree (1) disagree (0)

14. Delivering more than 5 children can increase an individual chance of getting cervical cancer?

    Strongly agree (3), agree (2) somewhat agree (1) disagree (0)

15. Oral pills taken for more than 12 years can increase ones chances of getting cervical cancer

    Strongly agree (3), agree (2) somewhat agree (1) disagree (0)

16. Smoking can increase the chance of getting cervical cancer or if you breathe cigarette smoke from somebody

Strongly agree (3), agree (2) somewhat agree (1) disagree (0

17. Having sexual intercourse with many partners can increase chance of getting cervical cancer

Strongly agree (3), agree (2) somewhat agree (1) disagree (0

18. Many deaths from cervical cancer is mainly due to late presentations and complications like bleeding

Strongly agree (3), agree (2) somewhat agree (1) disagree (0

19. More than 90% of cervical cancer is transmitted sexually from an infected person

Strongly agree (3), agree (2) somewhat agree (1) disagree (0

20. Screening services are available at the clinic, and you can be screened now if youwish.

Strongly agree (3), agree (2) somewhat agree (1) disagree (0

Thank you for participating

The participants who score 3 in 8 questions and above is considered to have adequate knowledge on the causes and preventive method for cervical cancer

6.1 Knowledge index

6.1.2To determine knowledge of the causes for cervical cancer and the preventive

Primary strategies, the following index were used for the purpose of this study;

1. A respondent being able to mention causes of cervical cancer promptly
2. The respondent being aware of the recommended strategies for prevention
3. The respondent being able to mention other co-factors for the development of cervical cancer

Knowledge of causes of cervical cancer – 1Knowledge of preventive strategies -1

Knowledge of the co-factors -1

6.1.3 Scoring

No knowledge = 0 Inadequate knowledge 1-2points Adequate knowledge -3points

6.1.4 Measuring the social-economic status of the respondents

A social-economic index was developed based on two variables

Household income based on occupation

Type of house occupied

6.1.5 Score format

6.1.6 Housing

Temporary =1 Semi permanent =2 Permanent =3

6.1.7 Rooms

Rooms =1 Rooms =2 More than 3 rooms =3

6.1.8 House ownership

1 rental =1 2 own =2

6.1.9 Occupation

Informal =1 Formal =2 Business =2

Total scope from the three variables was used to drive three social-economic groups

Low 0-4points Middle 5-8points High 9-10points

6.2 Question guide for focused group discussion

1. What is cervical cancer? Is this a disease that affects men or women?
2. Do you think cervical cancer is a serious disease? If yes why if no why?
3. Name the possible causes of cervical cancer?
4. Name possible preventive strategies for cervical cancer?
5. Name any sexually transmitted diseases that you know?
6. Name signs for sexually transmitted diseases?

6.2.1 Expectations

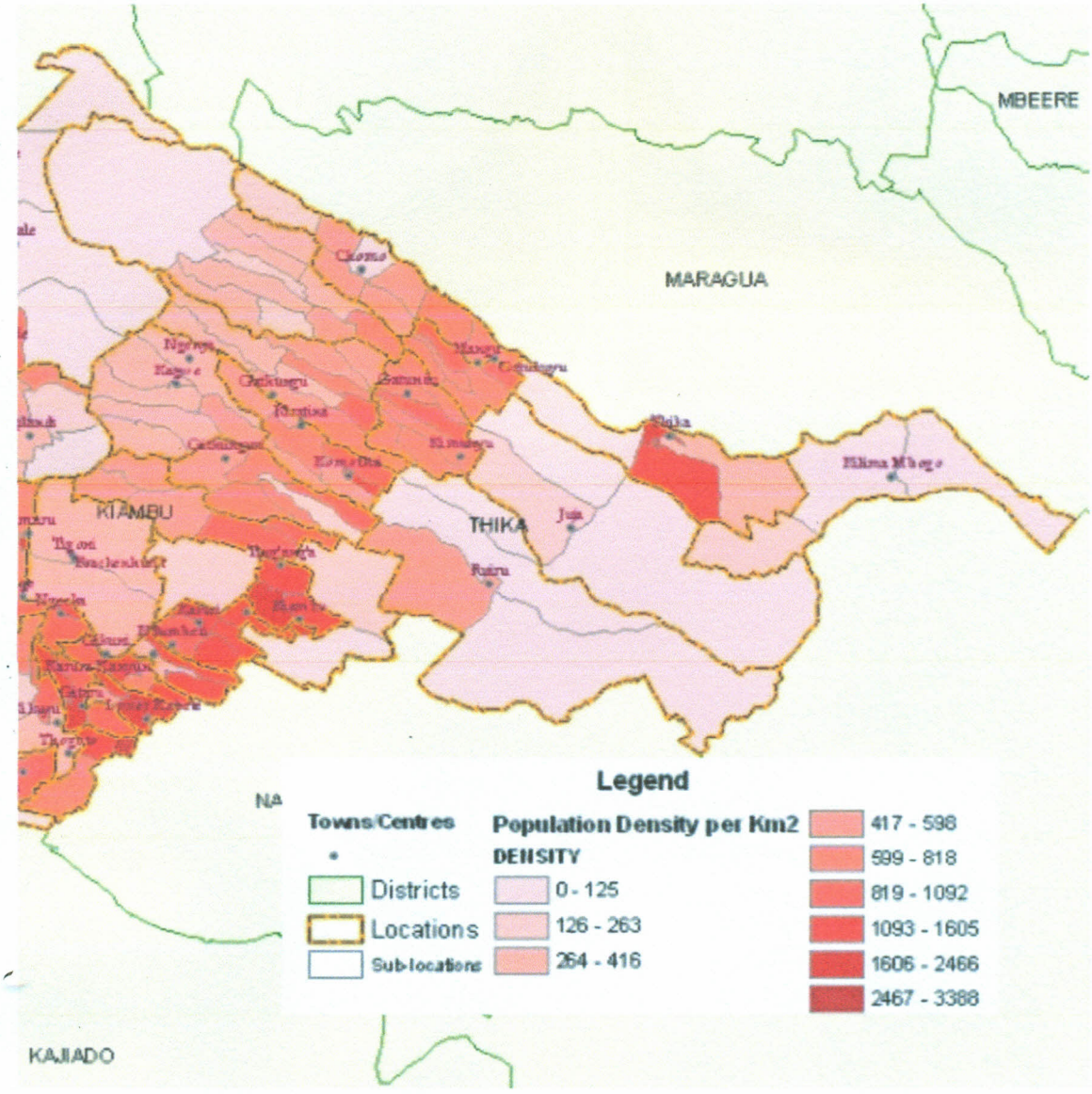
1. The group should be able to identify the organs that are affected in women

2. The group should identify correctly the signs and symptoms and the possible complication which are fatal

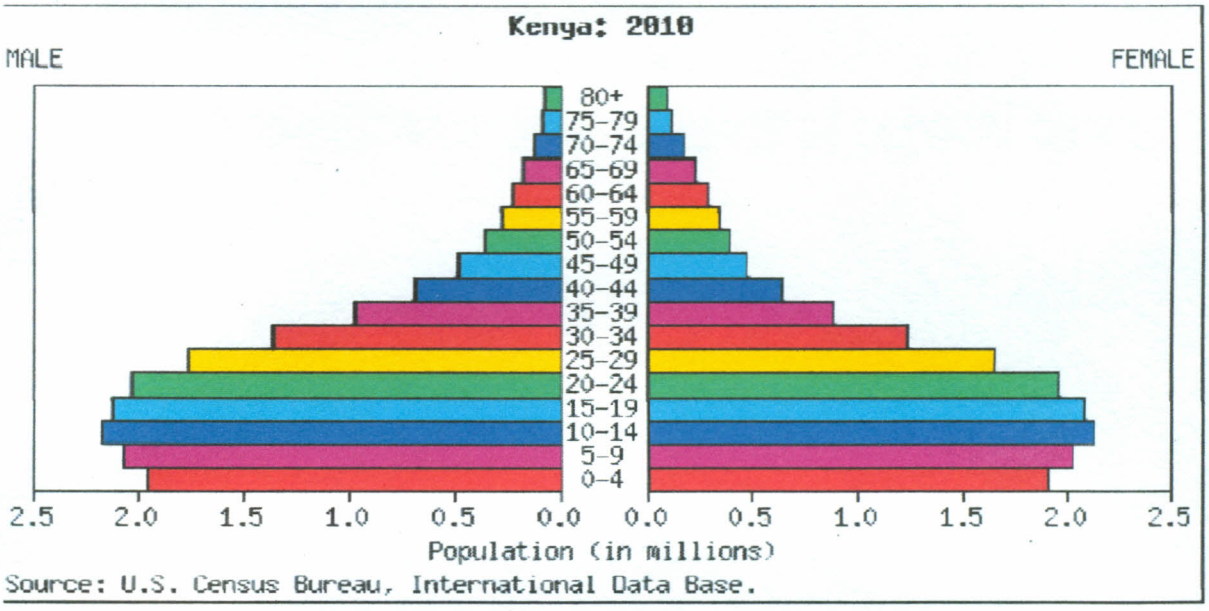
3. The group should identify at least 5 causes for them to be regarded as having adequate knowledge.

4. The group should name Pap smear and if possible immunization, treatment for sexually transmitted infections and monogamous relationships amongst other recommended methods for protection against sexual transmitted infections.

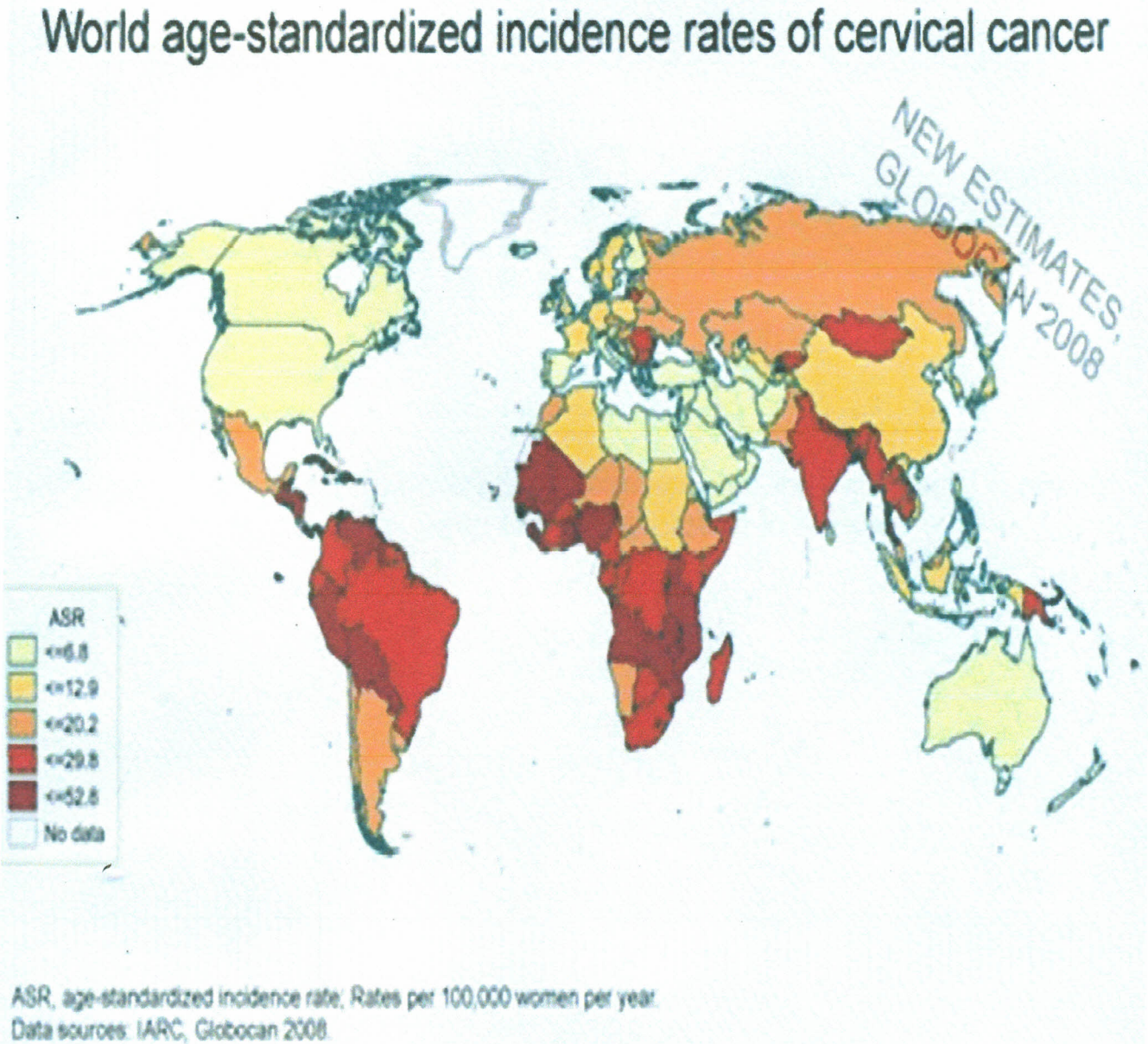
APPENDIX 111: MAP OF THE STUDY AREA THIKA DISTRICT POPULATION PROFILE



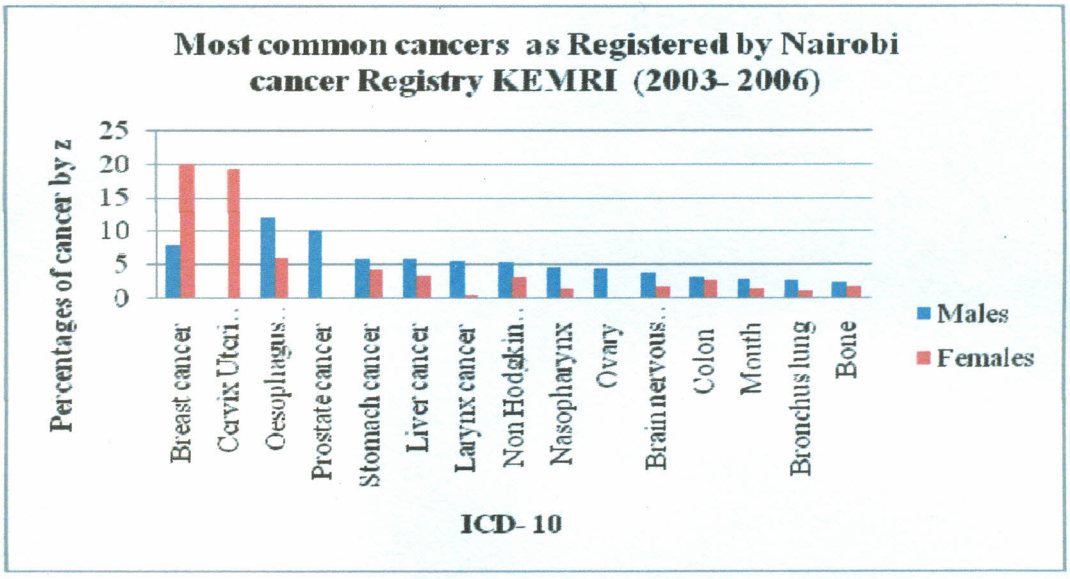
APPENDIX IV: KENYA POPULATION PYRAMIND



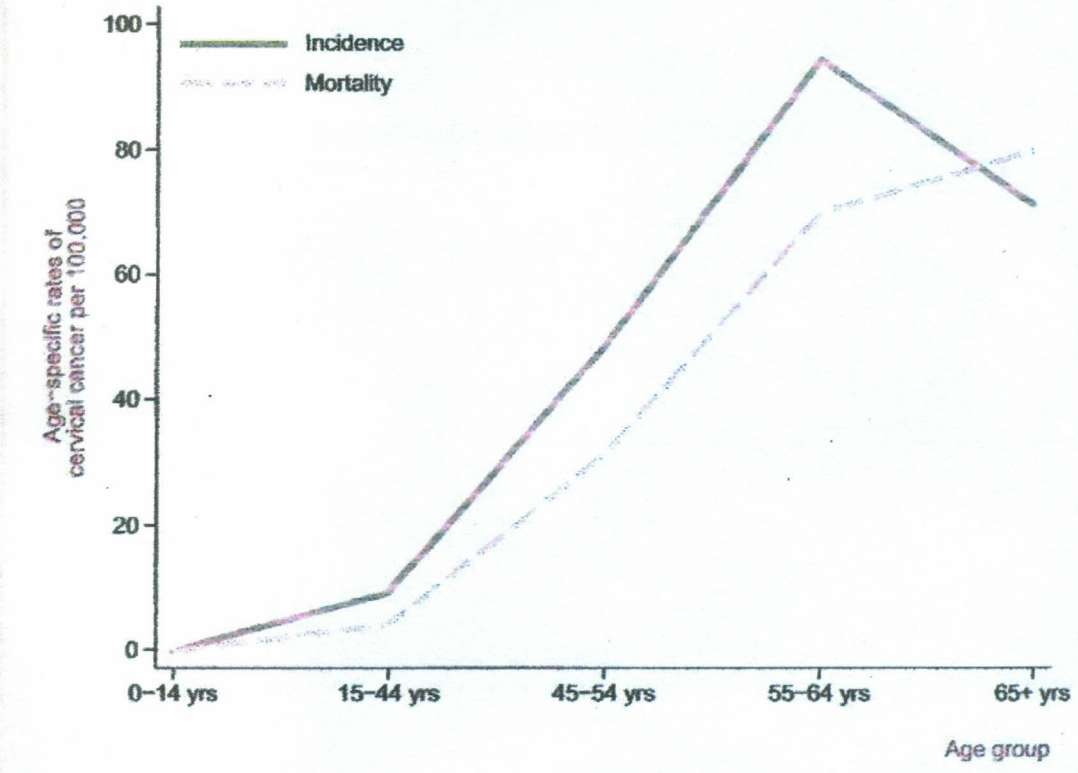
APPENDIX V: GLOBAL RATES OF CERVICAL CANCER



APPENDIX VI: CHARTS SHOWING BURDEN OF CERVICAL CANCER

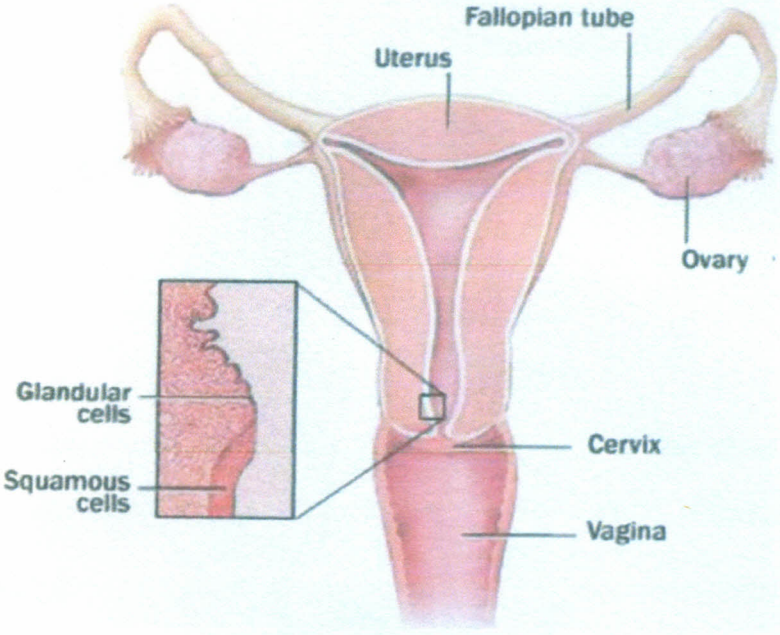


6.4.1 Figure 17: Comparison of age-specific incidence and mortality rates of cervical cancer in Kenya



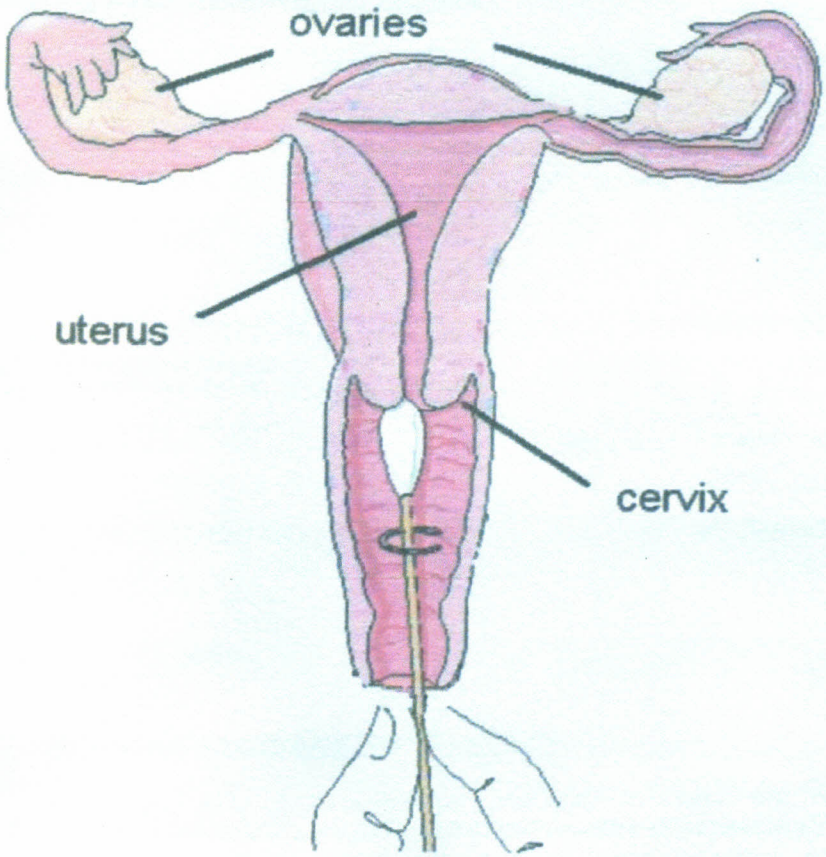
Rates per 100,000 women per year.
Data sources:
IARC, Globocan 2008. Age-specific data from GLOBOCAN 2008 were obtained from IARC, personal communication.
For specific estimation methodology refer to http://globocan.iarc.fr/DataSource_and_methods.asp.

APPENDIX VIIa: DIAGRAM SHOWING FEMALE REPRODUCTIVE ORGANSAND THE POSITION OF CERVICAL CANCER



Source of the diagram:
http://www.mayoclinic.com/images/image_popup/c7_cervical.jpg
(JPEG Image, 400 x 344 pixels)

APPENDIX VIIb: DIAGRAM OF THE FEMALE REPRODUCTIVE ORGAN



SOURCE:http://www.womenshealthmatters.ca/graphics/photos/combo.gif
(GIF Image, 427 x 437 pixels

APPENDIX VIII: RESEARCH PERMIT

REPUBLIC OF KENYA

NATIONAL COUNCIL FOR SCIENCE AND TECHNOLOGY

Telegrams: "SCIENCETECH", Nairobi
Telephone: 254-020-241349, 2213102
254-020-310571, 2213123,
Fax: 254-020-2213215, 318245, 318249
When replying please quote

P.O Box 30623 00100
NAIROBI-KENYA
Website: www.ncst.go.ke

Our Ref: NCST/RRI/12/1/MED-011/111/4

Date: 9th September, 2011

Jane Njeri Mugwe
Kenyatta University
P. O. Box 43844
NAIROBI

RE: RESEARCH AUTHORIZATION

Following your application for authority to carry out research on "*Factors determining uptake of HPV vaccine & screening for cervical precancerous lesions among women seeking maternal child health services at Thika Hospital*" I am pleased to inform you that you have been authorized to undertake research **in Thika Hospital** for a period ending ***30th October, 2012.***

You are advised to report to **the District Medical Officer of Health, Thika District & the District Commissioner, Thika District** before embarking on the research project.

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

P. N. NYAKUNDI
FOR: SECRETARY/CEO

Copy to:
The District Medical Officer of Health
Thika District

The District Commissioner
Thika District

APPENDIX IX: LETTER OF AUTHORIZATION FROM KENYATTAUNIVERSITY

KENYATTA UNIVERSITY
OFFICE OF THE DEAN, GRADUATE SCHOOL

E-mail: kubps@yahoo.com
dean-graduate@ku.ac.ke
Website: www.ku.ac.ke

P.O. Box 43844, 00100
NAIROBI, KENYA
Tel. 810901 Ext. 57530

Our Ref: P57/12161/09 Date: 6th July, 2011

The Permanent Secretary,
Ministry of Higher Education,
Science & Technology
P.O. Box 30040,
NAIROBI.

Dear Sir/Madam,

RE: RESEARCH AUTHORIZATION

I write to introduce Ms. Jane Mugwe who is a Postgraduate Student of this University. She is registered for a M.P.H. degree programme in the Department of Public Health.

Ms. Mugwe intends to conduct research for a thesis project entitled, "Factors Determining Uptake of HPV Vaccine & Screening for Cervical Precancerous Lesions Among Women Seeking Maternal Child Health Services at Thika Hospital."

Any assistance given to her will be highly appreciated.

Yours faithfully,

JOHN M. ODONGI
FOR: DEAN, GRADUATE SCHOOL

JMO/okk

APPENDIX X : RESERCH AUTHORIZATION – THIKA LEVEL 5 HOSPITAL

KENYATTA UNIVERSITY

OFFICE OF THE CHAIRMAN
DEPARTMENT OF PUBLIC HEALTH

Telephone: 020-8710901–19 Ext. 3314
Website: www.ku.ac.ke
Email: chairman-pubhealth@ku.ac.ke

P. O. Box 43844-00100
Nairobi, KENYA

Our Ref: KU/DPH/RL/57 VOL.2

Date: 28th February 2011

TO WHOM IT MAY CONCERN

RE: RECOMMENDATION FOR JANE MUGWE - REG. NO. P57/12161/06

This is to confirm that the above is a bona fide student of Kenyatta University, pursuing a Master of Science - Public Reproductive Health (M.Sc Public Reproductive Health) Degree Course in the Department of Public Health.

She has finished her course work and is now working on her research proposal on *"Factors Determining Uptake of HPV Vaccine and Screening for Cervical Precancerous Lesions Among Women Seeking MCH Services at Thika Level Five Hospital".*

Any assistance accorded to her will be highly appreciated.

Thank you.

KENYATTA UNIVERSITY
THE OFFICE OF THE CHAIRMAN
28 FEB 2011
P.O. BOX 43844-00100 NAIROBI
DEPARTMENT OF PUBLIC HEALTH

DR. I. MWANIKI
CHAIRMAN, DEPT OF PUBLIC HEALTH

31/03/2011

Approved, liaise
& NO/C mch

MEDICAL SUPERITENDENT
31 MAR 2011
P.O. BOX 727-01000 THIKA
THIKA LEVEL 5 HOSPITAL

APPENDIX XI: CONSENT LETTER FOR THE PARTICIPANTS

To be filled by participants above 18yeras or guardians to under 18 years.

I have accepted to participate in this study.

All information has been discussed to me. I have been informed that I can withdraw from the study without any negative implication to the health services I have sought.

Initials of name: .....

Age: .....

Date: .....

Sign of guardian for under 18yrs: .....