

**DETERMINANTS OF CERVICAL CANCER SCREENING UPTAKE BY WOMEN OF
REPRODUCTIVE AGE IN KENYA: A CASE OF KAKAMEGA CENTRAL SUB-
COUNTY**

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DECLARATION

This is my own original work and it has not been presented in The University of Nairobi or any other institution of learning or otherwise in Kenya or elsewhere for whatever purpose.

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

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L50/76029/2014

This research project has been submitted for examination with my approval as the university supervisor.

Signed..... Date.....

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DEDICATION

To Daniel Musili my husband, my loving daughter Hadassah Njoki, my mother Gladys Otipa and my father George Otipa for their patience, support and prayer all the way through the development of this project report.

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LIST OF ABBREVIATIONS AND ACRONYMS

CC	Cervical Cancer
CCS	Cervical Cancer Screening
CBO	Community Based Organization
FBO	Faith Based Organization
GOK	Government of Kenya
HIV	Human Immunodeficiency Virus
HPV	Human Papilloma Virus
IARC	International Agency for Research on Cancer
ICC	Invasive Cervical Cancer
KAP	Knowledge Attitudes and Practices
KNBS	Kenya National Bureau of Statistics
MOH	Ministry of Health
NACOSTI	National Commission for Science, Technology and Innovation
NGO	Non-Governmental Organization
NHIF	National Health Insurance Fund
OOP	Out-of-Pocket
Pap Smear	Papanicolaou's Smear
PPS	Probability Sampling Proportionate to Size
PSP4H	Private Sector Innovation Programs for Health
VIA	Visual Inspection with Acetic acid
VILI	Visual Inspection with Lugol's Iodine
WHO	World Health Organization
WRA	Women of Reproductive Age

ABSTRACT

The demand for screening of cervical cancer has remained low over the past decade. In a bid to enhance the public's knowledge on the conditions screening and at low-resource cost, this research aimed to identify important factors that could encourage the participation of women in Kenya in cervical cancer screening. The objectives of this study include establishing whether education level, the price of cervical cancer screening, health facilities accessibility, income levels, and whether having health insurance would influence uptake of screening for cervical cancer at Kakamega Central sub-county. The study targeted 57,785 women who were within the 18-49 age of reproduction and resided in Kakamega Central Sub-county. A descriptive survey design and questionnaires was administered to 382 women within the reproductive age. A two-stage cluster sampling was employed for random cluster's selection to be visited. In addition, a random clustering was employed in the selection of listed households for questionnaire administration. STATA 14 was used to assess collected descriptive data collected and the survey results presented via descriptive statistics like percentages, distributions of frequency, and averages. The research findings established that education level ($r = 0.229$; $p < 0.05$) monthly earnings ($r = 0.39$; $p = 0.000$) and possession of health insurance ($r = 0.654$; $p = 0.000$) were all positively linked with uptake of cervical cancer screening. Further, amount of money spent as transport to the health facilities ($r = -0.338$; $p = 0.000$), distance from home to health facility ($r = -0.218$; $p = 0.002$) and waiting time at the health facility ($r = -0.297$; $p = 0.000$) had significant negative association with uptake of cervical cancer screening . However, cost of cervical cancer screening ($r = 0.082$; $p = 0.401$) and time it took for one to travel from their homes to the health facility ($r = 0.080$; $p = 0.253$) did not have any noteworthy association with uptake of cervical cancer screening. Considering the study findings, the study makes the following recommendations. First, the Kakamega County Government in collaboration with NGOs and the National Government should hold workshops and seminars to create awareness on cervical cancer and encourage women to access health facilities where they can be screened. Secondly, Kakamega County Government in collaboration with NGOs and the National Government should waive cervical cancer screening fees or reduce them so that women from poor economic backgrounds will be able to access the service. Third, the county government should equip all health facilities in the county with cervical cancer screening tools and technology to enable all women who visit those centers to access the near their places of residence. Lastly, the national government should fast track the current campaign that seeks to increase enrollment to NHIF. The county government in partnership with other health stakeholders in the county should come up with their own health insurance to cover those who are from low income households by making them pay affordable annual premiums. This will enable women from such households to be able to access cervical cancer screening services.

CHAPTER ONE

INTRODUCTION

1.1 Background of Study

While cervical cancer is an extensively known condition among women from developing countries, efforts of screening it have neither been efficient in the containment of the disease's prevalence or mortality rates.

In countries like United States, Cervical cancer was a key reason of cancer related mortality of women. Nevertheless, over the last 40 years, cervical cancer cases and its fatalities have significantly reduced. Such decline is extensively attributed to the regular Pap testing on women. Pap testing does an early cervical cancer detection (NIH, 1996).

In Great Britain, the rate of cervical cancer incidence has reduced by 44% since late 1970s. The improvement is attributed to successful administration of cervical screening programmes in UK (UK, 2013).

Sub-Saharan Africa is ranked highest globally in terms of Cervical Cancer fatalities including deaths in women among developing nations (Gichangi, et al., 2003). Paradoxically, only 5% of cancer control resources globally are based in developing countries (Qian, et al., 2014) (Maranga, et al., 2013). Because of poor treatment outcomes and late cancer cases presentation, the Sub- Saharan region of Africa has incurred most fatalities from the disease (Maranga, et al., 2013).

However, such fatalities can be prevented with early detections and prevention (Maranga, et al., 2013), regardless this may only be attained if the public is aware of available treatment options, symptoms and prevention for cancer.

Low awareness levels in Kenya on the viability of cancer screening have been observed to be orchestrated with poor education, embarrassment, fear, poverty and absence of knowledge on symptoms and prevention (Maranga, et al., 2013) (Gichangi, et al., 2003). More so Kenyan patients have been characterized with late presentation, lack of screening, low awareness on

preventability of some cancer conditions, and a fatalistic attitude regarding cancer. (Maranga, et al., 2013)

Compared to cancer, HIV's knowledge and acceptance is greater in Kenya. An indication that proper health awareness and messaging would have an extensive impact on Cancer drives or KAPs (Joelle, et al., 2014). Research indicate of increased interests in understanding more about cancer by men and women (Joelle et al., 2014). But still the challenge of inadequate information sharing on care, prevention, and treatment of such disease across a wider population exists (Watson-Jones et al., 2015).

Various research studies indicate a significant connection between knowledge and education on cancer such that people who are learned are likely to recognize cancer risk factors like unhealthy diet, tobacco use, sedentary life, corpulence and toxic alcohol consumption (Varghese, Carlos and Shin, 2014) (Gichangi et al., 2003). Sub-Saharan African counties like Kenya still have low literacy levels (Qian, et al., 2014) this indicate presents as a likely element for cancer misinformation and hence a need of more targeted information. Some studies show that the cancer knowledge empowerments would influence the uptake of vaccines (Gichangi et al., 2003).

Another hindrance in anti-cancer drives have been the misconceptions about the condition and its management. For instance, some people holds cervical cancer to be sexually related, hence they have shunned requesting for vaccines fearing victimization (Watson-Jones et al., 2015). Majority (75%) of women in Mulago, Uganda are less likely to go for mammograms and ultrasounds since they consider it will cause them cancer, an indication of a wide knowledge gap (Joelle, 2014).

While most people consult health practitioners on cancer, reports show that in most instances patients are often not communicated to on the form of tests done on them leading to a break down in information passing or sharing (Gichangi et al., 2003). Similarly, it has been observed that healthcare providers with poor attitude, knowledge, and practices may likely fail to encourage testing (Gichangi et al., 2003).

Several studies have raised the need for enhancing information and education, sorting cultural beliefs (myths) related issues) and lobbying for open public discussion on challenges of eliminating cancer (Gichangi et al., 2003; Maranga et al., 2013). Also, Maranga et al. (2013) notes that the war against cancer may be bolstered through increased awareness and training of providers of health care.

1.2 Problem Statement

Cancer of the cervix is a dominantly common disease that affects women aged between (15 to 44 years) in Kenya. Up to 10.32 million Kenyan women of 15 years old and above are susceptible to getting cervical cancer and also, obtaining HPV infections (WHO/ICO, 2010). Estimates indicate of increased new incidences and deaths from cervical cancer in Kenya annually (ICO Information Centre, 2014).

HPV vaccine can prevent cervical cancer should it be administered before onset. Additionally, the frequent women screening will help detect abnormal cells' changes in the cervix would also prevent cervical cancer. Most Kenyan health facilities have cancer screening services such as VIA/VILLI and Pap smear (ICO Information Centre, 2014).

Long time premalignant lesion transition to cervical cancer provides adequate schedule for an early detection and a near complete cure. Nonetheless, such window of opportunity is often missed since the screening levels are low (Owoeye and Ibrahim, 2013). The rates of participations in the screening of cervical cancer screening are very fundamental for the success of the cancer of the cervix screening programs (Kjaer et al., 2012).

Yet, notwithstanding the state and stakeholders' determination to encourage and educate on the screening, the uptake levels of cervical cancer screening have maintained at low 3.2% among women aged (15-44 years) as opposed to the 70 % of women from developed nations (ICO Information Centre, 2014).

Cervical cancer is among major health challenges for a Kenyan woman. In Kakamega, estimates indicate that it is only a third of women who have heard about cervical cancer. Establishing the

factors related with women's apparent risk about cervical cancer may inform future clinical interventions and scholarly research on increasing the screening of cervical cancer (Sudenga et al, 2013).

Henceforth, it is critical to execute this study now since it will provide an insight into the underlying influences behind low participation in cervical cancer screening, the health care-seeking behavior of women within the reproductive age, and support in generating a program that is specific to the population segment.

1.3 Purpose of the study

The purpose of this study was to assess what causes uptake of screening for Cervical Cancer among women of reproductive age (15-46 years) in Kenya.

1.4 Research Objectives

1. To examine the extent that education level influences uptake of cervical cancer screening uptake among Kenyan women of reproductive age
2. To determine how cost of cervical cancer screening influences uptake of cervical cancer screening by women of reproductive age in Kenya
3. To examine the influence of healthcare services accessibility on uptake of cervical cancer screening by women of reproductive age in Kenya
4. To assess the influence of income level on uptake of cervical cancer screening by women of reproductive age in Kenya
5. To assess the influence of health insurance cover on uptake of cervical cancer screening by women of reproductive age in Kenya

1.5 Research Questions

The study answered the following research questions;

1. What is the influence of education level on uptake of screening for cervical cancer by women of reproductive age in Kenya?
2. How does cost of screening for cervical cancer determine its uptake by Kenyan women of reproductive age?

3. How does health facilities' accessibility influence uptake of screening for cervical cancer by women of reproductive age in Kenya?
4. How does income level determine uptake of screening for cervical cancer by women of reproductive age in Kenya?
5. What is the influence of health insurance coverage on uptake of screening for cervical cancer by women of reproductive age in Kenya

1.6 Significance of the study

In developing nations incidence of cervical cancer is often ignored as a major concern in public health due to the occurrence of several infectious conditions that may overcome the health-care division.

Hence, the findings from this research would be momentous in several ways including:

Inform the review of the MOH policies on matters cervical cancer to improve the public's (women) demands for cervical cancer health care in health facilities. Also help FBOs, CBOs, and NGOs in coming up with informed and programmatic coverage regarding cervical cancer screening. Additionally, form as a vital material of reference for researchers who have interest in studies related with cervical cancer.

1.7 Delimitation of the study

The locational focus of the study was Kakamega Central sub-county in Kakamega County. The focus of the study was women between the ages of 18 and 49 years, who resided in the sampled households that participated in the study. The targeted populace simulated a similar representation to other population from other regions countrywide that extensively affected by the concern of cervical cancer and as such, the research findings are generalized. The research was also inclined towards establishing the causes of uptake of screening Cervical Cancer among Kenyan women aged 18-49 years.

1.8 Limitations of the study

The sampling schedule was regionally based and hence the research findings would only provide a deductive picture of the factors influencing screening of cervical cancer in the underlined study area.

1.9 Assumptions of the study

The investigator aimed at female participants from the sampled households and assumed that they would cooperate in participating in the research and as well provide genuine feedback. Additionally, the study assumed that for each household that participated in the study, there were at least two women between 18 and 49 years of age. More so, the women in the households were assumed to be willing and available to respond to the questions, which guided the study.

1.10 Definition of significant terms used in the study

Accessibility of health facilities – easiness of entering or the facility's presence in an area

Cervical cancer screening – Methods of screening aimed at finding cervical changes that could cause cervical cancer. These include visual cervical inspection and the Pap smear test.

Cervical cancer screening uptake – participation, reception, or adoptability of the services for cervical cancer screening.

Education level – highest educational training and any kind of qualification achieved by individuals

Health insurance cover – possession of any form health insurance including private and NHIF medical covers in Kenya but limited to those who use their medical covers

Level of income – available money to a family or home per month

Pricing of cervical cancer screening – money billed to a clients who need cervical cancer's screening

Reproductive age – ages between 18 years and 49 years

Screening –simple testing on healthy population to isolate cases of diseases, including cervical cancer’s symptoms

Screening coverage – the level of eligible women’s participation in programs of cervical cancer screening

1.11 Organization of the Study

The study is divided into five chapters. The first Chapter elaborates on the study’s background, problem statement, purpose and objectives, questions for research, significance, assumptions, delimitations, limitations, and significant terms definition.

Chapter two comprises of the literature review associated with the determinants for Cervical Cancer Screening uptake by Kenyan women within the reproductive age. Concepts discussed include the charges for cervical cancer screening income levels, public accessibility, and health facilities’ possession and insurance respectively. Theoretical and conceptual reviews and knowledge gaps are also deliberated upon in this chapter.

Chapter three includes the research methodology incorporates target population, research design, sampling technique, sample size, instruments of research/data collection, the validity, reliability, and the procedures for data collection and analysis techniques.

Chapter four presents the study’s results, analyze and discuss them as per the research objectives. Lastly, Chapter five summarizes the research results, deliberations, conclusion, and commendations for further contribution and action on the underlined subject and also, it highlights suggestions for further studies.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

Presented in this chapter is the literature that is related to the subject under study. It consists of review of literature related to uptake of cervical cancer screening services, and the various factors that have been associated with the uptake. These include health insurance coverage, education level attained by women of reproductive age, cost of screening for cervical cancer, level of income, accessibility to healthcare services and how these factors are associated with uptake of cervical cancer screening. Moreover, the chapter presents the conceptual and theoretical framework.

2.2 Uptake of screening for Cervical Cancer

According to Kjaeret al. (2012) cervical cancer is a common diagnosis for women living in Sub-Saharan Africa as the region records between 80 and 85 percent of new incidences and deaths emanating for resulting from cervical cancer. Highest sub-regional Incidences and death rates from Cervical Cancer have been recorded in Eastern Africa Cancer (Afri-Dev, 2014).

Cervical cancer lines as the leading cause cancer death among Kenyan women aged (15-44) years. Health estimates of 2012 indicate of up to 2,451 annual cervical cancer related mortality in Kenya (Bruni, et al., 2015). Data ranks Kenya seventh globally in terms of fatalities resulted by cervical cancer, (Afri-Dev 2014).

If detected early, cervical cancer can be prevented or cured. The lesions that appear before cancer develops can be identifiable in 10 years or over prior to the development of cancer in antecedent screening (Eke et al., 2010). During earlier stage of cancer detection, simpler treatment forms could still be viable (Hennie, 2010). Early detection by in section by accessing of cancer, Developed Countries like the United States and Britain, cancer screening is a routine event. An ideal age for cancer screening is between (30 - 40 years). This is because during the period, women presents at an increased risk and more sexually active (Eke et al., 2010).

In developing nations, most cancer cases are often identified later on thus generating to high rate of mortality (Udigwe, 2009). If Kenya's treatment and screening of cancer remains low, the mortality rate from cervical cancer may be double by the year 2025, (Sudenga et al., 2013).

Studies from developed nations indicate that screening programs have significantly contributed to mortality and morbidity reduction of cervical cancer (Der, et al., 2014).

The report from Kenya Cancer Registry shows that in Nairobi only, on a weekly basis Kenya registers 10 to 15 new cervical cancer cases of cervical. Despite Kenya's magnitude problem and the easier preventability of the disease, only 3.2% coverage for cervical cancer screening across women aged (15-44) (DRH/MOPHS/GOK, 2012).

2.3 Uptake and Education level of screening for cervical cancer.

A Kenyan study reveals the medics to be the public's main source of info on cervical cancer (Ibrahim and Owoeye, 2013).

A Nigerian study found that women's level of educational could significantly influence cervical cancer their awareness and screening practices like Pap smear testing (Eke et al., 2010). Meaning that, women that are more knowledgeable are likely to hear or know Pap smear testing, and more so make regularly screening visit as recommended follow-up in abnormal finding (Owoeye and Ibrahim, 2013).

Pap smear screening and cervical cancer's awareness is correlated to HPV vaccine and higher screening uptake and also early symptoms diagnosis. Owoeye and Ibrahim (2013) observe that numerous motives for late diagnosis have been noted, for instance fatalistic attitude, ignorance of the symptoms, social and cultural assumptions on particular abnormal functioning (myths) hence resulting to delays in looking for help and validation of suspected cases.

In Tanzania, Kjaer et al. (2012) established that women with poor information on cervical cancer screening and those with low education levels should be given special consideration regarding screening for cervical cancer. Further, researchers noted that raising the awareness campaigns

should be paralleled with screening that are culturally acceptable. Such approaches may hence facilitate improvement of cervical cancer screening uptake (Kjaer et al., 2012).

These results correspond with other studies done in less resourced regions in countries like Malaysia, India, and China by Kjaer et al. (2012) that women who are less educated are less informed on the importance of regular screening for cervical cancer. This is notwithstanding the cost of screening for cervical cancer or the limited resources that these have to enable them attend regular screening.

In sub-Saharan Africa, various studies have indicated that women with limited information on cervical cancer may less likely participate in cancer screening drives and hence are at high risk of contracting cancer. A study done in Kakamega County indicate that women who have been screened tends to be more educated denoting that they have higher or secondary school education -96% vs 59%, monthly incomes (Kshs 93,000/=, 95% vs 62%) and are informed about cervical cancer (100% vs 25%) (Sudenga et al., 2013).

Fairly educated women are likely to feel vulnerable of acquiring cervical cancer, inadequately informed on cervical cancer by medics, and also tends to participate in the future cervical cancer screenings (Sudenga et al., 2013).

WHO (World Health Organization) recommends that programs for screening cervical cancer be done on women with 30 years or more and at a 3-year interval. Research suggests that women perceived at a high risk of acquiring cervical cancer are highly expected to partake in future cervical cancer screening as opposed to those who do not view themselves at risk. Additional studies have established similar findings that observed low cervical cancer risk to be associated with less screening uptake (Sudenga, 2013).

Education was also perceived to reduce the concern levels about testing positive of cervical cancer after the screening has been done. Women who are educated and test positive of abnormal cervical formations are highly concerned about acquiring cervical cancer. Hence, most of them were willing to go for annual gynecological examinations, even when there was no need for a

Pap smear over the three years. Women's knowledge on cervical cancer, HPV, and cervical cancer screening can be improved through education though it does not allay concerns of getting cervical cancer (Papa et al., 2010).

Women who have achieved low in their education, are less informed on cervical cancer's risk factors, and do not command the support of their husbands may have less likely partake in cancer screening provisions (Were, Nyaberi and Buziba, 2011).

Even where there are screening facilities, some individual characteristics will examine a woman's accessibility to the services. Women who agree to be screened are often younger aged between (30- 39), had been pregnant, married, have used contraceptive, and is better (Were, Nyaberi and Buziba, 2011).

Only 4.0% of Kenyan women in cities and towns undergoes cancer screening (Rosser, Njoroge, and Huchko, 2015). A Kenyan survey by Rosser, Njoroge and Huchko (2015) showed that about 69 percent of 649 women who had heard about cervical cancer do not perceive themselves to be at the risk acquiring cancer. Improved awareness on preventing and timely use of health services and attitude change on the health risk could help advance screening uptake.

Higher knowledge level is presented as a main predictor for screening intention. Recent studies also have suggested that lack of knowledge and awareness to be major hurdle for the acceptance of screening in Sub-Saharan Africa. Two East African retrospective studies identified a relationship between screening knowledge and awareness and cancer screening previously, (Rosser, Njoroge and Huchko, 2015).

2.4 Cost of screening and uptake of cervical cancer screening

Various studies in developed nations have indicated that the significant decline in mortality and morbidity from cervical cancer is as a result of planned screening programs. Der et al. (2014) established that availability, accessibility, and affordability of screening facilities would enhance early detection of women's lesions and appropriate treatment, hence limiting the women's number in presented at the early phase of the infection.

Kjaer et al. (2012) posited that to control cervical cancer's problem in developing countries, WHO and the IARC (International Agency for Research on Cancer) have identified the programs for cervical cancer screening by establishing some alternative methods for screening using visual inspection acetic acid (VIA).

A study by Sudenga et al. (2013) established that inadequate knowledge on cervical cancer, fear and lack of funds were the key factors that were mentioned by women who had not undergone cervical cancer screening.

In Kakamega County, Kenya, the setbacks to the programs for screening of cervical cancer comprised of poor accessibility to services, high costs and limited awareness by the public. Erstwhile, screenings were uncommon, indicating the need for affordable screening procedures. Information on screening should elaborate on the consequences and meaning of possible findings, (Were, Nyaberi, and Buziba, 2011).

VIA and visual inspection with Lugol's iodine (VILI) are two contemporary low-cost methods of cervical cancer screening that have been generated and assessed. Developing evidences indicate that these new methods are expected to have testing characteristics that are similar to the cytological approaches. For instance, when weighed against pap smear, VIA ranks lower as it has the weakness of generating false positives with the risk of over-treatment. Nonetheless, Were, Nyaberi and Buziba (2011) argue that VIA does not require enormous laboratory infrastructure, is easy to comprehend and cheaper and therefore provides women with the opportunity to acquire the results in instances the positive lesions from VIA tests necessitate further assessment.

Participants in numerous researches described main hindrances including negative attitude on screening (or abnormal Pap smear) results, inadequate financing for the services, and absence of awareness on screening services, (Were, Nyaberi and Buziba, 2011).

Most research in developing nations including Kenya highlights of a significant barrier which the costs of healthcare present to the operationalization of health provisions at both public and

private sectors. A 2007 KHHES (Kenya Household Health Expenditure Survey) reports that more than a third of the public that did not sought for medication (38%) recognized lack of cash as the motive for not looking for medication (DFID, 2014). This research hence aims to identify whether the same is applicable in the screening for cervical cancer.

2.5 Income and application of screening for cervical cancer

Causes that can encourage the rate of participation include: accessibility, acceptability, promotion of screening, screening interval among others.

A research in Botswana, Gaborone revealed that previous screening of the cervix was common on women with knowledge about cervical cancer or higher incomes, a fallacy constant with other findings (Sudenga et al., 2013).

Other studies also highlight of high intentions for screening among women who attend low-level medical facilities (for example dispensaries and sub-district hospitals) compared to large district hospitals, notwithstanding their low awareness levels, specific knowledge, income, and personal risk misconception (Rosser, Njoroge and Huchko, 2015).

Studies in Kenya on the determinants for the utilization of child health and maternal service have indicated that actors like age, educational level, birth parity, place of residence wealth status, knowledge on risk factor for pregnancy, and exposure to media that associated with the usage of health facilities (DFID, 2014).

2.6 Possessing health insurance and screening uptake of cervical cancer

Four percent of women in Kenyan cities and towns undergo screening, as opposed to just the 2.4% in countryside. The poor rates of screening have been attributed to limited access for health care and the levels of uptake of the services available (Rosser, Njoroge and Huchko, 2015).

36 percent of Kenya's health expenditure comes from out-of-pocket health expenditures by households' occupants. The extraneous out-of-pocket payments are also known for consumption expenditure reduction of other services and goods therefore causing poverty among households

through catastrophic expenditures. Recent reviews have indicated that health insurances may be adopted in the mitigation of impoverishing effects that emanates from paying huge health expenses from out-of-pocket. Kiplagat, Muriithi and Kioko (2013) observe that health insurance in Kenya provides inadequate cover regardless of the numerous premium payment systems.

Recent studies indicate that employment status, wealth index, levels of education, and sizes of households are vital determinants for health insurance choice and ownership. More so, the lack of awareness limits several from enrolling into any kind of insurance scheme for Medicare (Kiplagat, Muriithi and Kioko, 2013).

Huge healthcare expenses that are paid from out-of-pocket remain a huge barrier and burden and barrier towards enhancing access to healthcare services. When poor households' pay huge expenses from their pockets, this may often lead to impoverishment and catastrophic expenditures. They also dissuade the use and limits coverage of present health care services, of which both are imperative for the health outcomes' improvement. The study by Kiplagat, Muriithi and Kioko (2013) established that health care access fees have a negative implication of on healthcare services utilization.

Health insurance has been considered as one of the key aspects of enhancing access to healthcare services in Kenya. This is because the country's poor pay significant amount of healthcare expenses out-of-pocket. This high out of pocket spending on healthcare had adversely influenced access to healthcare (ICO/WHO, 2010). Health insurance has helped households to allocate financial resources for meeting medical costs for illness. Afri-Dev (2014) notes that health insurance enhances the risk pooling hence increasing financial security among households.

Conversely, absence of health insurance encourages derailment in seeking health care, failed compliance to the regime treatment and overall results health outcomes that are poor (Afri-Dev, 2014). The setback facing developing nations is therefore to risk management pooling from OOP financing and more so, ensure effective financial coverage and protection (Kiplagat, Muriithi and Kioko, 2013).

Policymakers have recognized the need for health insurance establishment in Kenya over some time now. This has been demonstrated with the creation of the NHIF (National Health Insurance Fund) in 1966 using a Parliamentary Act. The most important event over the recent past is the state's interest on social health indemnity for mechanism of financing healthcare and its probable implementation in the country. The object such policy is to enhance access and equity in healthcare services provisions among Kenyans, (Kiplagat, Muriithi and Kioko, 2013).

The influences of education are remarkable in mutual terms schemes. Respondents with tertiary, secondary, and primary schooling have higher chances of choosing community or mutual insurance as opposed to those who are illiterate, (Kiplagat, Muriithi and Kioko, 2013).

Higher publicity from the media on health insurance limits the probability of selecting mutual insurance; the growth in wealth index could increase the chances while employed heads of household are better placed to choose mutual insurance in comparison to unemployed, (Kiplagat, Muriithi and Kioko, 2013).

Compared to their unemployed colleagues, employed people are twice expected to select employer-based cover. Such of observation is not surprising because those it is a statutory requirement for those employees in formal sector (Kiplagat, Muriithi and Kioko, 2013). Also noted is that richer people will opt for private schemes over other options (Kiplagat, Muriithi and Kioko, 2013).

Certain of literatures also demonstrate the trends poor people seek from a private insurance provider, which informs PSP4H (Private Sector Innovation Programs for Health) market interventions. It is noted that there is a need for market interventions that include the mechanisms for the removal of economic barriers like medical saving plan, insurance, contracting, and voucher to incorporate the preferences and needs of the poor (DFID, 2014).

Levels of education were also established to influence health insurance demand (Kiplagat, Muriithi and Kioko, 2013). As anticipated, education improves the chances of acquiring all forms of insurance that an individual requires to manage or foreseeable risks. The findings also depicted that educated people are more empowered to make important health decisions that

include purchase of medical insurance to limit the adverse effect that huge health expenses can have on their personal finances. Moreover, Kiplagat et al. (2013) observed that high education levels enable people to acquire skills and knowledge to manage their health effectively.

Seemingly, people who purchase medical insurance usually could be classified belonging to highest wealth index and are often comparatively older with high education and awareness levels than the rest. Persons with mutual community frameworks often have lowest education level (Kiplagat, Muriithi and Kioko, 2013).

2.7 Health facilities Accessibility and cervical cancer screening uptake

For the definition of access, the study used the definition by Peter et al. (2008) who depicted that access relates to the appropriate use of a certain service based on the need at the time (Bart et al., 2011). There are four dimensions for access: geographic accessibility, availability, acceptability, and affordability. Demand-side influencers are the actors influencing users' ability to exploit health services at household, community or individual level, whereas supply-side elements are facets inherent for health systems which hinder the uptake of service by the community, individuals, or households (Bart et al., 2011).

The acknowledgment of increasing burden from the disease was done through a VIA testing program for cervical cancer screening and with WHO' and INCRS (International Network for Cancer Treatment and Research support) \ in Dar es Salaam in 2002. The documented program's evaluation through the VIA testing was operational as a screen test for prevention of cervical cancer and VIA testing was recommended for routine use. Approximately 500,000 women were targeted with the routine program in Dar es Salaam. The attendance for screening was evaluated five years after the program's implementation and established that only four percent of the population targeted had been screened on cervical cancer (Kjaer et al., 2012).

To address coverage in screening, the program for screening of cervical cancer in Tanzania has gone through several iterations over the recent years. Regardless of such efforts present screening resources are underutilized by many women staying in Dar es Salaam, Tanzania (Kjaer et al., 2012).

Contrastingly, Kjaer et al. (2012) posited that the district decentralization approach for screening of cervical cancer and a combination of the decentralized awareness campaigns were extensively effective in encouraging women to accept cervical cancer screening.

Lower levels of cancer screening acceptance among women of high-parity can be explained by factors such as cost of foregoing domestic activities which is common among the targeted group of women (Kjaer, et al., 2012).

In explaining the women's needs, of acknowledgement is that most women encounter with problems like poor health provisions, long waiting time, culturally deterrence to care, and economic constraints in their quest for accessing screening services. Efforts should be advanced remove these obstacles while scaling up screening services for cervical cancer (Kjaer et al., 2012).

Due to the absence of cytological laboratories and trained cytotechnologists, developing countries often experience long intervals of (1–3 months) between the period of tests availability and Pap screening. Moreover, a study by Jeronimo et al. (2010) established that for the women who have positive results from pap smear, only a small percentage of the women seek diagnostic positive treatment and evaluation. This is because most of the women lack access to the healthcare facilities that manage pre-invasive lesions. Moreover, few healthcare facilities have the capacity to provide such services. The limitations that screening through pap smears bring have encouraged development of alternate screening methods such as VIA.

The biggest advantage of the VIA screening method is that it requires low investment in infrastructure and technology equipment, while its results are available in minutes. Such traits make VIA a genuine alternative for low resource establishments (Jeronimo et al., 2010).

Regardless, the tests are also not provided free of any fee. Even at public health facilities, a patient has to pay some fees, some of which may at times be corresponding to a family's daily income. More so, Jeronimo et al. (2010) observed that there are no quality control systems countrywide to facilitate effective screening.

Use of VIA has risen to be an effective option in developing nations due to its inexpensiveness and effectiveness and also the fact that it demands lower level training with no specialized equipment (Jeronimo et al., 2010).

Another vital finding is about positively tested women that are distracted to follow up treatment. The fraction was mostly low among women who test positive after a VIA screening test compared to women with positive Pap smear. Such occurrence may be caused by the awareness level among women who test positive after a VIA test regarding the positive women about atypical result after visiting for the first time, thus receiving specialized counseling regarding the findings and importance of weekly or periodical visitations for follow up. On the other hand, Jeronimo et al. (2010) noted that to learn of their Pap smear (either negative and positive) results, while a weekly visitation to the health facility may be critical, some patients do not adhere to that and hence they never get specialized counseling on the implication of positive results.

A study by Ebu et al. (2014) established that there was a significant correlation that existed between obtaining a pap smear test and personal and institutional barriers. Therefore, Ebu et al. (2014) recommended that elimination of barriers that hinder women from getting cervical cancer screening is vital in the reduction of risks related with cervical cancer, while advancing the health of women.

2.8 Theoretical Framework

Adopting an effective conceptual framework in the study depended on review of literature relating to distinct health behavior models which could be best used particularly on cervical cancer screening related behavior. Hence, the theoretical framework adopted in the study was the health belief model.

The Health Belief Model (HBM) is a psychosomatic model which strives to predict and explain people's health behaviors by concentrating on their attitudes and beliefs. HBM was conceptualized in 1950s as by American Public Health Service social psychologists to clarify on the absence of public contribution in health prevention and screening programs (for example a conveniently and free located screening project for tuberculosis). Since then, HBM has been

used in the exploration of several short and long-term health behaviors, including sexual risky behaviors and HIV/AIDS transmission. Key variables of HBM entail (Rosenstock, Strecher and Becker, 1994).

Apparent threat that is the perceived vulnerability and the seeming severity of the health situation; Perceived Vulnerability, that is an individual’s subjective risky insight of contracting the health condition; Apparent Severity, that include feelings regarding the significance of contracting the disease or not treating it (including assessments of both clinical and medical consequences and likely social consequences); Apparent interests, the supposed strategy is effectively designed to reduce illness threats; Perceived Barriers, potential negative consequences which may result from engaging in certain health actions like financial demands, psychological, and physical; Action signals, events, bodily (like physical health symptoms) or environmental (including media publicity) which motivates individuals to react; Other Variables like socio-psychological, diverse demographic, and structural variants that influences an individual's insights hence indirectly influencing health-related behavior, and Self-efficacy, the confidence of being capable to effectively execute the behavior needed for the production of desired outcomes. (The idea was presented by Bandura in 1977).

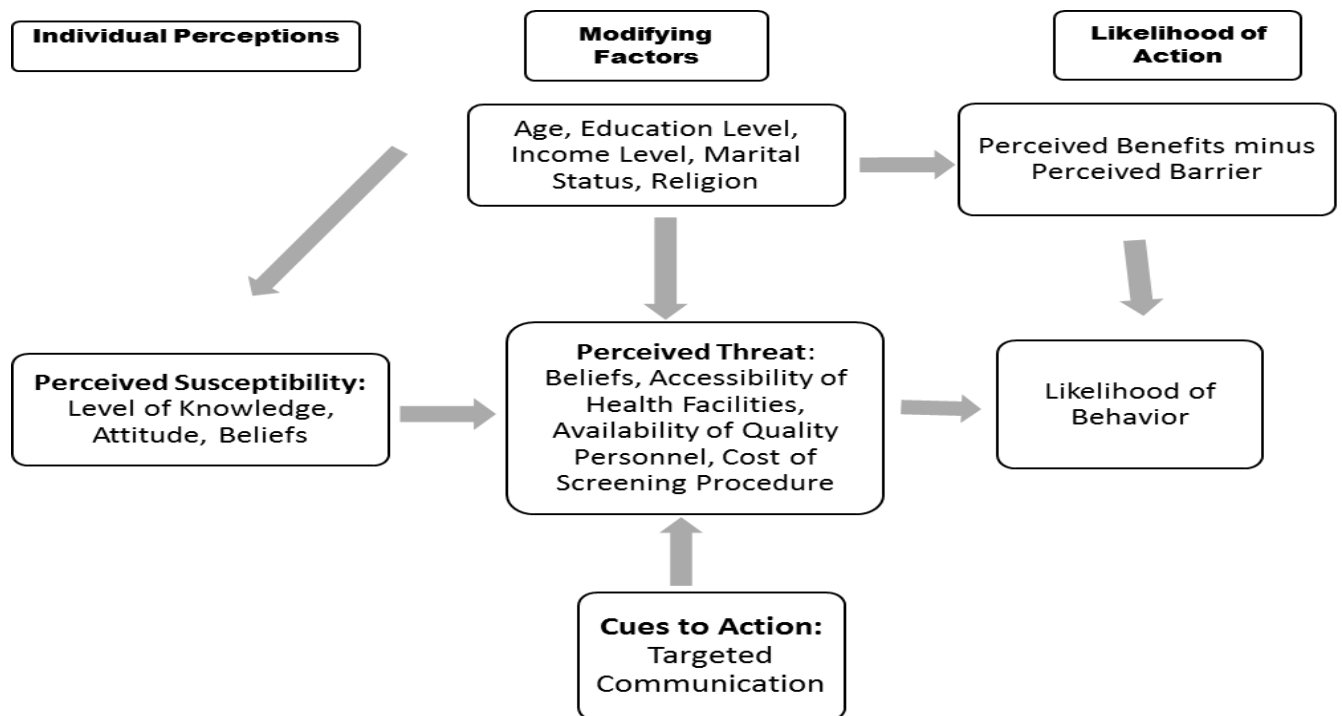


Figure 1: Health Belief Model

2.9 Conceptual Framework

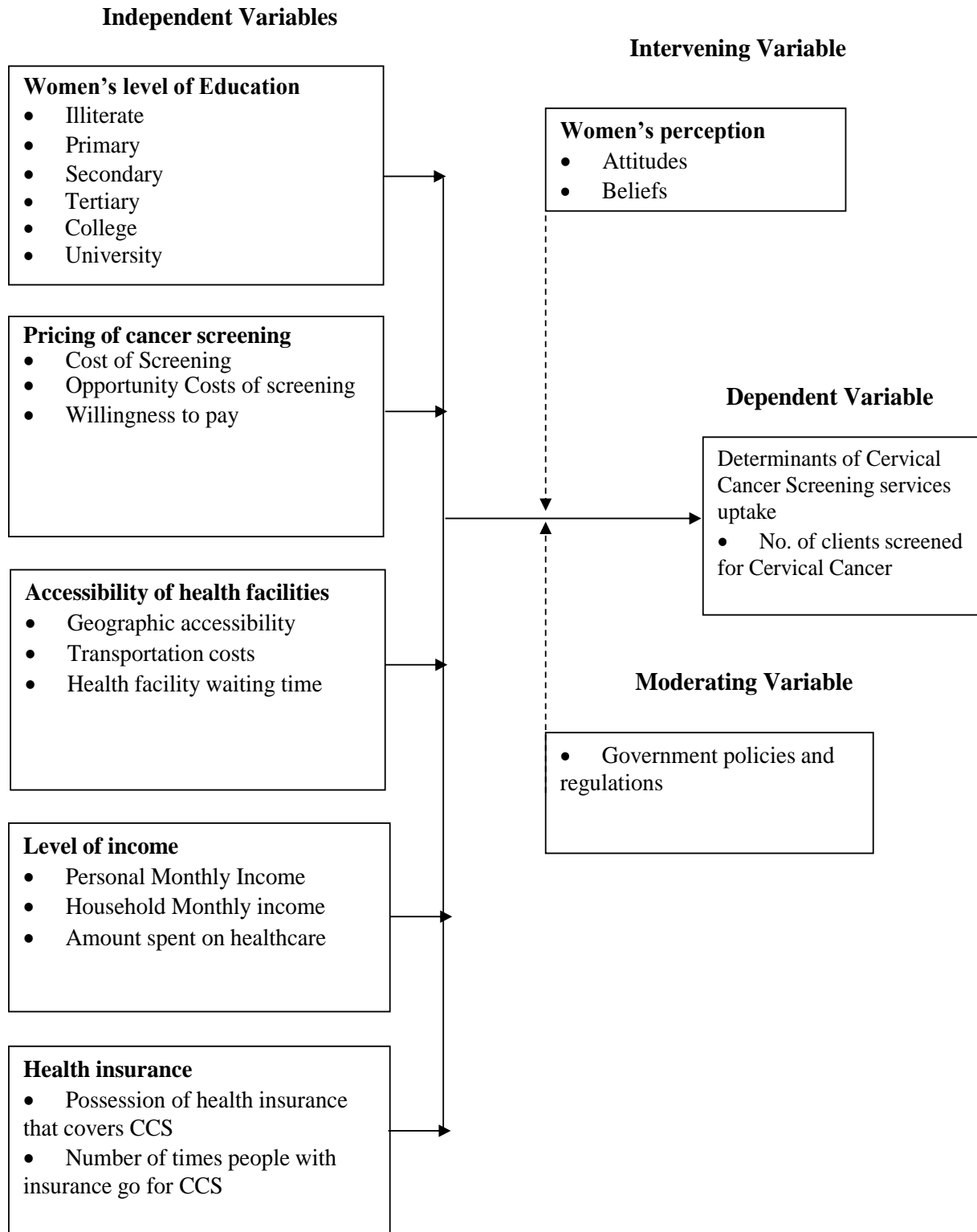


Figure 2: Conceptual Framework

This review is grounded on the conceptual framework below an indication of the relationship between dependent and independent variables and their influences on the level uptake for Cervical Cancer screening in Kenya.

Levels of education and the uptake of screening for cervical cancer. Education enhances the demand for consulting screening for cervical cancer. Low levels of education, particularly in rural areas, could influence people's risk of acquiring cervical cancer.

The cost of acquiring screening for cervical cancer and its influence on screening the uptake of cervical cancer. Costing for screening of cervical cancer may be conceived as impractical and unnecessary costs for others. Hence, this implicates directly on people's ability to seek for screening services or not.

Income levels and acceptance for screening of cervical cancer. Income bracket for a family may influence positively on the uptake of screening for cervical cancer. Women are capable of allocating funds for healthcare owing to more disposable income, thus health checkups.

Possessing a health insurance and uptake of screening for cervical cancer. People covered with health insurance are neither obliged to incur Out-of-Pocket costs in cancer screening. Health insurance motivates them to look for health care and routine checkups.

Health facilities' accessibility and uptake of screening for cervical cancer. Health facilities that are near individuals' home are easily accessible, hence making it easier for them to seek for screening for cervical cancer.

These influences are interrelated and complemented with Health Belief Model in explaining the uptake determinants for cervical cancer screening among women.

2.10 Research Gaps and Summary

Literature endorses respective linkages between social environmental stimuli and several health behaviors. Due to the increasing knowledge of the body on how ecological and social conditions

affect wellbeing and health behaviors, additionally studies are required to comprehend the operationalization of such interactions among Kenyan women within the age of reproductive. This research was aimed to be important to both public health related studies and social work and practice due to its viability to play a role in the conceptualization of the influence of certain particular factors in the daily lives of women could enable them to enhance their capacity to take certain decisive action that are documented to lower the risk of cervical cancer.

Table 2.1: Summary of Empirical Literature

Variable	Literature Source	Findings	Knowledge gap
Education level	Eke, et al. (2010). Investigating the knowledge about screening for cervical cancer among employed women in Nnewi, Nigeria.	The findings from this study depicted that awareness level regarding pap smear screening and cervical cancer were influenced by the women's education level.	The study engrossed on cervical cancer and not the correlation between uptake of cervical cancer screening and level of education
Pricing of cervical cancer screening	Were et al. (2011). Investigating the perceptions of risk and hindrances to screening for cervical cancer at Moi Teaching and Referral Hospital (MTRH), Eldoret, Kenya.	Since previous screening was not common, it resulted to the need for cheaper methods of screening. Communications regarding screening should underline on the consequences and meaning of possible results	Among key study's recommendation entailed the demand to find the linkage between screening up take for cervical cancer
Level of income	DFID. (2014). A review of literature on the poor in Kenya and their utilization of the private healthcare sector in the country	Studies in Kenya on factors determining child and maternal health services utilization have indicated that factors like age, pregnancy, exposure to the media, level of educational, residency, knowledge	Studies have exclusively shown the linkage between levels of income and uptake level for child and maternal health. While those which have shown the connection income level and

		of risk, wealth status and birth parity play a role in influencing utilization of private health facilities	CCS were conducted in Kenya
Having health insurance	Kiplagat et al. (2013). An analysis of the factors determining choice of health insurance in Kenya.	Findings from Kenya shows of the negative influences of users' fees in the healthcare service utilization	The findings do not indicate the impact from the uptake of health insurance On CCS services.
Accessibility of health facilities	Kjaer et al. (2012). An investigation into the factors determining utilization of cervical cancer screening services in Dar es Salaam, Tanzania.	The significant finding is concerned with women's who have positive tests and yet are for follow up before treatment	The research did not ascertain the potential barrier of accessibility in accessing CCS services

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

Chapter three encompasses the methodology of the research, including the procedures for data collection. These entail the research design, targeted population, the size to be sampled, and procedures for sampling, the instruments for research, reliability, and validity of the instruments, data analysis procedures, and techniques, and ethical concerns. Specifically, it highlights the methods of research to be engaged in dispensing the study with aim of answering the research questions.

3.2 Research Design

Research design is defined by Orodho (2010) as a plan that the researcher utilizes to gather and exploit data with an aim of obtaining the desired information. A descriptive research design was used to generate data from Kakamega Central sub-county women within the reproductive age to ascertain the influences of uptake level for Cervical Cancer Screening provisions.

A descriptive type of survey is that research which is conclusive with its major objectives as explanation for phenomenon related with a populace, subject, or approximation of population proportions with certain features (Orodho, 2010). The selection of a descriptive approach was chosen because it enhanced the researcher's ability to engage quantitative data analysis and collection techniques and answer research questions which appertain to the factors for uptake of screening for Cervical Cancer among women aged (18-49) year in Kenya (Mugenda and Mugenda, 1999).

3.3 Target Population

Kothari (2010) defines a population as a cluster of items, entities or individuals with which a researcher is interested in and whereby samples are extracted for investigation purposes. It can also be deducted to be the whole group of individuals, or elements with at least a common variable. Target population is that collection of elements of which one intends to infer with (Kothari, 2011).

This study hence had a population target of 57,785 women from Central sub-county of Kakamega aged (18-49) years (Kenya Open Data, 2016). The study only involved 382 WRA. WHO/ICO (2010) reports that most WRA are aged between 15-49 years. Because of ethical minors' constraint (women aged below 18 years) requiring for approval from caregivers to engage in the survey, the study was aimed at WRA 18-49 years.

The selection of Kakamega Central sub-county was motivated by its representation of high population size and cases of the women (within the reproductive age) population not going for cervical cancer as per the 2009 census report.

The sampling of women was random in similar simulation of representative regions in the country. KNBS (2009) indicated about 57,785 women within the age of reproduction in 65,121 Kakamega Central sub-county households.

3.4 Sample Size and sampling procedure

Obtaining of sample size was done by the use of (Krejcie and Morgan Table) which is a table that helps in establishing sample size. (Appendix I). The study used a sample size of 382 respondents.

The use of a Kish grid (Appendix III) ensured that all the respondents' residents in the household have same opportunity of being selected for the purpose of the study. According to Kish (1949), a Kish grid provides a procedure for selecting entities from a cluster or study population. Kish grid was developed by Leslie Kish who was a statistician who specialized in research and statistics. Leslie Kish encountered a challenge in selecting household members using a technique that provided equal chance of selection of each eligible member. The grid's usage can be easily verified as opposed to for instance, making decisions by tossing a coin (Kadam and Bhalerao, 2010).

Sampling is the procedure for selecting research participants. For cost reduction including interviewer's time and supervision, transport, and administrative convenience, random sampling was done from a two-stage clustered sampling.

Kakamega Central sub-county has three divisions including Navakholo, Lurambi, and Municipality. The Clusters based on sub-locations from each of the divisions were randomly selected using the sampling technique that considered their proportions in the population. They entailed Indangalasia, Namirama and Shirere sub-locations. All the clusters had a targeted population of 11,365 and 25,801 men and women respectively participating in the study. Additional, two villages (sub-clusters) from either of the clusters and six sub-clusters were chosen using MS excel table for random numbers and the listing of households was drawn by contacting the local administration. Microsoft excel table for random numbers was used to identify households and picking of two respondents was done using Kish grid from the 4 sub-clusters to sum up to 382 respondents.

A female household member aged 18-49 years and a survey area resident whose household had randomly been chosen for the study, was implored to provide oral consent to be interviewed. From the level of household, the researcher prepared a listing for normal female residents of particular household beginning with the eldest member of a household. The listing also encompassed ages of female occupants of the household. Only females within the age range of 18-49 years qualified for the survey. The Kish grid system supported the one respondent in every household schedule (Kish, 1949). This technique entails the listing of eligible individuals in particular address, ranged by age, then sampling a member based on the address serial number. This system guarantees all individuals within a household an equal opportunity for selection.

Table 3.1: Sampling

Sub-County	Division	Sub-location	Village	Female	Total	Households
Kakamega Central	Lurambi	Indangalasia	Ebunuku	3,866	7,431	1,566
			Murram			
Kakamega Central	Navakholo	Namirama	Bukongolo	5,383	10,335	2,061
			Namikama			
Kakamega Central	Municipality	Shirere	Musaa	16,552	33,510	7,738
			Shitaho "A"			
				25,801	51,276	11,365

3.5 Research Instruments

In this study questionnaires were used to collect quantitative data on determinants of cervical cancer screening uptake. The questionnaire encompassed three main sections: the first segment entailed the respondents' questions on socio-demographic characteristics; the second section was based on the 5 themes resulting from the research's objectives. The third section entailed questions on the factors which determine the uptake of services for cervical cancer screening among WRA.

A five-point Likert Scale was used in closed-ended questions that included:

(1). Strongly agree (2). Agree (3). Uncertain (4). Disagree and (5). Strongly disagree, Likert (1932). Questionnaires were used to facilitate assessment of influencing factors for screening for cervical among women 18-49 years aged in the Central sub-county of Kakamega.

The researcher used a pre-test tool to measure logical flow and ease of administration. Moreover, the pre-test of household questionnaire established the construct validity of questions.

After the researcher had reviewed the tools as per the pre-test and training input from the research team, the survey conducted a pilot survey to evaluate the dimensionality, validity,

reliability, and stability of the sampling methodology and the scales. The pilot study also enlightened adjustments on the survey work plan to provide for realistic field issues.

This was done through administration of the questionnaire to 10% (38) of the selected sample paying attention to the distribution of the respondents in relation to age. Orodho (2010) argues that when testing the measuring instrument, the pilot respondents must mirror the target population on the various identified characteristics. The re-test was conducted in Ingotse sub-location that comprised of comparable features to the survey location.

3.6 Validity of the Instruments

Validity is defined by Kothari (2004) as the extent that the measuring tool measures what is was designed and intended to measure. Thus, the concept of validity denotes the degree to which the measuring instrument provides accurate indicators of the phenomenon under study.

Validity of the questionnaire was determined by establishing that the items assessed what they were intended to measure. This included testing on the clarity of the wording of the questions to ensure that study participants would interpret the questions rightly and the same way. Moreover, test of validity was aimed at removing sections in the questionnaire that could have ambiguity or cause confusion. To boost the validity of the questionnaire, the field team revised the questionnaire to assess the appropriateness and adequacy of the items. Pre-testing of the questionnaire was done using two women with ages 18-24 years and two women of ages between 25-49 years to ascertain the questionnaire's validity. Corrections from identified questions were fused in the tool and a pilot testing was done on the randomly identified households which did not participate in the study. Lastly, the questionnaires were posted to the field for administration by an experienced team of research assistants.

The questionnaire was decoded into the local dialect. For validity purpose, back translation was done. In fieldwork, the following procedures were adhered to for maintaining validity: interviewers adopted the local dialect to encourage interaction with the interviewees. Research assistants were oriented on how to administer the data collection tool. Continuous assessment on

of the completed questionnaires was conducted on a daily basis by the researcher during the entire fieldwork period.

3.7 Reliability of the Instruments

Kothari (2004) defines reliability as the level to which the measuring tool provides consistent measurements when applied in different times at similar circumstances. The questionnaire in this study was tested for internal consistency which assesses the extent to which responses from a single respondent in a questionnaire are steady within themselves. The questionnaire's reliability was tested with the use of the split-half method that is commonly utilized in research surveys to experimentally establish the variance between two variants in a survey's protocol of recruitment characteristics like the mode data collection and instruments. In addition, the study applied the split-half technique recommended by Nachmias and Nachmias (1996) to compute reliability coefficients. The required range of reliability coefficient is 0.7 to 1.

This entailed scoring two-halves from the tests distinctly for each individual and then computing a correlation coefficient of the two scores sets. The tools were segmented into the even and odd items.

The formula for Spearman Brown prophecy is:

$$P_{xx}' = 2 P_{yy} / 1 + P_{yy}$$

Where: - P_{xx}' is the projected reliability for the full-length scale/test

- P_{yy} is the half-test correlation.

P_{yy} , is a reliability estimate for the scale/test when the number of items applied in the test is equal to the number of items that were considered in the half-test.

When the test/scale of the two halves is not parallel, then the full-length reliability scale/test is tabulated using the coefficient α formula for split halves:

$$\alpha = 2 [\hat{\sigma}^2_x - (\hat{\sigma}^2_{y1} + \hat{\sigma}^2_{y2})] / \hat{\sigma}^2_x$$

Where: - $\hat{\sigma}^2_{y1}$ and $\hat{\sigma}^2_{y2}$ are the variance scores of the two halves test,

$\hat{\sigma}^2_x$ is the score for variance of the entire test, with $X = Y_1 + Y_2$.

3.8 Data Collection Procedure

The process of collecting data that was required in the study started when the researcher received authorization from the University of Nairobi University. The letter of authorization was used to acquire a permit for research from the NACOSTI (National Commission for Science, Technology and Innovation). Two copies of the permit documents were presented to sub-county offices of Kakamega Central as a procedural requirement before fieldwork commencement. With the support by trained research assistants, the researcher afterwards visited local administration offices for appointments booking before visiting the sampled households for the purpose of establishing rapport.

Data collection dates were agreed after getting informed consent. The instructions were extensively elucidated to the selected respondents before the interview after guaranteeing them the confidentiality of their information which was only limited to the study's objectives. Enough time was provided to every respondent to get appropriate responses to the questions after which the questionnaires were checked for accuracy and completeness. Data collection exercise was projected to approximately take five days. Then the collected data was tabulated into Microsoft Excel database for cleaning and errors verification.

3.9 Data Analysis Techniques

Descriptive data gathered from this research was tabulated into a Microsoft Excel database, then cleaned to ensure completeness and accuracy. The STATA 14.0 version was used to evaluate data and presented by descriptive statistics like frequencies, percentage distributions and averages. Bar graphs, tables of frequency, and pie charts were used to assess marital status, background data, age, women's' education level and uptake for screening services of cervical cancer. Correlations and percentages were also be computed for various indicators.

3.10 Ethical Issues

The study followed key ethical procedures required when conducting a research. These include seeking authorization from statutory organizations, seeking consent from respondents, assuring confidentiality to respondents and ensuring effective data management and communication of results. A research permit was sought from NACOSTI. The study also complied with NACOSTI procedures and policies. Moreover, throughout the study period, the study addressed the moral principles including respect of persons, justice, and beneficence. The survey strived to protect individual's autonomy, maximize benefits and minimize harm, and equitably risks distribution and benefits by providing procedures which were constant with comprehensive research designs that reflect these issues. The study did not present physical risks linked to physical interventions and procedures, like obtaining blood or tissue samples.

Several considerations for ethics were engaged in the study. The respondents were interviewed if only they gave informed consent. An informed consent sheet did not have a link with the questionnaire and hence was separately stored. All the research members participating in the research underwent through certification and training on human protection of subjects, mostly on the importance of safeguarding confidentiality and privacy. Additionally, the training of the field assistants incorporated elements such seeking voluntary and informed written consent from study participants. Additionally, the study participants were informed of their right to opt out of the study, and also not to provide answers for any questions they were uncomfortable replying to. Lastly, to ensure confidentiality, there were no personal identifiers that were collected from the study participants (NIH-OHRP, 2016).

3.9 Operationalization of Variables

The operationalization framework presents how the study variables were defined and measured in the study. Operationalization of the study's variables was done as per the study's objectives: To ascertain the degree that education levels influence uptake of screening for cervical cancer; to gauge the effect of cost of cervical cancer screening on uptake of the screening services; assess the extent of health facilities' accessibility in determining uptake of screening for cervical cancer; assess how income level influences the uptake of screening for the underlying cancer and; to find the influence of possession of a health insurance cover on uptake of cervical cancer screening services.

Table 3.2: Operationalization of variables

Objectives	Variable type	Indicators	Measurement	Scale	Data collection Method	Data Analysis
1. To examine the influence of level of education on uptake of screening for cervical cancer	Independent	Most advanced academic qualification attained	Academic qualifications	Ordinal	Questionnaire	Percentages, frequencies and correlation
		Awareness of cervical cancer risk factors				
		Risk perception				
2. To examine the effect of cost of cervical cancer screening services on uptake of the services	Independent	Cervical cancer screening cost	Healthcare cost	Ordinal	Questionnaire	Percentages, frequencies and correlation
		Screening opportunity costs				
		Ability to pay				
3. To examine the influence of accessibility to healthcare facilities on uptake of screening services for cervical cancer	Independent	Distance between home and nearest health facility	Distance from health facility	Nominal	Questionnaire	Percentages, frequencies and correlation
		Cost of transport	Time it takes to get to the nearest facility			
		Waiting time at the health facility				
		Screening time	Time taken to screen for cervical cancer in a health facility			
4. To examine the influence of income levels on uptake of screening services for cervical cancer	Independent	Household Monthly income	Income Levels	Ordinal	Questionnaire	Percentages, frequencies and correlation
		Amount spent on healthcare				
5. To assess the influence of possession of a health insurance cover on uptake of screening services for cervical cancer	Independent	Possession of health insurance that covers CCS	Health insurance covers	Ordinal	Questionnaire	Percentages, frequencies and correlation
		Incidences that those covered by insurance go for CCS				
Indicators of Cervical Cancer Screening uptake	Dependent	Number of women screened for cervical cancer	Number of clients screened	Ratio	Questionnaire	Percentages, frequencies and correlation

CHAPTER FOUR

DATA ANALYSIS, PRESENTATION AND INTERPRETATION

4.1 Introduction

Presented in this chapter are the analysis procedures for the collected data, the presentation of the analyzed data and the interpretation of the findings. The presentation of the findings is done using tables. First, findings on the response rate are presented followed by demographic information of the study participants. Then findings on cancer screening are provided followed by findings in regard to the five study objectives.

4.2 Response Rate

The study targeted a sample of 382 WRA of between the ages of 18 and 49 years in Kakamega Central sub-county. Out of the 382 who were issued with the study questionnaire, 291 respondents consented to participate in the study and filled the questionnaire. These filled questionnaires from the 291 respondents were inspected and found to be comprehensively filled and therefore fit to be included in analysis. This was a response rate of 76% which was considered to be adequate (Babbie, 2011). According to Babbie (2011), a response rate of 50% or above for paper based social or medical research surveys is considered to be adequate.

4.3 Demographic Characteristics of the Respondents

This section provides the demographic characteristics of the study participants. This includes information on employment status, highest level of education attained, age and marital status.

4.3.1 Age of the Women Participants

Results on the age of the responding women in presented in Figure 4.1. The results show that 28% of the responding women were aged between 31 and 34 years while only six percent were aged between 45 and 49 years. These findings imply that most of the women of child bearing age in Kakamega central subcounty were young (below 35 years).

Table 4.1: Age of Women Participants

Age in years	Frequency	Percent
18 - 24	46	16
25 - 30	55	19
31 - 34	83	28
35 - 39	41	14
40 - 44	48	17
45 - 49	18	6
Total	291	100

4.3.2 Marital Status of Women Participants

The study investigated the marital status of the women participants. Findings presented in Table 4.2 indicate that 40 percent of the women were married, 36 percent had never married, 14 percent were divorced while 10 percent were widowed. These findings indicate that more than half of the women who participated in the study did not have partners as they had either not married, divorced or widowed.

Table 4.2: Marital Status of Women Participants

Marital status	Frequency	Percent
Married	116	40
Divorced	41	14
Widowed	28	10
Never-Married	106	36
Total	291	100

4.3.3 Distribution of women by level of education

The study further investigated the highest education level attained by the research participants. The study results are presented in Table 4.3. The findings indicate that 31% of the respondents had university level of education while 19 percent had primary level of education. The findings imply that most women of reproductive age in Kakamega central sub-county had tertiary education (college or university). This indicates high education level attainment by the respondents in the sub-county.

Table 4.3: Education Level of Women Participants

Education level	Frequency	Percent
Primary	54	19
Secondary	79	27
College	67	23
University	91	31
Total	291	100

4.3.4 Income Level of the Respondents and Their Households

The study enquired about the income level of the respondents and their households. Findings in Table 4.4 indicate the income level of the participating women. The study results show that the women who earned less than KES 10,000 in a month were the majority (36%) while those who earned between KES 29,318 and KES 38,892 were nine percent. Moreover, those who earned between KES 10,001 and KES 19,741 were 20 percent with those earning between KES 19,742 and KES 29,317 being 13 percent. These findings indicate that most of the women who participated in the survey were low income earners who earned less than KES 20,000 a month. This may indicate their low ability to cater for health and other household expenses.

Table 4.4: Respondents' Individual Monthly Income

Individual Income	Frequency	Percent
Less than 10,000	106	36
Between 10,001 to 19,741	58	20
Between 19,742 to 29,317	37	13
Between 29,318 to 38,892	27	9
38,893 and above	63	22
Total	291	100

The study also enquired about the household incomes of the respondents. The results indicate that the biggest proportion of the women surveyed (36%) were from households with incomes of KES 38,893 and above. Further, study findings show that 34 percent of the women were from households that had incomes of KES 10,000 or less while only six percent were from households with incomes of between KES 29,318 and KES 38,892.

Table 4.5: Monthly Income of the Household

Monthly income	Frequency	Percent
Less than 10,000	98	34
Between 10,001 to 19,741	29	10
Between 19,742 to 29,317	41	14
Between 29,318 to 38,892	19	6
38,893 and above	104	36
Total	291	100

The study also investigated that amount on average that the respondents spent on health care services in a month. The findings presented in Table 4.6 revealed that 33 percent spent nothing as they accessed free services. Further, 31 percent spent between KES 500 and KES 1,000 while only three percent spent between KES 5001 and KES 10,000. These findings indicate that most of the surveyed women spent little on healthcare services or relied on free healthcare services.

Table 4.6: Average amount spent on health care services in a month

Amount	Frequency	Percent
Nothing/ Free Services	96	33
Less than 500	45	15
Between 500 to 1,000	90	31
Between 1000 to 5000	52	18
Between 5001 to 10,000	8	3
Total	291	100

The study assessed the economic situation of the household by evaluating assets owned by the household. Results in Table 4.7 indicate that households that had bicycles were 26%, 21% had motorcycle or scooter, 20% had a car or truck, two percent had animal drawn cart while none had a boat with motor. These results indicate households that did were not well economically as they had few means of transport.

Table 4.7: Means of transportation Owned in the Household

	Yes	Percent	N=
Bicycle	73	26	283
Motorcycle/Scooter	56	21	271
Animal-Drawn Cart	6	2	271
Car/Truck	55	20	273
Boat with Motor	0	0	265

Further, the study explored the usual means of transport used by the respondents. Study findings in Table 4.8 show that most the respondents (53%) walked to their destinations while two percent used bicycle. These findings indicate that the women surveyed mostly used facilities that were near them which they could access just by walking into the facilities.

Table 4.8: Usual mode of transport

Means of transport	Frequency	Percent
Bicycle	5	2
Motorcycle/Scooter	48	17
Car/Truck	82	28
Walking	155	53
Total	290	100

4.3.5 Employment status

The employment status of the participating women was investigated. The study results presented in Table 4.9 depict that 35 percent of the respondents were employed full-time while only two percent were retired. More findings indicated that 24 percent were self-employed, 19 percent were unemployed, 13 percent were employed part time while seven percent were still studying. These findings indicate that around 70 percent had a source of income as they were employed fulltime or part-time or self-employed. The remainder (around 30%) who were either studying or unemployed indicates that they depended on other members of their household for livelihood.

Table 4.9: Employment Status of the Women

Employment status	Frequency	Percent
Full-time employed	101	35
Part-time employed	38	13
Self-employed	71	24
Still studying	20	7
Retired	5	2
Unemployed	56	19
Total	291	100

4.4 Awareness level and demand for cervical cancer screening services

The study inquired from the respondents their knowledge of cervical cancer. The questions asked tested the respondent's cervical cancer awareness level, the transmission mechanisms, and symptoms and signs of cervical cancer. Moreover, the study enquired on the knowledge of the respondents regarding cervical cancer risk factors. The study findings are presented in Table 4.10. The study findings indicate that though awareness of cervical cancer was good at 70 percent, a considerable number of surveyed women (30%) were not aware of cervical cancer. Results also indicated that 27 percent of the women erroneously indicated that cervical cancer can be transmitted from one woman to another. This indicated that these women were not aware that cancer is not communicable.

Table 4.10: Awareness level and demand for cervical cancer screening services

Statement	Frequency	Percentage	N=
Have you heard of cervical cancer?	205	70	291
Cancer can be transmitted to a woman from another woman	54	27	204
Light bleeding following menstruation or between periods or blood spots could be a symptom of cervical cancer	151	74	204
Unexplained and persistent pain could be a symptom cervical cancer	161	79	204
Heavier and longer menstrual bleeding could be a cervical cancer symptom	133	65	204
Pelvic examination, douching and bleeding after intercourse could be a cervical cancer symptom	154	76	204
Pain during sexual intercourse could be a cervical cancer symptom	140	69	204
Increased discharge from the vagina could be a cervical cancer symptom	122	60	204
Having one steady sexual partner could prevent one from getting cervical cancer	42	20	204
Having an abortion increases the likelihood of developing cervical cancer	63	31	204
Are you at risk of developing cervical cancer?	101	49	204

Other findings from Table 4.10 Indicate that some of the study participants did not understand the symptoms of cervical cancer. For instance, 15 percent of the respondents were not aware while 16 percent did not know that pain during sexual intercourse could be a cervical cancer symptom. Similarly, 14 percent thought that bleeding when having sexual intercourse could not be a cervical cancer symptom while 10 percent did not know whether bleeding during intercourse could be a cervical cancer sign. Moreover, 21 percent of the respondents thought that vaginal discharge cannot be a sign of cervical cancer while 19 percent did not know whether vaginal discharge could be a cervical cancer sign. Furthermore, study results established that 69 percent of the study participants held the view that having one steady sexual partner cannot prevent one from getting cervical cancer. However, 20 percent thought that by having one steady sexual partner one cannot get cervical cancer whereas 11 percent indicated that they did not know. These findings imply that some of the respondents were not aware that human papillomavirus (HPV) was a key risk factor of cervical cancer which is usually sexually transmitted and usually infect those with many sexual partners.

The study also assessed demand for cervical cancer screening among the surveyed women of Kakamega central sub-county. Study results presented in Table 4.11 depict that 53 percent of the study participants had at least once visited a health facility for cervical cancer screening services. Forty-seven percent had never sought cervical cancer screening services. These findings indicate that nearly half of the surveyed women had never been screened for cervical cancer which reveal a high percentage who may not be aware of their cervical cancer status.

Table 4.11: Demand for Cervical Cancer Screening Services

Response	Frequency	Percent
Yes	108	53
No	96	47
Total	204	100

For the participants who had cervical cancer screening, the study inquired from them how long the cervical cancer screening took. The findings in Table 4.12 reveal that 29 percent experience cancer screenings sessions that took 15 minutes while only five percent had cervical cancer screenings that had taken 45 minutes. The average time it took for cervical cancer screening was 20.69 minutes with a standard deviation of 8.551 minutes. These findings imply that cervical screenings procedures do not take long which may encourage many women to partake.

Table 4.12: Duration of cervical cancer screening

Minutes	Frequency	Percent
10	16	15
15	31	29
20	24	22
25	11	10
30	21	19
45	5	5
Total	108	100
Mean		20.69
Std Deviation		8.551

The study further enquired from the respondents the importance they placed on cervical cancer screening. Study results in Table 4.13 show that 32 percent of the surveyed women viewed cervical cancer screening as very important to them while 29 percent viewed cervical cancer screening as slightly important, 23 percent were neutral, and 15 percent indicated that cervical cancer screening was slightly important to them. These findings indicate that most women in Kakamega Central Sub-county perceived cervical cancer screening as important but only around half had sought those services. This indicates that there must be underlying factors that prevent these women from seeking cervical cancer screening services.

Table 4.13: Importance of Cervical Cancer screening to respondent

Level of importance	Frequency	Percent
Slightly important	31	15
Neutral	47	23
Moderately important	60	29
Very important	66	32
Total	204	100

4.5 Women’s education level and demand for cervical cancer screening services

The first study objective was to ascertain whether the level of education could determine the cervical cancer screening uptake among Kenyan women within the reproductive age. The study applied correlation analysis to assess whether level of education was related with access to screening for cervical cancer. The results (Table 4.14) revealed that education level attained had a moderate positive and significant association with cervical cancer screening ($r = 0.229$; $p < 0.05$). These findings imply that women who have attained higher education levels were mostly expected to seek screening services for cervical cancer.

The study further enquired the views of the respondents regarding the extent they thought education level of women determine the uptake of screening services for cervical cancer. The findings presented in Table 4.15 disclose that 59 percent of the study participants agreed while 28 percent strongly agreed that education level of women influenced uptake of screening services for cervical cancer. Those who were uncertain were 10 percent while three percent disagreed. These findings support the correlation findings that had established a positive

relationship between education levels attained by women and uptake of screening services for cervical cancer. The findings imply that women of reproductive age who have attained higher education levels have a high likelihood of seeking screening services for cervical cancer.

Table 4.15: Influence of Level of education on uptake of screening for cervical cancer

Response	Frequency	Percent
Strongly Agree	56	28
Agree	121	59
Uncertain	20	10
Disagree	7	3
Total	204	100

4.6 Pricing of screening for cervical cancer

The second objective of the study focused on evaluating whether pricing of screening for cervical cancer would affect uptake of screening for cervical cancer Kenyan women within the reproductive age. Various questions in the questionnaire were asked to assist in attaining this objective. First, those research participants who had sought cancer screening were asked to indicate the amount they paid for the cervical cancer screening service. Study results in Table 4.16 reveal that 52 percent of the study participants who had sought cancer screening service had not paid any amount as they had sought free services. Those respondents who had paid KES 200 for the services were 20 percent, 15 percent had paid KES 500, eight percent had paid KES 300 while five percent had paid KES 100. These findings reveal that more than half who had accessed cervical cancer screening had not paid for the services.

Table 4.16: Amount spent on healthcare

Amount paid in KES	Frequency	Percent
0	52	52
100	5	5
200	20	20
300	8	8
500	15	15
Total	100	100

The study investigated the perception of the study respondents regarding what they were prepared to pay for cervical cancer screening. Study findings in Table 4.17 revealed that 37 percent of the study participants were willing to spend KES 500 while 14 percent a piece were willing to spend KES 100 and KES 500. Those who were not willing to spend anything were 11 percent. The findings reveal that 87 percent of the respondents were willing to spend KES 500 or less in cervical cancer screening.

Table 4.17: Willingness to pay in health facilities

Amount in KES	Frequency	Percent
0	22	11
20	10	5
50	11	5
100	28	14
200	29	14
500	76	37
1000	13	6
2000	8	4
3000	7	3
Total	204	100

The study enquired from the study participants how they perceived the cost of cervical cancer screening in health facilities. Study findings presented in Table 4.18 show that 54 percent of the study participants viewed the cost of screening for cervical cancer in health facilities as fairly cheap while 41 percent viewed the cost as expensive with five percent indicating the cost as very expensive. These results indicate that most of the study respondents who had accessed screening services for cervical cancer viewed the cost as affordable.

Table 4.18: Opinion on cost of cervical cancer screening in health facilities

Response	Frequency	Percent
Very Expensive	5	5
Expensive	44	41
Fair Cheap	58	54
Total	107	100

Lastly, to test the association between pricing of screening services for cervical cancer and uptake of cervical cancer screening by women in Kakamega central sub-county, the study conducted a correlation analysis between pricing and uptake. The study findings in Table 4.19 reveal that there existed no significant association between cost of screening for cervical cancer and uptake of cervical cancer screening in health facilities ($r = 0.082$; $p = 0.401$). These findings show that cost of the screening for cervical cancer may not be a major factor in hindering women in Kakamega Central Sub-county to access cervical cancer screening services.

4.7 Accessibility to health facilities and cervical cancer screening

The third study objective was to examine whether accessibility to health facilities would affect the uptake of screening for cervical cancer among Kenyan women within the reproductive age. First, the study enquired on the cost of transport from places of residence of the respondents to the health facility. Results from the study presented in Table 4.20 indicate that 41 percent of the study participants paid nothing, 28 percent paid KES 50, 14% paid KES 100 while two percent paid KES 60. The results indicate that 81 percent of the respondents paid KES 50 or less from their home to the health facility.

Table 4.20: Amount paid for transportation to the facility

Amount in KES	Frequency	Percent
0	118	41
5	5	3
10	8	3
30	21	7
50	83	28
60	7	2
100	41	14
500	8	3
Total	291	100

The study conducted an analysis of the relationship between amount spent to reach health facility and cervical cancer screening services. Study results presented in Table 4.21 indicate that there was a significant moderate and negative association between uptake of screening for cervical cancer and amount of money spent as transport to the health facilities ($r = -0.338$; $p = 0.000$).

Transport to the health is one indicator of access to health services. When the cost of transport to the health facilities is high, it can make women fail to access cervical cancer screening services.

The study also investigated the time it took the respondents between their homes to the health facility. Study results shown in Table 4.22 reveal that 28 percent took 30 minutes from their homes to the health facility, 20 percent took five minutes, 15 percent took 20 minutes while two percent took no time which implies that they lived next to the health facility. However, the findings indicate that 20 percent of the respondents took 45 or more minutes to travel from their homes to the health facility.

Table 4.22: Time taken to health facility

Time in minutes	Frequency	Percent
0	7	2
5	58	20
10	6	2
15	11	4
20	44	15
25	24	8
30	82	28
45	6	2
50	21	7
60	32	11
Total	291	100

The study further investigated the relationship between the time it took one to travel from their homes to the health facility and uptake of cervical cancer screening. Study findings presented in Table 4.23 indicate that there existed no significant association between uptake of screening services for cervical cancer and the time it took for one to travel from their homes to the nearest health facility ($r = 0.080$; $p = 0.253$).

The study also enquired on the distance from the respondents' homes to the nearest health facility. Study results in Table 4.24 show that 21 percent of the study participants lived three kilometres from the health facility, 17 percent lived five kilometres away while two percent lived

eight kilometres away from the health facility. The findings further, indicate that there were 21 percent of respondents who lived 10 or more kilometres away from a health facility.

Table 4.24: Distance to nearest health facility

Distance in kms	Frequency	Percent
1	13	5
2	19	7
3	61	21
4	15	5
5	51	17
6	22	8
7	28	10
8	5	2
9	10	3
10	30	10
15	16	6
20	13	5
Total	283	100

The study investigated the relationship between the distance between the respondents' homes and the health facility and uptake of screening services for cervical cancer. Study findings presented in Table 4.25 reveal that there was a significant moderate and negative association between uptake of screening services for cervical cancer and the distance from home to health facility ($r = -0.218$; $p = 0.002$). These results show that women who reside nearer the health facilities had a high likelihood of accessing cervical cancer screening services than those women who resided farther away from the health facility.

The study investigated on the waiting time for the research participants before being attended when they visited the health facility. Table 4.26 provides the findings. Twenty percent waited in the health facility for 15 minutes before they were attended, 16 percent waited from 20 minutes while two percent waited for 50 minutes. Findings indicated that more than 30 percent waited in the facility for 30 minutes or more in the health facility before being attended.

Table 4.26: Waiting time at health facility

Waiting time in minutes	Frequency	Percent
5	30	10
10	27	9
15	57	20
20	46	16
24	6	2
25	35	12
30	31	11
32	10	3
45	27	9
50	5	2
60	17	6
Total	291	100

The study assessed the association between uptake of screening services for cervical cancer and respondents' waiting time at the health facility. Study results in Table 4.27 depict a significant moderate and negative association between respondents' waiting time at the health facility and uptake of screening services for cervical cancer ($r = -0.297$; $p = 0.000$). These findings imply that women who experience shorter waiting time at the health facility can be more inclined to seek cervical cancer screening services.

4.8 Levels of income and acceptance of screening for cervical cancer

The study aimed at examining whether levels of income would affect the acceptance of screening for cervical cancer among Kenyan women within the reproductive age. To achieve this objective, the study examined the association between levels of income of the women and access to cervical cancer screening services. Study findings in Table 4.28 indicate that there was a significant moderate and positive association between monthly income and uptake of cervical cancer screening ($r = 0.39$; $p = 0.000$). This implies that women with higher levels of income may be inclined to access cervical cancer screening than those women with lower monthly income.

The women were asked to indicate their view on whether level of monthly income influenced uptake of screening services for cervical cancer by women in the reproductive age. Findings from the study presented in Table 4.29 reveal that 46 percent of the study participants strongly

agreed that level of monthly income influenced the uptake of cervical cancer screening while only three percent disagreed. Those who agreed were 43 percent whereas eight percent were uncertain.

Table 4.27: Influence of level of monthly income on uptake screening for cervical cancer

Level of agreement	Frequency	Percent
Strongly Agree	94	46
Agree	88	43
Uncertain	15	8
Disagree	7	3
Total	204	100

4.9 Health insurance and screening of cervical cancer

The fifth study objective sought to ascertain if health insurances would improve registration levels for screening of cervical cancer among Kenyan women within the reproductive age. To attain this objective, respondents were first asked whether they possessed health insurance such as NHIF. Findings in Table 4.30 show that 51 percent of the surveyed women possessed health insurance while 49% did not have any insurance cover. Those who possessed health insurance were asked to indicate whether the insurance covered cervical cancer screening where 43 percent were unsure whether their health insurance covered cervical cancer screening, 39 percent indicated that it covered while 18 percent indicated that the insurance did not cover cervical cancer screening. For those who had accessed screening services for cervical cancer, 43 percent had used their health insurance whereas 57 percent had not used their health insurance cover.

Table 4.28: Respondent's health insurance status

	Yes	Percent	N=
Do you have health insurance? E.g. NHIF	147	51	291
Whether the health insurance coverage includes screening for cervical cancer	57	39	147
Whether respondents used health insurance cover to cater for cervical cancer screening costs	46	43	108

The study assessed whether possession of health insurance by women of reproductive age was associated with levels for screening of cervical cancer. The study conducted a correlation analysis and study findings are as presented in Table 4.31. The study findings revealed that there was a positive and strong association between possession of health insurance cover and uptake of cervical cancer screening ($r = 0.654$; $p = 0.000$). This implies that women who had health insurance had a higher likelihood of seeking screening services for cervical cancer compared to the women who do not possess any health insurance cover.

4.10 Challenges faced when seeking cervical cancer screening services

The study explored the challenges the women faced when seeking cervical cancer screening services. A number of challenges were listed, and study participants were requested to indicate the challenges they had encountered. Study results are presented in Table 4.32. The findings indicate that 37 percent were challenged by lack of money to cater for the cost of cervical cancer screening, 14 percent did not encounter any challenge, 13 percent were challenged by poor services at the health facilities while 12 percent were challenged by transport issues. Those who faced a combination of challenges that included lack of money to pay for the services, poor services at the health facilities and transport issues were eight percent.

Table 4.29: Challenges faced when seeking cervical cancer screening services

Challenge	Frequency	Percent
None	22	14
Transport hindrances	19	12
Health facilities providing poor services	20	13
Inability to raise funds to cater for the services	58	37
Poor services at the health facilities and transport hindrances	7	5
Transport hindrances and inability to raise funds to cater for the services	12	8
Poor services at the health services and inability to raise funds to cater for the services	9	6
Transport hindrances, inability to raise funds to cater for the services and poor services at the health facilities	8	5
Total	155	100

To deal with the encountered challenges, the respondents provided the solutions indicated in Table 4.33. Twenty-nine percent of the respondents recommended that to tackle challenges identified with low take-up of screening services for cervical cancer, the government ought to arrange for free screening services for cervical cancer and that health facilities should offer subsidised screening services for cervical cancer. Also, 16 percent demonstrated that free screening services for cervical cancer provided by the government would be sufficient while 15 percent showed that there ought to be government arranged free screening services for cervical cancer, health facilities should offer subsidised screening services for cervical cancer and stakeholders should provide more training and create more awareness regarding screening for cervical cancer. The individuals who upheld for expanded number of healthcare facilities in Kakamega Central Sub-County were eight percent. The study findings depict that to enhance take-up of screening services for cervical growth, there ought to be free provision of the services by the county and national governments, more training and awareness creation regarding screening for cervical cancer and health facilities should consider providing low cost screening services and subsidizing screening services for cervical cancer. Further, the county government should enhance healthcare facilities in Kakamega Central Sub-County.

Table 4.30: Solutions to the challenges

Solution	Frequency	Percent
Government ought to arrange for free screening services for cervical cancer	23	16
Health facilities should offer subsidised screening services for cervical cancer	15	11
Stakeholders should provide more training and enhance awareness creation regarding screening for cervical cancer.	7	5
County government should enhance healthcare facilities in Kakamega Central Sub-County	11	8
Government ought to arrange for free screening services for cervical cancer and health facilities should offer subsidized screening services for cervical cancer	41	29
Health facilities should offer subsidised screening services for cervical cancer and County government should enhance healthcare facilities in Kakamega Central Sub-County	8	6
Government ought to arrange for free screening services for cervical cancer, health facilities should offer subsidised screening services for cervical cancer and stakeholders should provide more training and enhance awareness creation regarding screening for cervical cancer.	21	15
Health facilities should offer subsidised screening services for cervical cancer, stakeholders should provide more training and enhance awareness creation regarding screening for cervical cancer and County government should enhance healthcare facilities in Kakamega Central Sub-County	8	6
Government ought to arrange for free screening services for cervical cancer, health facilities should offer subsidised screening services for cervical cancer, stakeholders should provide more training and enhance awareness creation regarding screening for cervical cancer and County government should enhance healthcare facilities in Kakamega Central Sub-County	6	4
Total	140	100

CHAPTER FIVE

SUMMARY OF FINDINGS, DISCUSSIONS, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter provides the summary of findings regarding the factors influencing uptake of screening services for cervical cancer by women in the reproductive age in Kenya where the study focused on Kakamega Central Sub-County. This chapter provides a discussion of the study results, conclusions made in the study and the recommendations made based on the study results. The chapter also presents suggestions for further research in the subject area.

5.2 Summary of Findings

The study explored the level of awareness and demand for screening services for cervical cancer. Findings indicated that awareness of cervical cancer was good at 70 percent, but a considerable number of surveyed women (30%) were not aware of cervical cancer. 27 percent of the women erroneously indicated that cervical cancer can be transmitted from one person to another. This indicated that these women did not have the correct information about cervical cancer including the risks, transmission and how to prevent it. Similarly, some of the respondents did not understand the symptoms of cervical cancer. For instance, 15 percent of the respondents were not aware while 16 percent did not know that pain during sexual intercourse could be a sign of cervical cancer. Further, 14 percent thought that bleeding during intercourse cannot be a sign of cervical cancer while 10 percent did not know whether bleeding during intercourse could be a sign of cervical cancer. Equally, 21 percent of the respondents thought that vaginal discharge cannot be a sign of cervical cancer while 19 percent did not know whether vaginal discharge could be a cervical cancer sign. Additionally, study results established that 69 percent of the respondents were of the view that having one steady sexual partner cannot prevent one from getting cervical cancer. However, 20 percent thought that by having one steady sexual partner one cannot get cervical cancer whereas 11 percent indicated that they did not know. These findings imply that some of the respondents were not aware that key risk factors of cervical cancer include human papillomavirus (HPV) which is usually sexually transmitted and having many sexual partners.

On demand of cervical cancer screening, study findings revealed that 52 percent of the respondents had visited a health facility for cervical cancer screening services, at least once. Forty-eight percent had never sought cervical cancer screening services. For the women who have had cervical cancer screening, findings revealed that 29 percent experienced cancer screenings sessions that took 15 minutes while only five percent had cervical cancer screenings that had taken 45 minutes. The average time it took for cervical cancer screening was 20.69 minutes with a standard deviation of 8.551 minutes. Findings regarding the importance the surveyed women placed on cervical cancer screening showed that 32 percent of the surveyed women viewed cervical cancer screening as very important to them, 29 percent viewed cervical cancer screening as slightly important, 23 percent were neutral, and 15 percent indicated that cervical cancer screening was slightly important to them.

The first objective of the study was to ascertain whether the level of education could determine the cervical cancer screening uptake among Kenyan women within the reproductive age. The findings indicate that 31 percent of the respondents had university level of education, 23 percent college level, 27 percent secondary level while 19 percent had primary level of education. The study applied correlation analysis to assess whether level of education was related with uptake cervical cancer screening. The results revealed that level of education had a positive and significant relationship with cervical cancer screening ($r = 0.229$; $p < 0.05$). These findings imply that women with higher levels of education were more likely to seek cervical cancer screening services.

The second objective of the study focused on evaluating whether pricing of screening for cervical cancer would affect uptake of screening for cervical cancer Kenyan women within the reproductive age. Findings indicated that 52 percent of the research participants who had sought cancer screening had not paid any amount as they had sought free services. Those respondents who had paid KES 200 for the services were 20 percent, 15 percent had paid KES 500, eight percent had paid KES 300 while five percent had paid KES 100. Regarding the views of the study participants on what they were willing to pay for cervical cancer screening, results revealed that 37 percent of the respondents were willing to spend KES 500 while 14 percent were willing to spend KES 100 with a similar percentage willing to spend KES 500. Those who

were not willing to spend anything were 11 percent. Regarding how they perceived the cost of cervical cancer screening in health facilities, 54 percent of the respondents viewed the cost of cervical cancer screening in health facilities as fairly cheap while 41 percent viewed the cost as expensive with five percent indicating the cost as very expensive. Further, the study results revealed that there was no significant relationship between cost of cervical cancer screening and uptake of cervical cancer screening in health facilities ($r = 0.082$; $p = 0.401$).

The third study objective was to examine whether accessibility to health facilities would affect the uptake of screening for cervical cancer among Kenyan women within the reproductive age. Accessibility was assessed through amount spent as transport to the health facility, time taken from home to health facility, distance from home to health facility and waiting time at the health facility. Study results indicate that there was a significant negative relationship between uptake of cervical cancer screening and amount of money spent as transport to the health facilities ($r = -0.338$; $p = 0.000$). This implies that when the cost of transport to the health facilities is high, demand for cervical cancer screening was expected to be low and vice versa. Additionally, study findings indicate that there was no significant relationship between time it took for one to travel from their homes to the health facility and the uptake of cervical cancer screening ($r = 0.080$; $p = 0.253$). Furthermore, study findings reveal that there was a significant negative association between distance from home to health facility and the uptake of cervical cancer screening ($r = -0.218$; $p = 0.002$). These results show that women who reside nearer the health facilities were more likely to be screened for cervical cancer than those women who reside farther away from the health facility. Moreover, study findings showed a negative relationship between uptake of cervical cancer screening and waiting time at the health facility ($r = -0.297$; $p = 0.000$). These findings imply that women who experience shorter waiting time at the health facility can be more inclined to seek cervical cancer screening services.

The study aimed at examining whether levels of income would affect the acceptance of screening for cervical cancer among Kenyan women within the reproductive age. The study results show that the women who earned less than KES 10,000 in a month were the majority (36%) while those who earned between KES 29,318 and KES 38,892 were nine percent. Moreover, those who earned between KES 10,001 and KES 19,741 were 20 percent with those earning between KES

19,742 and KES 29,317 being 13 percent. These findings indicate that most of the women who participated in the survey were low income earners who earned less than KES 20,000 a month. The study examined the association between levels of income of the women and access to cervical cancer screening and established a significant positive association between monthly income and uptake of cervical cancer screening ($r = 0.39$; $p = 0.000$). This implies that women with higher levels of income may be inclined to access cervical cancer screening than those women with lower monthly income.

The last study objective sought to ascertain if health insurance would improve registration levels for screening of cervical cancer among Kenyan women within the reproductive age. Study findings showed that 51 percent of the surveyed women possessed health insurance while 49% did not have any insurance cover. Additionally, 43 percent of those who had medical insurance were unsure whether their health insurance covered cervical cancer screening, 39 percent indicated that it covered while 18 percent indicated that the insurance did not cover cervical cancer screening. For those who had accessed cervical cancer screening services, 43 percent had used their health insurance whereas 57 percent had not used their health insurance cover. Moreover, study findings revealed that there was a strong positive relationship between possession of health insurance and uptake of cervical cancer screening ($r = 0.654$; $p = 0.000$). This implies that women who had health insurance were more likely to seek cervical cancer screening compared to those women who did not have any health insurance.

5.3 Discussions

The next section outlines discussions on the study findings, conclusions of the study, recommendations and suggestions for further research.

5.3.1 Awareness and demand for cervical cancer screening services

Findings from the study revealed that awareness of cervical cancer was good at 70 percent. Moreover, on knowledge about cervical cancer, 27 percent of the women erroneously indicated that cervical cancer can be transmitted from one person to another. Additionally, 15 percent of the respondents were not aware while 16 percent did not know that pain during sexual intercourse could be a sign of cervical cancer. This indicates poor knowledge by women

regarding cervical cancer which is contrary to the awareness and knowledge levels in developed countries as indicated in studies such as Der et al. (2014).

On demand of cervical cancer screening, study findings revealed that 52 percent of the respondents had visited a health facility for cervical cancer screening services, at least once. Forty-eight percent had never sought cervical cancer screening services. These findings concur with the findings by Sudenga et al. (2013) which indicated that in Kenya, treatment and screening of cancer remains low, which may increase the mortality rate from cervical cancer by the year 2025. The findings are contrary to the studies conducted in developed nations, such as Der et al. (2014), which indicate that screening programs are regular for most women and have significantly contributed to mortality and morbidity reduction of cervical cancer. Additionally, the screening of cervical cancer was high in Kakamega central Sub-county compared to the levels reported by GOK (2012) indicating that only 3.2 percent coverage for cervical cancer screening across women aged between 15 and 44 years.

5.3.2 Level of education and cervical cancer screening uptake

The study established that level of education had a positive and significant relationship with cervical cancer screening ($r = 0.229$; $p < 0.05$). These findings imply that women with higher levels of education were more likely to seek cervical cancer screening services. These findings relate with the findings from a Nigerian study by Eke et al. (2010) that found that women's level of educational could significantly influence their cervical cancer awareness and screening practices like Pap smear testing. Similarly, the findings agree with the results by Owoye and Ibrahim (2013) which indicated that more educated women are likely to hear or know Pap smear testing, and more so make regular screening visits as recommended follow-up when there are abnormal findings. The study findings from this study also explain why a study in Tanzania by Kjaer et al. (2012) recommended that special consideration should be put on women with low education or information regarding the screening of cervical cancer. Additionally, the findings from this study corresponds with other studies done in less resourced regions in countries like Malaysia, India, and China according to Sudenga et al. (2013) which have acknowledged that women who are less educated are less informed on the need for taking cervical screenings

notwithstanding their limited resources to afford for their regular screening attendances considering its inherent costs.

5.3.3 Pricing of screening for cervical cancer and acceptance of cervical cancer screening

The study established no significant relationship between cost of cervical cancer screening and uptake of cervical cancer screening in health facilities ($r = 0.082$; $p = 0.401$). These results implied that cost of cervical cancer screening may not be a deterrent for women in seeking cervical cancer screening services. These study findings contradict a previous study by Sudenga et al. (2013) which reported that women who had not been checked for cervical cancer mentioned lack of funds as one key factor which had challenged them. Moreover, the findings disagree with the results from a previous study in Kakamega County by Were et al. (2011) which indicated that the setbacks to the programs for screening of cervical cancer included high costs. This implies that great strides have been made in the past seven years to reduce the cost and also to make cervical cancer screening affordable. This can be due to the introduction of new testing technology such as VIA which is cheaper, easy to comprehend, and does not demand for laboratory infrastructure which allows women to acquire the results easily and affordably.

5.3.4 Accessibility to health facilities and Uptake of screening for cervical cancer

Study results indicate that there was a significant negative relationship between uptake of cervical cancer screening and amount of money spent as transport to the health facilities ($r = -0.338$; $p = 0.000$). This implies that when the cost of transport to the health facilities is high, demand for cervical cancer screening was expected to be low and vice versa. Additionally, study findings indicate that there was no significant relationship between time it took for one to travel from their homes to the health facility and the uptake of cervical cancer screening ($r = 0.080$; $p = 0.253$). These findings partially support earlier findings by Jeronimo et al. (2010) that the cost and time it takes women to travel to the health facilities is inversely associated with their seeking of cervical cancer screening services. Furthermore, study findings reveal that there was a significant negative association between distance from home to health facility and the uptake of cervical cancer screening ($r = -0.218$; $p = 0.002$). These results show that women who reside nearer the health facilities were more likely to be screened for cervical cancer than those women who reside farther away from the health facility. Moreover, study findings showed a negative

relationship between uptake of cervical cancer screening and waiting time at the health facility ($r = -0.297$; $p = 0.000$). These findings concur with the findings by Kjaer et al. (2012) that long waiting time in health facilities was a key constraint in the women's quest for accessing cervical cancer screening services. Further, the findings concur with the results by Ebu et al. (2014) which found a significant correlation between institutional barrier and obtaining a Pap smear test.

5.3.5 Levels of income and uptake of screening for cervical cancer

The study established a significant positive association between monthly income and uptake of cervical cancer screening ($r = 0.39$; $p = 0.000$). This implies that women with higher levels of income may be inclined to access cervical cancer screening services than those women with lower monthly income. This concurs with a research in Botswana, Gaborone by Sudenga et al. (2013) which revealed that previous cervical cancer screening was common on women with higher incomes. The findings, however contradict other studies, such as Rosser et al. (2015), which highlight high intentions for screening among women who attend low-level medical facilities (for example dispensaries and sub-district hospitals) compared to large district hospitals, notwithstanding their income.

5.3.6 Health insurance and uptake cervical cancer screening services

The study findings revealed that there was a strong positive relationship between possession of health insurance and uptake of cervical cancer screening services ($r = 0.654$; $p = 0.000$). This implies that women who had health insurance were more likely to seek cervical cancer screening services compared to those women who did not have any health insurance. These findings support findings by Afri-Dev (2014) that absence of health insurance encourages derailment in seeking health care, and failed compliance to the treatment regimen. Moreover, the study findings support the findings by Kiplagat et al. (2013) that women with health insurance are more likely to seek medical services than those women who do not have health insurance.

5.4 Conclusions of the study

The study makes the following conclusions. The level of education is a significant determinant of cervical cancer screening uptake. Women who have high levels of education are expected to have high levels of acceptance and uptake of cervical cancer screening services. This is because

they may have more knowledge and awareness of the risks of cervical cancer and hence able to take precautionary measures.

There is no significant relationship between cost of cervical cancer screening services and uptake of cervical cancer screening services in health facilities. Cost of cervical cancer screening may not have a significant determining effect on uptake of cervical cancer screening by women. This may be due to the fact that the cost of cervical cancer has reduced or eliminated in some health facilities hence making it easy for women from all economic backgrounds to access the services.

There is a significant negative relationship between uptake of cervical cancer screening services and amount of money spent as transport, time taken from home to health facilities and waiting time at health facilities. This implies that when the cost of transport to the health facilities is high, demand for cervical cancer screening services was expected to be low and vice versa. Additionally, women who take longer to travel from their homes to health facilities study findings may have less access to cervical cancer screening services than those women who live near health facilities. Moreover, the study concludes that a negative association exists between uptake of cervical cancer screening services and waiting time at the health facility. Long waiting time is expected to associate with lower uptake of cervical cancer screening services and vice versa.

Fourth, monthly income is a significant determiner of uptake of cervical cancer screening services. Women with higher levels of income may be inclined to access cervical cancer screening services than those women with lower monthly income.

Lastly, possession of health insurance was the greatest determinant of uptake of cervical cancer screening services among the factors assessed. There is a strong positive relationship between possession of health insurance and uptake of cervical cancer screening services. Women who had health insurance were more likely to seek cervical cancer screening services compared to those women who did not have any health insurance.

5.5 Recommendations

Considering the study findings, the study makes the following recommendations. The Kakamega County Government in collaboration with NGOs and the National Government should make awareness creation on cervical cancer a priority. Moreover, health facilities should have a policy to enhance women's knowledge about cervical cancer by incorporating cervical cancer education in most of the health services sought by women.

Kakamega County Government in collaboration with NGOs and the National Government should step up efforts to waive and reduce cervical cancer screening fees so that women from poor economic backgrounds are able to access the service.

The county government should equip all health facilities in the county with cervical cancer screening tools and technology to enable all women who visit those centers to access the services near their places of residence.

Moreover, Kakamega county government should develop more health facilities in the county and equip them with the current technology on cervical cancer screening to be accessed by all women of reproductive age. The county government should seek partnerships with local and international health NGOs to enable it access resources to expand the health infrastructure.

The national government should fast track the current campaign that seeks to increase enrollment to NHIF. Lobby groups and the County Government should also campaign for an inclusive NHIF cover that will include routine cervical cancer screening. This will enable more women access cervical cancer screening services.

5.6 Suggestions for further research

A more comprehensive study that covers the entire Kakamega County is suggested which will incorporate several data collection procedures such as focus group discussions, key informant interviews and semi-structured questionnaires. Qualitative research will be able to narrow down the factors that influence uptake so that decision makers on the interventions to be made have more conclusive information on the determinants. The current study relied only on

questionnaires which limited the type and amount of information collected. Using focus group discussions and key informant interviews will enable any future study to get more information from a wide array of respondents including health professionals and community health workers who will provide deeper insight into the determinants of uptake of cervical cancer screening services by women of reproductive age. Qualitative techniques will also give insights on the behavior of the target audience that will help design an intervention suited for the target audience.

5.7 Contribution to the body of knowledge

The study provides empirical evidence regarding determinants of uptake of cervical cancer screening services among women in rural Kenya. There is a dearth of empirical evidence on the factors that inform uptake of cervical cancer screening in Kenya and mostly in rural Kenya. Most of the studies available have been conducted in other countries and in urban centers in Kenya which are different contextually from rural areas. Moreover, the study focusses on health insurance as a determining factor, whereas most past studies only focused on socio-economic and demographic factors. This provides evidence on the importance of health insurance in enhancing uptake of screening services for cervical cancer in Kakamega Central Sub-county.

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APPENDIX I: LETTER OF TRANSMITTAL



NATIONAL COMMISSION FOR SCIENCE, TECHNOLOGY AND INNOVATION

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NAIROBI-KENYA

Ref: No **NACOSTI/P/17/10151/18457**

Date: **23rd August, 2017**

Rhoda Nelima Otipa
University of Nairobi
P.O. Box 30197-00100
NAIROBI.

RE: RESEARCH AUTHORIZATION

Following your application for authority to carry out research on “*Determinants of cervical cancer screening services uptake by women of reproductive age in Kenya: a case of Kakamega Central Sub-County,*” I am pleased to inform you that you have been authorized to undertake research in **Kakamega County** for the period ending **22nd August, 2018.**

You are advised to report to **the County Commissioner and the County Director of Education, Kakamega County** before embarking on the research project.

Kindly note that, as an applicant who has been licensed under the Science, Technology and Innovation Act, 2013 to conduct research in Kenya, you shall deposit a **copy** of the final research report to the Commission within **one year** of completion. The soft copy of the same should be submitted through the Online Research Information System.

A handwritten signature in blue ink, appearing to read 'G. Kalerwa', is written over a faint, light blue circular stamp or watermark.

GODEREY P. KALERWA MSc., MBA, MKIM
FOR: DIRECTOR-GENERAL/CEO

Copy to:

The County Commissioner
Kakamega County.

The County Director of Education
Kakamega County.

National Commission for Science, Technology and Innovation

APPENDIX II: QUESTIONNAIRE

CERVICAL CANCER SCREENING UPTAKE QUESTIONNAIRE

To be Read to the respondent: "I would like to ask you some questions about yourself" Do not read out answers unless prompted. Allow for unprompted answers and round the appropriate answer.

SECTION 1: DEMOGRAPHIC CHARACTERISTICS

1. What is your age in complete?

18-24 25-30 31-34 35-39 40-44 45-49

2. What is your marital status?

Married Divorced Widowed Never-Married

SECTION 2(A): LEVEL OF EDUCATION

3. What is the highest degree or level of school you have completed? (If currently enrolled, mark the previous grade or highest degree received.)

None Primary Secondary College (Middle Level) University

4. Have you heard of cervical cancer? Yes No

5(a). Can cancer be transmitted from one person to another Yes No

5 (b) The following may or may not be true about cervical cancer. We are interested in <u>your</u> opinion:			
	Yes	No	Don't Know
Do you think an Blood spots or light bleeding between or following periods could be a sign of cervical cancer			
Do you think a persistent unexplained pain could be a sign of cervical cancer			
Do you think Menstrual bleeding that is longer and heavier than usual could be a sign of cervical cancer			
Do you think bleeding after intercourse, douching, or a pelvic examination could be a sign of cervical cancer			
Do you think a Pain during sexual intercourse could be a sign of cervical cancer			
Do you think Increased vaginal discharge could be a sign of cervical cancer			
Do you think by having one steady sexual partner you cannot get cervical cancer			
Do you think that a woman who has had an abortion has a higher chance of getting cervical cancer?			

6 (a). Do you feel like you are at risk of getting cervical Cancer? Yes No 6(b)

Why or Why not? (Give reason(s))

SECTION 2(B): LEVEL OF INCOME

7. Are you currently?

Employed full-time Employed part-time Self-employed

Still studying Retired Unemployed

8. How much is your monthly level of income? (In Kenya shillings)

Less than 10,000

Between 10,001 to 19,741

Between 19,742 to 29,317

Between 19,318 to 38,892

38,893 and above

9. What is your total household monthly income? (In Kenya shillings)

Less than 10,000

Between 10,001 to 19,741

Between 19,742 to 29,317

Between 19,318 to 38,893

38,893 and above

10. On average, how much do you spend on health care services in a month? (In Kenya shillings)

Less than 500

Between 500 to 1,000

Between 1000 to 5000

Between 5001 to 10,000

10,000 and above

Nothing/ Free Services

SECTION 2(C): ACCESSIBILITY OF HEALTH FACILITIES

11. Does any member of this household own:

	YES	NO
a) Bicycle	1	2
b) Motorcycle/Scooter.	1	2
c) Animal-Drawn Cart . . .	1	2
d) Car/Truck	1	2
e) Boat with Motor	1	2

12. Which is your usual mode of transport?

TICK ONE

- a) Bicycle
- b) Motorcycle/Scooter.
- c) Animal-Drawn Cart . . .
- d) Car/Truck
- e) Boat with motor

f) Walking. []

13. How much do you pay one way to the facility _____ Kenya Shillings?

14. How long does it take you to get to the health facility using (____) above means?

15. How far is the nearest health facility from your home? _____ Kilometers?

16. When you go to the health facility, how long does it take before a health care provider attends to you? _____ minutes

17. How long does cervical cancer screening take? _____ minutes

SECTION 2 (D): PRICING OF CERVICAL CANCER SCREENING

18. Have you ever visited a health facility for Cervical Cancer screening services?

[] Yes [] No

19. How much did you pay for the cervical cancer screening service?

_____ Kenya Shillings

20. How much are you willing to spend on cervical cancer screening services in health facilities?

_____ Kenya Shillings

21. What would you say about cost of cervical cancer screening services in health facilities?

[] Very Expensive [] Expensive [] Fair Cheap [] Very Cheap

22. How important is Cervical Cancer screening to you?

1 – Not at all important

2 – Slightly important

3 – Neutral

4 – Moderately important

5– Very important

SECTION 2(E): HEALTH INSURANCE

23. Do you have health insurance? Eg NHIF (if No, skip to Section 3)

Yes No

24. Does your health insurance cover cater for cervical cancer screening?

Yes No Unsure

25. If you have gone for cervical cancer screening, did you use your health insurance to pay for the screening?

Yes No

SECTION 3: DETERMINANTS OF UPTAKE OF CERVICAL CANCER SCREENING SERVICES IN KAKAMEGA CENTRAL SUB-COUNTY.

26. To what extent do you think the following are key factors that influence the uptake of cervical cancer screening services? Please rank between 1-5 where (1 is Strongly Disagree and 5 is Strongly Agree)

Variable	Strongly Agree	Agree	Uncertain	Disagree	Strongly Disagree
Level of Education					
Pricing of Cervical Cancer screening					
Accessibility of					

health facilities					
Level of Income					
Possession of Health Insurance Cover					

SECTION 4: CHALLENGES AND SOLUTIONS

27. What challenges have you faced when seeking cervical cancer screening services?

- Transport issues
- Poor services at the health services
- Lack of money to pay for services
- Others (Specify)

28. What solutions do you think would solve the above challenges?

- Free provision of cervical cancer screening by the Government
- Subsidized cervical cancer screening services at the health facilities
- More awareness and education on issues of cervical cancer screening
- Increased number of health facilities in Kakamega Central Sub-County
- Others (Specify)

-End-

APPENDIX III: THE KISH GRID

Instructions for using Kish Grid

1. Find out how many people living in the household are eligible to be interviewed. Include people who sleep there, but are not there when you visit.
 2. The youngest is number 1; the second youngest is number 2, and so on.
 3. The first household where you do an interview is household 1; the second is household 2, and so on, up to household 8 - the last in the cluster.
 4. Look up the column for the household number and the row for the number of eligible people. The number in the cell where the column and row meet is the person to interview.
- For example, if household 2 has 3 adults, interview the 2nd youngest

Eligible people	Household							
	1	2	3	4	5	6	7	8
1	1	1	1	1	1	1	1	1
2	1	2	1	2	1	2	1	2
3	1	2	3	1	2	3	1	2
4	1	2	3	4	1	2	3	4
5	1	2	3	4	5	3	4	5
6	1	2	3	4	5	6	3	6
7	1	2	3	4	5	6	7	4
8	1	2	3	4	5	6	7	8
9	1	2	3	4	5	6	7	8
10 or more	1	2	3	4	5	6	7	8

APPENDIX IV: Krejcie and Morgan Sample Calculation Table

Table for Determining Sample Size from a Given Population

<i>N</i>	<i>S</i>	<i>N</i>	<i>S</i>	<i>N</i>	<i>S</i>
10	10	220	140	1200	291
15	14	230	144	1300	297
20	19	240	148	1400	302
25	24	250	152	1500	306
30	28	260	155	1600	310
35	32	270	159	1700	313
40	36	280	162	1800	317
45	40	290	165	1900	320
50	44	300	169	2000	322
55	48	320	175	2200	327
60	52	340	181	2400	331
65	56	360	186	2600	335
70	59	380	191	2800	338
75	63	400	196	3000	341
80	66	420	201	3500	346
85	70	440	205	4000	351
90	73	460	210	4500	354
95	76	480	214	5000	357
100	80	500	217	6000	361
110	86	550	226	7000	364
120	92	600	234	8000	367
130	97	650	242	9000	368
140	103	700	248	10000	370
150	108	750	254	15000	375
160	113	800	260	20000	377
170	118	850	265	30000	379
180	123	900	269	40000	380
190	127	950	274	50000	381
200	132	1000	278	75000	382
210	136	1100	285	100000	384

Note.—*N* is population size.
S is sample size.

APPENDIX V: RESEARCHER ETHICS CERTIFICATE

