

**FACTORS ASSOCIATED WITH UTILIZATION OF
CERVICAL CANCER SCREENING AMONG WOMEN
OF REPRODUCTIVE AGE AT GELEGELE LOCATION,
IN BOMET COUNTY,
KENYA**

A Thesis Proposal Submitted to the Department of Public Health

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In Partial Fulfillment of the Requirements for the Degree of

Master of Public health

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APPROVAL SHEET

DECLARATION BY THE CANDIDATE

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ABSTRACT

Cervical cancer is a major global public health problem. Cervical cancer is a malignant neoplasm of the cervical area of the uterus in which the cells of the cervix become abnormal and begin to grow uncontrollably. The latest world cancer statistics indicates that cervical cancer is the fourth most common cancer in women globally with over half a million new cases and the second most common in developing countries with over four hundred thousand new cases annually. In Kenya, cervical cancer screening uptake is low with less than 4% of all women reported to have undergone cervical cancer screening. This is due to poor perceptions regarding susceptibility to cervical cancer, the severity of cervical cancers and benefits of having a cervical cancer screening. The purpose of this study was to determine the factors associated with utilization of cervical cancer screening services among women of reproductive age in Gelegele location, Bomet County, Kenya. The objectives of the study was to determine the prevalence of uptake of cervical cancer screening, to determine the level of awareness of cervical cancer screening and to determine factors associated with utilization of cervical cancer screening. The study used cross-sectional study design as it adopted quantitative approach through a structured survey questionnaire. The target population for the study was women of reproductive age. The sample size comprised of 350 women residence of that location. data was collected using structured questionnaires, analyzed in three phases which included both descriptive and inferential statistics and presented using tables. Associated factors were determined by use of logistic regression model using STATA version 13.1 and statistical significance determined at $p < 0.05$. Factors significantly associated with utilization of cervical cancer screening services: Age (OR = 2.87; 95% CI: 0.93-8.49; $p < 0.10$), high school education (OR = 2.26; 95% CI: 0.89-5.75; $p < 0.10$), presence of chronic illness (OR = 2.52; 95% CI: 1.02-6.20; $p < 0.05$), and presence of cervical cancer screening fee (OR = 0.10; 95% CI: 0.02-0.43; $p < 0.01$). Prevalence of cervical cancer screening was 15.1%. Factors associated with frequency of utilization of cervical cancer screening services were; religious affiliation, marital status, parity, education, presence of chronic illness, distance to the cancer screening facility and charging screening fee. This study generated information that will be used to develop policies to improve the uptake of cervical cancer screening.

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DEDICATION

This research is humbly and lovingly dedicated to my family members whose prayers, encouragement and selfless support have been a great source of inspiration. They always believed in me when it was hard for me to believe in myself.

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LIST OF ABBREVIATED ENTRIES

WHO	: World Health Organization
MOH	: Ministry of Health
VIA	: Visual Inspection using Acetic Acid
VILI	: Visual Inspection using Lugol's Iodine
HPV	: Human Papilloma Virus
NGO	: Non-Governmental Organizations
UK	: United Kingdom
ASIR	: Age Standardized Rate
NHSCSP	: National Cervical Screening Programme
HIV	: Human Immunodeficiency Virus
Pap smear	: Papanicolaou smear test

CHAPTER ONE

INTRODUCTION

This chapter presents the background of the study, statement of the problem, research objectives and research questions, significance of the study, justification of the study, conceptual framework and operational framework, scope of the study and definition of terms.

Background of the Study

Cervical cancer is a major public health problem globally. The latest world cancer statistics indicates that cervical cancer is the fourth most common cancer in women globally with over half a million new cases and the second most common in developing countries with over four hundred thousand new case (Catarino et al., 2016). Cervical cancer is a malignant neoplasm of the cervical area of the uterus in which the cells of the cervix become abnormal and begin to grow uncontrollably. In most cases, it is asymptomatic in early stages. However it may present as persistent pelvic pain, bleeding between periods and after sexual intercourse, unexplained weight loss and unusual vaginal discharge (Abdikarim, Atieno, & Habtu, 2017). Infection with human papilloma virus (HPV) cause 75% of cervical cancer globally. HPV vaccines are not available widely and screening is still low in developing countries. Lack of awareness and the stigma associated with the disease are significant barriers to accessing screening services (WHO, 2013). The implementation of widespread cervical cancer screening has been demonstrated to reduce the prevalence and mortality of cervical cancer through the detection of precancerous

lesions. The tests to detect cervical cancer include the Papanicolaou test (Pap smear), visual inspection with acetic acid (VIA) and visual inspection with Lugol's iodine (VILI) which are currently available in most government hospitals as well as private clinics and hospitals in Kenya (Komiyaama & Hasegawa, 2017).

In Japan, 10,000 women are diagnosed with cervical cancer every year, and 2,700 die from it. However, the rate of cervical cancer screening in Japan is (37%) much lower compared with those of other developed countries (70-80%). The incidence rate of cervical cancer in Japan also rises for women in their twenties and forties and it levels off for women older than 50 years (Komiyaama & Hasegawa, 2017).

India alone accounts for one-quarter of the global burden of cervical cancer. There is no nationwide government sponsored public health policy on prevention of cervical cancer by either screening or vaccination or both, despite the huge burden of cervical cancer in India. This is the case in other developing countries (Bobdey, Sathwara, Jain, & Balasubramaniam, 2016).

In South Africa, cervical cancer screening facilities are available, yet the incidence of the disease remains high. Majority of women are not aware of cervical cancer screening or the facilities offering the services. Therefore, it is evident that the provision of cervical cancer screening services is not enough to ensure successful uptake of screening, since it is affected by several other factors.

A study done in Nigeria, noted that there is no organized or national programme on cervical cancer prevention as obtained in developed countries, rather an opportunistic cervical cancer screening in which a woman is screened during a hospital visit for other reasons. This has led to low screening uptake and high

incidence of cervical cancer (Nwobodo& Ba-Break, 2015). The reason for the low uptake of cervical cancer screening is that most cervical cancer screening services in Nigeria have been irregular and poorly coordinated. Most services are urban-based while the rural and semi-urban dwellers are often neglected. Also, the low awareness of women about cancer of the cervix and cervical cancer screening is another barrier to uptake of cervical cancer screening (Idowu, Olowookere, Fagbemi, &Ogunlaja, 2016).

Globally, Uganda is ranked 14th among countries with the highest incidence of cervical cancer, and over 65% of those diagnosed with the disease die from it. It is estimated that about 33.6% of women in the general population in Uganda harbour cervical human papilloma virus infection the main cause of cervical cancer at any given time (Ndejjo, Mukama, Musabyimana&Musoke, 2016).

In Kenya, cervical cancer screening uptake is low and only 3.2% of all women are reported to have undergone cervical cancer screening. This is due to poor perceptions regarding vulnerability to cervical cancer, the severity of cervical cancers and benefits of having a cervical cancer screening. Other major contributing factors include low or lack of awareness on these cancers and screening. (Mungai, Kivuvi, Wanzala&Mutai, 2016). This explains the importance of identifying factors associated with utilization of cervical cancer screening. The objectives of this study are; first to determine the utilization of cervical cancer screening, second to determine the prevalence of cervical cancer screening and third was to determine the factors associated with utilization of cervical cancer screening in Gelegele location in Bomet County, Kenya.

Statement of the Problem

In Kenya, the women population aged 15 and above is estimated to be above 13 million. Cervical cancer has been ranked as the most frequent cancer among women between 15 and 44 years. Close to 5,000 women are diagnosed with cervical cancer every year and more than 2,000 die from it. About 63.1% of invasive cervical cancers are attributed to HPV infection (ICO, 2013).

The World Health Organization (WHO), recommends screening programmes globally as a way of reducing the incidence of cervical cancer screening. However, only a small percentage between five percent to twenty-seven percent of women was found to have received screening in Sub-Sahara Africa, nevertheless, the incidence of cervical cancer screening is still lower in Eastern Africa region (WHO, 2013).

The largest burden of cervical cancer mortality falls mostly on underserved populations. Poor, older and rural women who have higher risks of developing cervical cancer are less likely to be screened. Access to health services in rural areas, has been characterized by transport challenges, long distances to health Centres, ill equipped health facilities and lack of information access. Studies about cervical cancer screening carried out in the East African region have mainly focused on urban areas and health care settings (Ndejjo et al., 2016).

Broad Objective

To explore factors associated with uptake of cervical cancer screening among women of reproductive age in Gelegele location, Kenya.

Specific Objectives

- To determine the prevalence of uptake of cervical cancer screening at Gelegele location, Kenya.
- To explore factors associated with utilization of cervical cancer screening among women of reproductive age in Gelegele location, Kenya.

Research Questions

- What is the prevalence of uptake of cervical cancer screening at Gelegele location, Kenya?
- What are the factors associated with utilization of cervical cancer screening among women of reproductive age in Gelegele location, Kenya?

Significance of the Study

The study examined the factors associated with uptake of cervical cancer screening in Bomet County. Hence, the findings of the study are expected to help in decision making on how to improve uptake of cervical cancer screening services among women of reproductive age in Bomet County.

The findings will enable the Ministry of Health (MOH), Non-governmental organizations (NGO)s and other stakeholders to develop free cervical cancer screening programs in Kenya so as to increase uptake of cervical cancer screening among women. The results of the study will also be used for planning and designing appropriate intervention measures to improve the uptake of cervical cancer screening. Based on the data dissemination methods that will be used, women of reproductive age will understand the importance of cervical cancer screening.

Justification of the Study

Cervical cancer screening is considered as a good protection against cervical cancer, due to early detection the disease can be managed easily. Researchers have also noted that most of those who die of cervical cancer had never been screened. In Kenya, cervical cancer screening is quite low. In Bomet County, there is inadequate information at present regarding the level of cervical cancer screening. Therefore, this study sought to determine factors associated with utilization of cervical cancer screening among women of reproductive age (15-49 years) in Gelegele location; so as to generate information that will be used to develop policies to improve the uptake of cervical cancer screening. So far no study has ever been done amongst this study population in Bomet County, hence the need for an in-depth study. This study will also reveal gaps in knowledge for further research.

Conceptual Framework

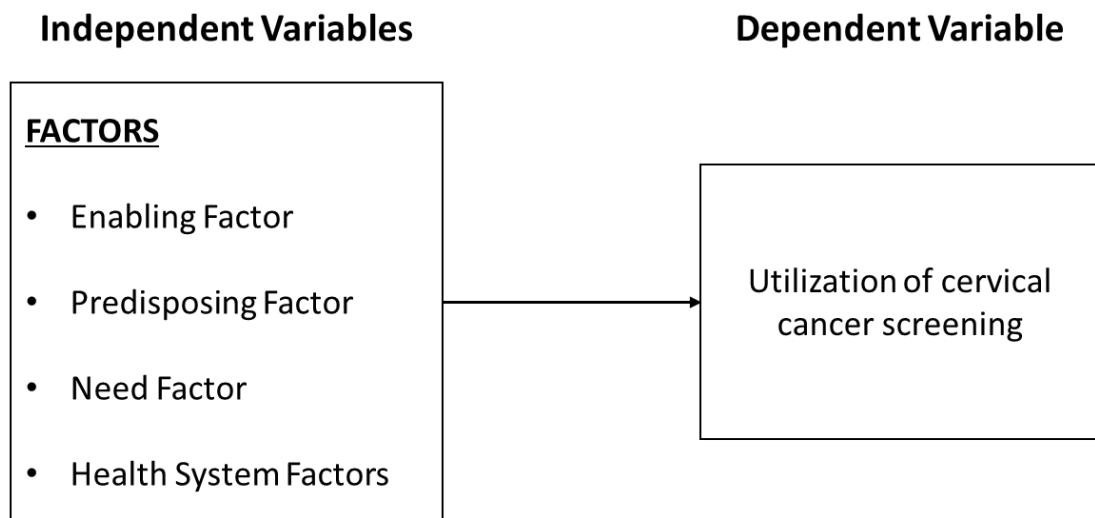


Figure 1: Conceptual Framework

Operational Framework

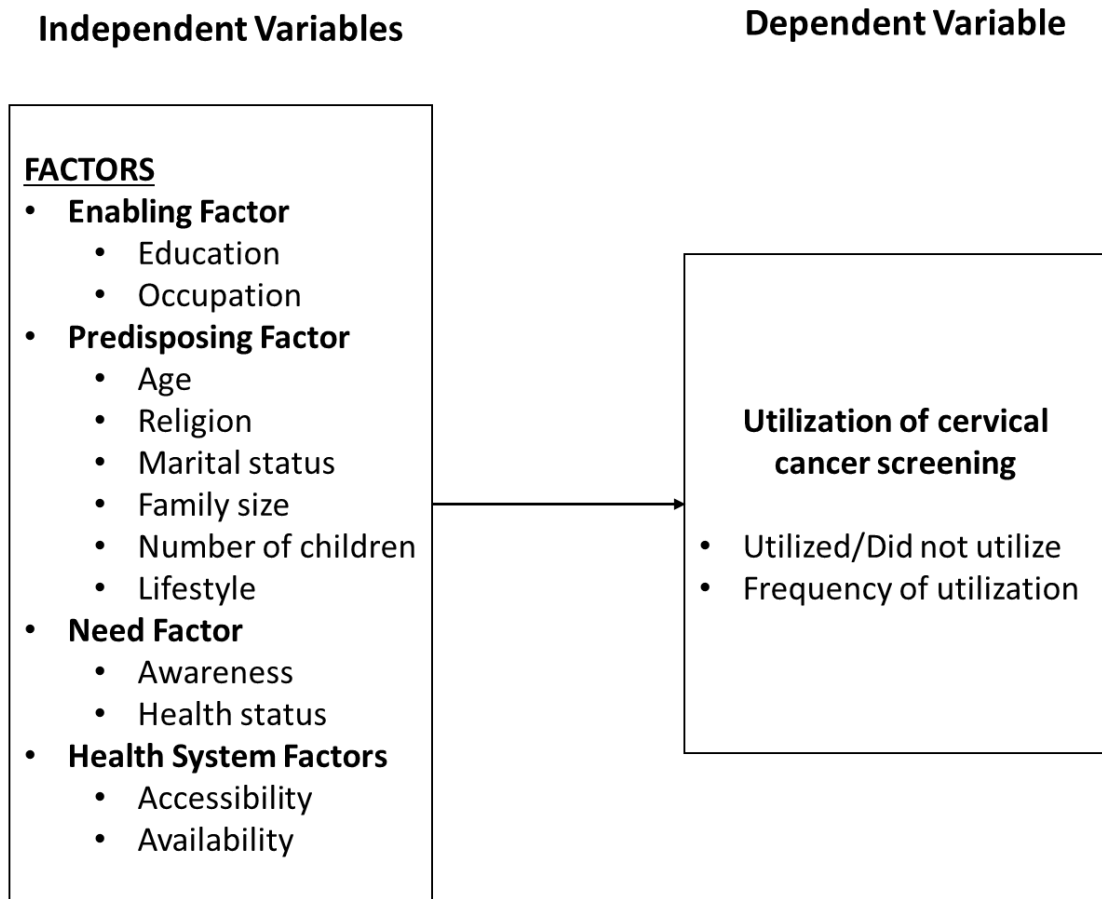


Figure 2: Operational Framework

Scope of the Study

The study was conducted at Gelegele location, situated in Bomet County. The participants were purposively selected from three sub-locations, and they are representing different villages. The study focused on women of reproductive age (15-49) years to find out factors associated with utilization of cervical cancer screening.

Definition of Terms

Cervical cancer-cancer that forms in tissues of the cervix which is the organ connecting vagina and the uterus.

Screening-the use of simple test amongst a healthy population so as to identify people who have the disease but have not shown symptoms.

Age-the length of time that a person has lived. It was measured by asking respondents the year in which they were born

Religion-the belief in and worship of a superhuman controlling power. It was measured by asking respondents their religious affiliations.

Education –the acquisition of knowledge. It was measured by asking respondents their level of education

Occupation-a job or profession. It was measured by asking respondents their occupation

Awareness-knowledge or perception of a situation or fact. It was measured by asking respondents if they are aware of cervical cancer screening

Availability-the quality of being able to be used or obtained. It was measured by asking respondents the availability of cervical cancer screening services.

Accessibility-easy to approach, reach or enter-it was measured by asking respondents the accessibility of cervical cancer screening services.

Lifestyle-individual or groups behavioral orientation-it was measured by asking respondents if they think food choices and physical exercise is a risk factor of cervical cancer screening.

CHAPTER TWO: REVIEW OF RELATED LITERATURE AND STUDIES

In this chapter, the researcher reviews literature from various sources on cervical cancer screening. The main themes reviewed are; utilization of cervical cancer screening, awareness of cervical cancer screening and the factors associated with utilization of cervical cancer screening.

Cervical Cancer

Cervical cancer is the second most common cancer in women globally and it is the most common in developing countries among women of reproductive age. It is estimated to contribute to about 12% of the cancers in women (Morris, 2016).

In the Caribbean region, countries with the highest cervical cancer mortality rates are Haiti (48.1 per 100,000), Barbados (16.5 per 100,000), and Jamaica (17.4 per 100,000). The mortality rate for cervical cancer in Jamaica is 6.6 times more than that for Caucasian females in the United States of America, and 2.8 times more than that for African-American females (Ncube, Bey, Knight, Bessler, & Jolly, 2015).

In the United States, the incidence of new cases of cervical cancer was 14.8 per 100,000 persons in 1975. In 2013, that rate dropped to 6.4 per 100,000 persons. Over the past 10 years alone, rates for new cervical cancer cases have been falling at an average of 0.9% and death rates from cervical cancer have been falling, on average, 0.8% each year. These is due to the availability and use of the Pap test, demonstrating the importance of early, routine, and adequate screening (Nardi, Sandhu & Selix, 2016).

In the United Kingdom (UK), it is estimated that 92% of women who die from cervical cancer have never been tested. In 2008, 2250 new cases of invasive cervical cancer³ and 830 women died from cervical cancer in England⁵. It is estimated that cervical cancer screening prevents about 4,500 cases of cervical cancer per year in the UK (Labeit, Peinemann, &Kedir, 2013).

In India, the burden of cervical cancer is huge accounting for about 20 percent of all cancer related deaths in women and is the leading cause of death in the middle age Indian women (S,Singh, &Badaya, 2012).

In China, cervical cancer is a major problem facing women. China alone, accounts for 29% of the 51,000,000 new cases of cervical cancer each year. Cervical cancer is the eighth most common malignant cancer among females in Mainland China, with an age-standardized incidence rate (ASIR) of 5.15 per 100,000 inhabitants. Although the incidence of cervical cancer in China is low in comparison to that of western countries, the mortality rate remains high, especially in rural areas (Jia et al., 2013).

In Sub-Sahara Africa, cervical cancer is the most common type of cancer in women. It is estimated that 34.8 new cases of cervical cancer are diagnosed per 100,000 women each year, and 22.5 per 100,000 women die from the disease, compared to 6.6 and 2.5 per 100,000 women, respectively, in North America. The incidence of cervical cancer in sub-Saharan Africa is even much higher in rural areas compared to urban areas. It is noted that 60% to 75% of women in sub-Saharan Africa who develop cervical cancer live in rural area (McFarland, Gueldner, &Mogobe, 2016).

In Africa, approximately 267.9 million women above the age of 15 years old are at risk of developing cervical cancer. Over 80 000 African women are diagnosed with cervical cancer annually and most of them are found in Sub Sahara Africa. In Sub-Saharan Africa, the incidence of cervical cancer is relatively high with an incidence rate of 50 per 100 000 and average age standardized rate (ASR) of 31 per 100 000 women in the entire region (Lim&Ojo, 2017).

In Eastern Africa, the incidence and mortality rate of cervical cancer is high despite the measures put in place to reduce it. In Ethiopia 20.9 million women were estimated to be at risk of developing cervical cancer in 2010 and that new cases of cervical cancer will double by 2025 and an estimated 7,619 new cases and 6,081 deaths annually. It accounted for 25.8% - 32% of all female malignancies (Gebru,Gerbaba & Dirar,2016).

In Kenya, cervical cancer is a major public health problem among women where screening services are lacking or inaccessible for the majority. Kenya has a population of 10.32 million women aged between 15 years and above who are at risk of developing cervical cancer. Current estimates indicate that annually, 2635 women are diagnosed with cervical cancer and 2111 die from the disease in Kenya. Cervical cancer is the most common cancer among women, and the second most common cancer among women between 15 and 44 years of age in Kenya. It also accounts for 59% of all documented genital cancers (Ombech,Muigai & Wanzala, 2012).

Utilization of Cervical Cancer Screening

Utilization of cervical cancer screening is much higher in developed countries compared to developing countries. This is because they have well established health systems and enough resources to provide screening services. Developing countries are faced with a double burden of disease and hence lack of enough resources.

In England, utilization of cervical cancer screening is high. The screening of cervical cancer started in Britain in the mid-1960s. By mid-1980s, many women were being tested regularly, however, women at greatest risk were not being tested, and that those who were tested and had positive results were not being followed up and treated effectively. This initiated the National Cervical Screening Programme (NHSCSP) in 1988 when all health authorities were instructed by the Department of Health to introduce computerized call-recall systems to assist in follow-up of screened women who have positive results. In 2010/11, this programme invited approximately 4.5 million women for screening and 3.4 million women were screened in England. The success of this programme can be seen by the decreasing incidence and mortality rates of cervical cancer. Mortality rate in 2008 was nearly 70 per cent lower (2.4 per 100,000 females) compared to 1979 when it was (7.1 per 100,000 females) (Labeit et al., 2013).

In Jamaica, free Papanicolaou (Pap smear) screening is available. However, cervical cancer is the second leading cause of cancer related deaths among women. Several studies have indicated that the uptake for cervical screening is low among Jamaican women. In fact, about 90% of Jamaican women who die from cervical cancer had never been screened before (Ncube et al., 2015).

In Sub-Saharan Africa, minimum attention is given to cervical screening program and South Africa is the only country with a national screening program. There have been some improvements in term of creating awareness and provision of screening services. However, utilization of cervical cancer screening service remains low. The best recorded urban and rural cervical screening coverage was in Congo (20.2% and 14.0% respectively), and the worst recorded coverage of 1.6% and 0.4% for urban and rural areas was in Ethiopia. This means that in Sub-Saharan Africa, utilization is higher in urban settlement and lower in rural settlements (Lim & Ojo, 2017).

In Nigeria, the government and some non-governmental organizations have made efforts to put screening services (Pap smear) in place. However, available centre's for this screening are still few and the uptake is poor. Previous studies conducted in Eastern, Northern and Southern parts of Nigeria reported poor uptakes of cervical cancer screening which ranged between 4.2-20.5 % (Amu, Olatona & Ndugba, 2017).

In Tanzania, Cervical cancer is the first most frequent cancer among women in general and also among women between 15 and 44 years of age. In 2001, Tanzania had the lowest numbers of women screened for cervical cancer per month in East Africa (Kileo, Michael, Neke, & Moshiri, 2015).

In Kenya, cervical cancer screening is low, even though there is overwhelming evidence that cervical cancer today is almost totally preventable to a large extent through screening and treatment of premalignant lesions, unfortunately the services are not readily available to the general population in most developing countries, including Kenya (Ombech, Muigai & Wanzala, 2012).

Factors Associated with Utilization of Cervical Cancer Screening

In India, there are several reported factors that influence utilization of cervical cancer screening. These factors include the lack of awareness, inadequate access to healthcare facilities, unawareness among the healthcare providers at the rural health facilities regarding importance of early diagnosis and treatment, existence of alternative medicinal systems, lack of economic and moral support from husband and family and an inappropriate demand for providing cervical cancer screening from the potential beneficiaries could be enumerated as the chief causes (Set al., 2012).

In Korea, Pap smear is a preventive test but women rarely feel comfortable with it because they have to expose their genitalia to a healthcare provider, which is especially problematic if the doctor is male. In addition, several studies have reported that a woman's decision to seek a cervical cytology examination is negatively affected by fear and embarrassment of the procedures and test results. Negative emotions, such as shame, embarrassment and discomfort with a male doctor, are among the obstacles hindering cervical cytology examinations in eligible women (Chang et al., 2017).

In China, women especially those in rural areas are not aware about cervical cancer and even the cervical cancer screening services offered. In Chinese culture, more focus is often on disease treatment rather than on disease prevention. For the Chinese, as with most Asians, they seek medical attention only when there are abnormalities for example when they are sick. This finding is also supported by previous studies in which Chinese women seem to participate in health care initiatives for reasons of illness rather than prevention. Other barriers to cervical cancer screening included the lack of awareness on the benefits of screening, the fear pain

during screening, and the possibility of fatal cervical cancer even if the screening is effective (Jia et al., 2013).

In Malaysia, a study found out that several factors are associated with utilization of cervical cancer screening. Marital status, knowledge, perceived barriers and having a regular healthcare provider were the predictive factors (Nwabichie, Manaf & Suriani, 2018).

In Sub-Saharan countries, uptake of cervical cancer screening remains low due to the following barriers, inadequate health services, lack of awareness of cervical cancer screening, financial challenges and various perceptions about cervical cancer screening. Researchers also point out that the non-communicable diseases such as cancer in sub-Saharan Africa have been under-recognized and under prioritized compared to communicable diseases such as Human Immunodeficiency Virus (HIV), Tuberculosis, and Malaria (McFarland et al., 2016).

In Kenya, a study done in Homabay County, there are several factors that delay uptake of cervical cancer screening services. First the women don't know that cervical cancer screening services exist in the local health facilities. Second, is that the women are always committed at work, business place or busy doing their household duties. Third is lack of funds to pay for services especially women who depend on their husbands. Fourth is the distance to the facilities, some of them are far and expensive to reach. Lastly, is the fear of being diagnosed with cervical cancer and also the fear of the procedures during testing (Morris, 2016).

Factors associated with utilization of cervical cancer screening services

Frequency of utilization of cervical cancer screening services was found to be low in this particular population. Those who had been screened reported to have done it once. This is not in consistence with the screening guidelines as recommended by the American Cancer Society. The guidelines recommend that all women should begin cervical cancer screening at the age of 21 years while those 21 to 29 years should be tested every 3 years.

CHAPTER THREE: RESEARCH METHODOLOGY

This section contains the research design, study area, study population, sampling techniques, sample size, research instrument, reliability and validity, data gathering procedures, statistical treatment of data, data dissemination, inclusion and exclusion criteria and ethical consideration.

Research Design

The study employed a cross-sectional study design to collect quantitative data from women of reproductive age (15-49 years), at Gelegele location in Bomet County. The study explored factors which are associated with uptake of cervical cancer screening and was cross-sectional because it aims at collecting data to make inferences about a population at one point in time.

Study Area

This study was conducted at Gelegele location, which is situated in Sotik Sub-County of Bomet County. Gelegele location has three sub-locations namely: Koiyet, Kipsimbol and Gelegele with 5, 12 and 12 villages, respectively. The total number of villages in this location is 29. Women of reproductive age in Gelegele location is approximated to be 1,400. The area receives maximum rainfall annually but mostly hot during the months of January to February. People occupying the area are majorly farmers as they grow maize, beans, and potatoes and keep dairy cattle.

Study Population

The target population was approximately 1,400 women of reproductive age who are between ages 15 years to 49 years who resides in Gelegele location.

Sampling Techniques

The study used both probability and non-probability sampling techniques. Purposive sampling was used to choose the women of reproductive age to represent the target population. Multi-stage sampling was used. In the first-stage, the three sub-locations in Gelegele location were purposively selected. In the second-stage, however, 2, 4 and 4 villages were selected randomly from Koiyet, Kipsimbol and Gelegele sub-locations, respectively. In the third-stage purposive sampling was also used to select households for the study. Finally, all women of reproductive age group who were available at the time of study were included in the study.

Sample Size

Raosoft sample size calculator, an online software, was used to determine the required sample size from the total number of mothers of reproductive age with margin of error of 5%, confidence interval of 95% and response distribution of 50% (Raosoft, 2004). The sample size of 302 was determined from the total number of women aged 15 to 49 years living in Gelegele location which is approximated to be 1,400.

Research Instruments

A structured survey questionnaire was used to collect data from the participants. The questionnaire was divided into three sections which addressed participants' characteristics, utilization of cancer screening services, and awareness of cervical cancer screening.

Reliability and Validity

Pilot study was conducted prior to the study at Ndanai location to test both validity and reliability of the tool, assess the feasibility of the study and to make the necessary changes to the study. This population is chosen because it has similar characteristics with the actual study population. This enabled the researcher to determine whether the respondents understood the questions and even sought their opinion regarding the questions asked, therefore ascertaining clarity of the questionnaire.

Data Gathering Procedures

Before collecting data, enumerators who understand both English and the local dialect (i.e., Kipsigis) was selected and trained on the data collection methods and the questionnaire items for a clear understanding. Enumerators were expected to understand the key terms in the study for adequate translation in case there is need to translate to the participant who may not be able to understand English. Enumerators were deployed to the field and were supervised to ensure credibility in the data collection. In the process of collecting data, enumerators ensured that the participants have answered all the questions to avoid missing data. Data entry was done in the Microsoft Excel before cleaning and preparing for analysis.

Statistical Treatment of Data

After entering data in MsExcel, it was imported in to the Stata software for data cleaning and analysis. Data was then analyzed in three phases which included both the descriptive and inferential statistics. In the first stage of the analysis, descriptive statistics was used to present the data in form of number and percentages by utilization of cervical cancer screening services. The results of cervical cancer

screening services utilization were presented in the form of Tables. The differences between groups within the categorical variables used in this study were tested using Pearson Chi-square tests at an alpha level of 0.05.

The second and the third phases of the analysis were inferential statistics. In the second phase, logistic regression technique was used to produce the odds ratios (ORs) and the 95% confidence interval (CI) to explore the relationship between various factors and the binary outcome indicator of utilization of cervical cancer screening services. The logistic regression technique is a generalized linear model used to model binary outcome. Finally, in the third phase, Poisson regression technique (i.e., used to model count data) was used to assess the factors associated with the frequency of utilization of cervical cancer screening services among women of reproductive age in Gelegele location in Bomet County. All the analyses were performed using Stata version 13.1 (StataCorp, College Station, Texas, USA).

Data Dissemination

The research findings will be disseminated through a report to various administrators, conferences and publication in scientific journals. The final thesis will also be kept in the University of Eastern Africa, Baraton library for general students' readership.

Inclusion Criteria

- All mothers of reproductive age who consented to participate were included in the study.

Exclusion Criteria

- Women who are not within the reproductive age of 15-49 years were excluded.
- Women who were not willing to participate.

Ethical Considerations

Ethical Approval

Ethical approval was sought for from the Internal Research Ethics Committee (IREC) of the University of Eastern Africa, Baraton before it is carried out. After the IREC approval permission to conduct the study was acquired from the County government of Bomet before presenting it to the local administrators for certification.

Informed consent

Enumerators were required to explain the informed consent principle, before signing of the informed consent form by the participants. If the participants agree to participate, the questionnaire was administered, but if they do not consent, the interviewer was required to apologise and leave the household. The subjects were not coerced to participate in the study.

Confidentiality

Confidentiality was highly maintained throughout the study. Any information given was not linked to the interviewee other than on an identity number that was kept in a secure location. All data was anonymized before and after analysis.

CHAPTER FOUR: PRESENTATION OF FINDINGS, ANALYSIS AND INTERPRETATION

Prevalence of cervical cancer screening utilization

Table 1 presents the characteristics of the respondent who had been screened for cervical cancer. The prevalence of cervical cancer screening among women in Gelegele location is 15.1% with the age group of 41 years and above being the highest at 21.3% as compared to the other age groups though the differences between the age groups was not statistically significant. About a quarter of women who had only one child or two children had been screened for cervical cancer while those who had no child were 8.8%. Also, the majority of screened women had tertiary level of education (22.2%; $p < 0.05$), had salaried employment (22.1%; $p < 0.10$), were aware of cervical cancer (16.8%; $p < 0.05$), had at least one chronic illness (29.6%; $p < 0.01$), were not screened for a fee (19.3%; $p < 0.001$), and had few barriers (22.5%; $p < 0.10$).

Table 1 Characteristics of participant by cervical cancer screening services among women of reproductive age in Gelegele location, Bomet County

Variables	Screened for cervical cancer, <i>n</i> (%)			<i>P</i> -value [†]
	Total <i>n</i> = 350	No <i>n</i> (%) = 297 (84.9)	Yes <i>n</i> (%) = 53 (15.1)	
Age group				0.498
≤ 25	91	81 (89.0)	10 (11.0)	
26 – 30	77	65 (84.4)	12 (15.6)	
31 – 35	68	59 (86.8)	9 (13.2)	
36 – 40	53	44 (83.0)	9 (17.0)	
≥ 41	61	48 (78.7)	13 (21.3)	
Religious affiliation				0.192
Protestant	151	127 (84.1)	24 (15.9)	
Catholic	113	101 (89.4)	12 (10.6)	
Other	86	69 (80.2)	17 (19.8)	
Marital status				0.373
Singles	101	83 (82.2)	18 (17.8)	
Married	249	214 (85.9)	35 (14.1)	
Family size				0.148
≤ 4	109	88 (80.7)	21 (19.3)	
> 4	241	209 (86.7)	32 (13.3)	
Children born				0.020
None	68	62 (91.2)	6 (8.8)	
1 – 2	98	75 (76.5)	23 (23.5)	
3 – 4	116	104 (89.7)	12 (10.3)	
> 4	68	56 (82.4)	12 (17.7)	
Cigarette smoking				0.317
No	343	292 (85.1)	51 (14.9)	
Yes	7	5 (71.4)	2 (28.6)	
Alcohol intake				0.305
No	328	280 (85.4)	48 (14.6)	
Yes	22	17 (77.3)	5 (22.7)	
Education level				0.026
Primary and below	123	112 (91.1)	11 (8.9)	
High school	137	115 (83.9)	22 (16.1)	
Tertiary	90	70 (77.8)	20 (22.2)	
Employment				0.054
Unemployed	80	69 (86.3)	11 (13.8)	
Farming	166	147 (88.6)	19 (11.5)	
Salaried employment	104	81 (77.9)	23 (22.1)	
Cervical cancer awareness^a				0.049
No	59	55 (93.2)	4 (6.8)	
Yes	291	242 (83.2)	49 (16.8)	
Chronic illness^b				0.004
No	306	266 (86.9)	40 (13.1)	
Yes	44	31 (70.5)	13 (29.6)	

Variables	Screened for cervical cancer, <i>n</i> (%)			<i>P</i> -value [†]
	Total <i>n</i> = 350	No <i>n</i> (%) = 297 (84.9)	Yes <i>n</i> (%) = 53 (15.1)	
Family cancer history				0.751
No	302	257 (85.1)	45 (14.9)	
Yes	48	40 (83.3)	8 (16.7)	
Cancer facility distance				0.864
< 3 km	51	42 (82.4)	9 (17.7)	
3 – 4 km	61	52 (85.3)	9 (14.8)	
> 4 km	238	203 (85.3)	35 (14.7)	
Fare to cancer facility				0.931
Kshs 100	292	248 (84.9)	44 (15.1)	
Kshs 150	58	49 (84.5)	9 (15.5)	
Screening fee				< 0.001
No	265	214 (80.8)	51 (19.3)	
Yes	85	83 (97.7)	2 (2.4)	
Barriers^c				0.075
≤ 2 Barriers	89	69 (77.5)	20 (22.5)	
3 – 4 Barriers	191	168 (88.0)	23 (12.0)	
≥ 5 Barriers	70	60 (85.7)	10 (14.3)	

^a, Heard of cervical cancer and screening; ^b, Had at least one of the chronic disease

which included diabetes, hypertension, arthritis, stroke, and coronary heart diseases; ^c, screening barriers included fear of a positive result, embarrassing procedure, lack of information, non-supportive partner, and distance to the screening facility, perceived painfulness and expensive procedure.

[†]Pearson Chi-Square was used to test the differences in the categorical indicators

Factors associated with utilization of cervical cancer screening services

Table 2 indicates the logistic regression results of the utilization of cervical cancer screening services among women of reproductive age in Gelegele location in Bomet County. The results show that age group was associated with utilization of cervical cancer screening services before and after adjustment, with the age group of 41 years and above being more likely to utilize cervical cancer screening services than those who were 25 years and below after adjustment (OR = 2.87; 95% CI: 0.93 – 8.49; $p < 0.10$). However, women who were married were 55% less likely to utilize cervical cancer screening services than the singles after adjusting for the confounding effect.

After adjusting for all the variables, those who had either one or two children (OR = 5.38; 95% CI: 1.42 – 20.41; $p < 0.05$) and those who had five or more children (OR = 3.65; 95% CI: 0.84 – 15.98; $p < 0.10$) were more likely to utilize cervical cancer screening services than those who did not have any child. The education level variable was also statistically significant before and after adjustment, with those who had high school and tertiary education being 2.26 times (95% CI: 0.89 – 5.75; $p < 0.10$) and 2.83 times (95% CI: 0.98 – 8.13; $p < 0.10$) more likely to utilize cervical cancer screening services than those who had primary education and below, respectively. Cervical cancer awareness was only significant before adjustment. But, after adjusting for the confounding effect, the difference attenuated.

Nevertheless, the presence of a chronic disease was also associated with utilization of utilize cervical cancer screening services before and after adjustment, with those who had at least one chronic disease being more likely to utilize cervical cancer screening services (OR = 2.52; 95% CI: 1.02 – 6.20; $p < 0.05$) than those who

did not have any chronic disease. While, the presence of the cervical cancer screening fee reduced the likelihood of women to utilize cervical cancer screening services before and after adjustment (OR = 0.10; 95% CI: 0.02 – 0.43; $p < 0.01$). Even though women who had indicated to having more barriers were less likely to utilize cervical cancer screening services, the difference attenuated after adjustment.

Table 2 Logistic regression of the utilization of cervical cancer screening services among women of reproductive age in Gelegele location, Bomet County

	Utilization of cervical cancer screening	
	Crude Model Odds Ratio (95% CI)	Adjusted Model Odds Ratio (95% CI)
Age group		
≤ 25	1	1
26 – 30	1.50 (0.61, 3.68)	1.39 (0.49, 3.97)
31 – 35	1.24 (0.47, 3.23)	1.36 (0.44, 4.33)
36 – 40	1.66 (0.63, 4.38)	1.53 (0.49, 4.86)
≥ 41	2.19 (0.89, 5.39)*	2.87 (0.93, 8.49)*
Religious affiliation		
Protestant	1	1
Catholic	0.63 (0.30, 1.32)	0.67 (0.29, 1.54)
Other	1.30 (0.66, 2.59)	1.15 (0.52, 2.56)
Marital status		
Singles	1	1
Married	0.75 (0.40, 1.41)	0.45 (0.19, 1.03)*
Family size		
≤ 4	1	1
≥ 5	0.64 (0.35, 1.17)	0.99 (0.35, 2.78)
Children born		
None	1	1
1 – 2	3.17 (1.21, 8.27)**	5.38 (1.42, 20.41)**
3 – 4	1.19 (0.43, 3.34)	2.63 (0.64, 10.82)
≥ 5	2.21 (0.78, 6.29)	3.65 (0.84, 15.98)*
Cigarette smoking		
No	1	1
Yes	2.29 (0.43, 12.12)	1.74 (0.21, 14.68)
Alcohol intake		
No	1	1
Yes	1.72 (0.60, 4.87)	1.17 (0.29, 4.74)
Education level		
Primary and below	1	1
High school	1.95 (0.90, 4.20)*	2.26 (0.89, 5.75)*
Tertiary	2.91 (1.31, 6.44)***	2.83 (0.98, 8.13)*

Employment		
Unemployed	1	1
Farming	0.81 (0.37, 1.80)	0.68 (0.23, 2.07)
Salaried employment	1.78 (0.81, 3.91)	1.10 (0.42, 2.91)
Cervical cancer awareness^a		
No	1	1
Yes	2.78 (0.96, 8.04)*	2.27 (0.68, 7.63)
Chronic illness^b		
No	1	1
Yes	2.79 (1.35, 5.77)***	2.52 (1.02, 6.20)**
Family cancer history		
No	1	1
Yes	1.14 (0.50, 2.60)	0.74 (0.28, 1.97)
Cancer facility distance		
< 3 km	1	1
3 – 4 km	0.81 (0.29, 2.22)	1.05 (0.27, 4.14)
> 4 km	0.80 (0.36, 1.80)	0.99 (0.33, 2.99)
Fare to cancer facility		
Kshs 100	1	1
Kshs 150	1.04 (0.47, 2.26)	0.99 (0.35, 2.78)
Screening fee		
No	1	1
Yes	0.10 (0.02, 0.42)***	0.10 (0.02, 0.43)***
Barriers^c		
≤ 2 Barriers	1	1
3 – 4 Barriers	0.47 (0.24, 0.92)**	0.81 (0.37, 1.76)
≥ 5 Barriers	0.58 (0.25, 1.32)	0.92 (0.34, 2.54)

^a, Heard of cervical cancer and screening; ^b, Had at least one of the chronic disease which included diabetes, hypertension, arthritis, stroke, and coronary heart diseases; ^c, screening barriers included fear of a positive result, embarrassing procedure, lack of information, non-supportive partner, and distance of screening facility, perceived painful and expensive procedure; CI, confidence interval.

* $p < 0.10$

** $p < 0.05$

*** $p < 0.01$

Factors associated with frequency of utilization of cervical cancer screening services

Using Poisson modeling technique, we tested the factors associated with the frequency of utilization cervical cancer screening services among women in Gelegele location (Table 3). Only religious affiliation, marital status, number of children born to the woman, education, presence of a chronic illness, distance to the cancer facility, and charging screening fee were associated with the frequency of utilization of cervical cancer screening services.

The women who were affiliated to the Roman Catholic church (OR = 0.59; 95% CI: 0.33 – 1.05; $p < 0.10$), married (OR = 0.62; 95% CI: 0.36 – 1.06; $p < 0.10$), and who indicated the presence of a screening fee (OR = 0.11; 95% CI: 0.03 – 0.36; $p < 0.001$) were less likely to frequently utilize cervical cancer screening services than those who were affiliated to the protestant churches, were single and did not indicate charging of a screening fee, respectively.

On the other hand, women who had at least one child (OR = 3.76; 95% CI: 1.42 – 9.96; $p < 0.01$), had high school education (OR = 1.65; 95% CI: 0.91 – 2.98; $p < 0.10$), had a chronic illness (OR = 2.38; 95% CI: 1.34 – 4.23; $p < 0.01$) and indicated that the cancer facility was between 3 km and 4 km (OR = 2.79; 95% CI: 1.03 – 7.54; $p < 0.05$) were more likely to frequently utilize cervical cancer screening services than those who had no child, had primary education and below, had no chronic illness and lived near the cancer facility, respectively.

Table 3 Poisson regression of frequency of utilization cervical cancer screening services among women of reproductive age in Gelegele location, Bomet County

	Frequency of utilization cervical cancer screening ^d	
	Crude Model IRR (95% CI)	Adjusted Model IRR (95% CI)
Age group		
≤ 25	1	1
26 – 30	1.11 (0.56, 2.20)	0.92 (0.44, 1.92)
31 – 35	0.94 (0.45, 1.98)	0.71 (0.32, 1.60)
36 – 40	1.72 (0.88, 3.36)	1.13 (0.54, 2.40)
≥ 41	1.93 (1.03, 3.64)**	1.75 (0.85, 3.59)
Religious affiliation		
Protestant	1	1
Catholic	0.52 (0.29, 0.90)**	0.59 (0.33, 1.05)*
Other	0.92 (0.55, 1.52)	0.82 (0.47, 1.43)
Marital status		
Singles	1	1
Married	0.86 (0.54, 1.35)	0.62 (0.36, 1.06)*
Family size		
≤ 4	1	1
> 4	0.95 (0.60, 1.51)	1.23 (0.56, 2.69)
Children born		
None	1	1
1 – 2	2.52 (1.15, 5.50)**	3.76 (1.42, 9.96)***
3 – 4	2.05 (0.94, 4.50)*	3.04 (1.11, 8.32)**
> 4	2.38 (1.04, 5.43)**	2.81 (0.98, 8.06)*
Cigarette smoking		
No	1	1
Yes	3.10 (1.26, 7.66)**	2.25 (0.66, 7.68)
Alcohol intake		
No	1	1
Yes	1.36 (0.63, 2.94)	1.34 (0.48, 3.71)
Education level		
Primary and below	1	1
High school	1.31 (0.78, 2.20)	1.65 (0.91, 2.98)*
Tertiary	1.42 (0.81, 2.49)	1.60 (0.78, 3.29)
Employment		
Unemployed	1	1
Farming	1.05 (0.59, 1.86)	0.77 (0.35, 1.68)
Salaried employment	1.36 (0.75, 2.46)	0.92 (0.46, 1.83)
Cervical cancer awareness^a		
No	1	1
Yes	2.23 (1.03, 4.83)**	1.91 (0.83, 4.38)
Chronic illness^b		
No	1	1
Yes	2.62 (1.62, 4.24)*****	2.38 (1.34, 4.23)***

Family cancer history		
No	1	1
Yes	1.15 (0.64, 2.08)	0.70 (0.36, 1.36)
Cancer facility distance		
< 3 km	1	1
3 – 4 km	1.77 (0.80, 3.90)	2.79 (1.03, 7.54)**
> 4 km	1.33 (0.66, 2.70)	1.66 (0.68, 4.00)
Fare to cancer facility		
Kshs 100	1	1
Kshs 150	1.01 (0.57, 1.79)	0.76 (0.37, 1.55)
Screening fee		
No	1	1
Yes	0.12 (0.04, 0.37)****	0.11 (0.03, 0.36)****
Barriers^c		
≤ 2 Barriers	1	1
3 – 4 Barriers	0.75 (0.46, 1.23)	1.29 (0.73, 2.26)
≥ 5 Barriers	0.78 (0.42, 1.46)	1.09 (0.54, 2.18)

^a, Heard of cervical cancer and screening; ^b, Had at least one of the chronic disease which included diabetes, hypertension, arthritis, stroke, and coronary heart diseases; ^c, screening barriers included fear of a positive result, embarrassing procedure, lack of information, non-supportive partner, and distance of screening facility, perceived painful and expensive procedure; ^d, frequency range is 0 (not utilized) to 4 times (most frequent user); IRR, incidence rate ratio; CI, confidence interval.

* $p < 0.10$

** $p < 0.05$

*** $p < 0.01$

**** $p < 0.001$

CHAPTER FIVE: SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

Summary

One of the objectives of this study was to determine the prevalence of utilization of cervical cancer screening among women of reproductive age in Gelegele location which was found to be 15.1%. In Sub-Sahara Africa; utilization of cervical cancer screening is still low. In Ethiopia, Lim and Ojo (2017) reported the worst recorded coverage of 1.6% and 0.4% for urban and rural areas.

The findings from this study supported the findings of other researchers who have found low cervical cancer screening rates in other parts of the world. This low prevalence of cervical cancer screening could be because cervical cancer screening is not seen as a routine checkup in most African countries, but it is mostly done when it is recommended by the doctor to rule out other underlying conditions. This was evidenced in this study, whereby those who had at least one chronic disease were more likely to utilize cervical cancer screening services than those who did not have any chronic disease.

In this study, several factors were explored that could be associated with the uptake of cervical cancer screening; age, marital status, level of education, chronic disease and screening fee. It was found that age was associated with increased utilization of screening services. Older women 41 years and above were more likely to be screened than those who were 25 years and below. The explanation could be, older women are more likely to have interacted with the health system longer and therefore more likely to have undergone screening.

This study revealed that marital status was not associated with utilization of cervical cancer screening with married women being 55% less likely to utilize than singles. This is contrary to a study done in Malaysia by Nwabichie, Manaf and Suriani, (2018) where it was found that married women were more likely to utilize cervical cancer screening services than single women. This is consistent with the findings of some studies that indicated spouse may hinder cervical cancer screening (Set al., 2012).

This study revealed that education is a significant predictor of cervical cancer screening service utilization. Those with high school and tertiary education were more likely to utilize than those who had primary education. This could be as a result of increased knowledge. Those who went to school understand the importance of screening. This finding is in accordance with studies that have also found knowledge to be significantly associated with cervical cancer screening. For instance, a study by Nwabichie, Manaf and Suriani, (2018) revealed that African women in Klang Valley, Malaysia, with low level of education are less likely to participate in screening services. Women with at least one child were more likely to utilize the services the services, this could be as a result of seeking other postnatal services at the health facility. They are also likely to have received health education on cervical cancer screening.

Conclusion

This study was conducted at the right time when the country is planning to improve cervical cancer prevention services. The findings of this study revealed a gap in the utilization of cervical cancer screening services. The findings have also highlighted challenges that undermine utilization of the services. Hence intervention

measures are necessary to increase utilization of screening among this study population.

Recommendations

1. The County Government of Bomet should start community based outreach and screening camps in order to take the services closer to the community instead of waiting for the women to come for the services at the hospitals. The public should be sensitized on the existence and severity of cervical cancer and the importance of early and routine screening.
2. It is important to promote spouse involvement in cervical cancer screening because men provide financial support in most families and they are also the decision makers.
3. Cervical cancer screening services should be integrated with other health services so that as women access other health services they get to access cervical cancer information and screening services.
4. There is need for a multi-sectoral approach in addressing cervical cancer screening. This should involve health facilities, policy makers in the ministry of health, Non-Governmental organizations, communities, families and individuals.
5. The ministry of health should introduce community based educational program through local media to promote uptake of cervical cancer screening services.
6. The study focused on the factors that influence utilization of cervical cancer screening among women of reproductive age in Gelegele location, Bomet County. Therefore, the findings of the study cannot be generalized. In future, a study should be done across the county.

7. A study should be carried out on the effectiveness of cervical cancer screening services.

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APPENDICES

APPENDIX I: CONSENT FORM

Dear participant,

My name is Chelangat Martha a senior student in the department of Public Health at the University of Eastern Africa Baraton. I am conducting a study on **FACTORS ASSOCIATED WITH UTILIZATION OF CERVICAL CANCER SCREENING AMONG WOMEN OF REPRODUCTIVE AGE IN GELEGELE LOCATION, BOMET COUNTY**. You have been selected as a respondent in this study where you will play a very important role of responding to the questions. Approximately 10-15 minutes of your time will be required to fill this questionnaire that is provided alongside this consent. Participation in this study is voluntary and withdrawal is also at will. There are no direct benefits and no penalties for participating in this study.

You are hereby required to respond suitably to the questions given and express your views freely without fear or favor. Note that information given will be treated with outmost confidentiality. In case of any clarification please be feel free to ask.

In case of any questions about the study in general or about your role in the study please feel free to contact Chelangat Martha either by telephone at 0729401355 or email martha.chelangat88@gmail.com

I consent to participate in the study on factors associated with utilization of cervical cancer screening among women of reproductive age (15-49 years) in Gelegele location conducted by Chelangat Martha. I have understood the nature of the study and wish to participate.

Signature of participant: _____ Date _____

Signature of investigator: _____ Date _____

APPENDIX II: QUESTIONNAIRES

DEMOGRAPHIC AND SOCIOECONOMIC FACTORS

1. In which year were you born? _____
2. What is your religious affiliation?
☐ Protestant ☐ Roman Catholic ☐ Anglican SDA ☐
Other _____
3. What is your marital status?
☐ Single ☐ Married-monogamy ☐ Married-poly ☐ Divorced
☐ Widowed
4. How many people are in your family? _____
5. How many children do you have? _____
6. Do you smoke cigarettes? ☐ No ☐ Yes
7. If Q6 is yes, how many cigarettes a day? _____
8. Do you drink alcohol? ☐ No ☐ Yes
9. If Q8 is yes, how many glasses a day? _____
10. What is your education level?
☐ No education ☐ Primary ☐ Secondary ☐ College
☐ University
11. What is your occupation?
☐ Unemployed ☐ Technician/professional/managerial ☐ Clerical
duties ☐ Sales person ☐ Farming-employee ☐ Farming self-employed
☐ Household/domestic worker ☐ Services ☐ Skilled manual
☐ Unskilled
12. If married, what is your husband's education level?

- ☐ No education ☐ Primary ☐ Secondary ☐ College
☐ University

13. If married, what is your husband's occupation?

- ☐ Unemployed ☐ Technician/professional/managerial ☐ Clerical
duties ☐ Sales person ☐ Farming-employee ☐ Farming self-employed
☐ Household/domestic worker ☐ Services ☐ Skilled manual ☐
Unskilled

AWARENESS OF CERVICAL CANCER SCREENING

14. Have you heard of cervical cancer? ☐ No ☐ Yes

15. Have you heard of cervical cancer screening? ☐ No ☐ Yes

16. If Q14 is yes, how did you get the information?

- | | | |
|--------------------|-----------------------------|------------------------------|
| a. Radio | ☐ No | ☐ Yes |
| b. Television | ☐ No | ☐ Yes |
| c. Internet | ☐ No | ☐ Yes |
| d. Books/Magazines | ☐ No | ☐ Yes |

17. Is there anyone who has had cancer in your family? ☐ No ☐ Yes

18. If Q16 is yes, who?

- ☐ Grandparents ☐ Father/Mother ☐ Brother/Sister ☐ Child
☐ Uncle/Aunt

19. Do you have any of the following chronic diseases?

- | | | |
|----------------------------|-----------------------------|------------------------------|
| a. Diabetes | ☐ No | ☐ Yes |
| b. Hypertension | ☐ No | ☐ Yes |
| c. Arthritis | ☐ No | ☐ Yes |
| d. Stroke | ☐ No | ☐ Yes |
| e. Coronary heart diseases | ☐ No | ☐ Yes |

20. How far is the nearest cancer screening facility from your home?

☐ < 1 km ☐ 1-2 km ☐ 2-3 km ☐ 3-4 km ☐ > 4 km

21. Do they offer cancer screening services? ☐ No ☐ Yes

22. How much does it cost to reach the nearest cancer screening facility?

23. How much does it cost to do cervical cancer screening? _____

UTILIZATION OF CERVICAL CANCER SCREENING SERVICES

24. Have you ever been screened for cervical cancer? ☐ No ☐ Yes

25. If Q23 is yes, how often do you go for cervical cancer screening?

☐ Yearly ☐ Every 2 years ☐ Every 3 years ☐ Only once

26. When is it necessary to have a screening test?

- | | | |
|--|-----------------------------|-----|
| a. When the disease is of serious consequences. | ☐ No | Yes |
| b. When the test is reliable and not harmful. | ☐ No | Yes |
| c. When there is an effective treatment for the disease. | ☐ No | Yes |

27. What are the benefits of cervical cancer screening?

- | | | |
|--|-----------------------------|-----|
| a. Cervical cancer can be detected early | ☐ No | Yes |
| b. For a woman to know if they are healthy | ☐ No | Yes |
| c. The disease can be controlled before it spreads | ☐ No | Yes |
| d. Early detection means less treatment | ☐ No | Yes |

28. What are the barriers to cervical cancer screening?

- | | | |
|--|-----------------------------|-----|
| a. Cervical cancer screening is painful | ☐ No | Yes |
| b. Screening services are expensive | ☐ No | Yes |
| c. I fear being diagnosed with cervical cancer | ☐ No | Yes |
| d. Screening procedure is embarrassing | ☐ No | Yes |
| e. Lack of information about screening | ☐ No | Yes |

- f. My partner cannot allow ☐ No Yes
- g. Health facility offering the service is far ☐ No Yes

APPENDIX III: RESEARCH BUDGET

Activity	Item	Unit of Measurement	Unit cost (Ksh)	Total (Ksh)
Stationeries	Printing of questionnaires	260	5	1300
	Printing of consent forms	260	5	1300
	Pens	2	20	40
	Binding	4	50	200
Internet services	Modem	1	3,000	3,000
Pilot study	Transport and lunch for 2 people	2 days	1,000@	4,000
Data collection	Transport and lunch for 2 people	20 days	1,000@	40,000
Phone expenses	Airtime	20 days	100@	2000
Total				51,840

APPENDIX IV: WORK PLAN IN GANTT CHART

Activity	Sept- Oct 2018	Nov 2018	Dec 2018	Jan 2019	Feb 2019	March 2019	April 2019	May 2019	June 2019
Topic selection and concept development									
Proposal writing									
Proposal defense									
Pilot study									
Data collection									
Data analysis									
Report writing									
Report examination									
Thesis defense									
Final report refinement and submission									

APPENDIX V: CURRICULUM VITAE

PERSONAL DETAILS

Name: Chelangat Martha

Sex: Female

Age: 29 Yrs

Marital Status: Married

Profession: Public Health Officer

Address: P.O Box 301, Sotik.

Mobile Phone: 0729401355.

Email: martha.chelangat88@gmail.com

CAREER FOCUS

Acquisition of new skills while in pursuit of professional and corporate excellence through hard work and team work in striving to achieve my desired goal of success and ultimate self- actualization.

CAREER OBJECTIVE

To work in a challenging position where I can utilize my gained knowledge and skills to the best of my ability.

ACADEMIC QUALIFICATIONS

September 2016 to date: University of Eastern Africa, Baraton: Masters of Public

Health Generalist and Health Promotion and also

Epidemiology and Disease Control

2010- 2014: University of Eastern Africa, Baraton Bsc in Public

Health Cumulative GPA: 3.23/4.0 (Second Class

Honors Upper Division)

2006-2009: Kenya Certificate of Secondary Education (KCSE)

Mean Grade C+ (Plus)

MoiSiongiroi Girls High School

2001-2005: Kenya Certificate of Primary Education (KCPE)

Attained 342 Marks out of 500

Tenwek Boarding Primary School.

1994-2000: Gelegele primary school

WORK EXPERIENCE

Oct 2015 to Dec 2015: MOH Public Health Graduate Internship Programme in Bomet County

DUTIES AND RESPONSIBILITIES

Participating in public health activities in the sub county level and related staff development activities.

Collecting and processing data of community based projects.

Participating in routine health facility service delivery

Managing complaints from the public arising from health related issues and promoting health promotion through forums by conducting health education.

Participated in cholera outbreak response in 2015

Three rounds of polio campaign

Community health promotion and disease surveillance

LLITNs household registration and distribution

MAY 2014-AUGUST 2014: Kakamega General Hospital (Attachment)

RESPONSIBILITIES

Training, implementation and coordinating community health activities

VOLUNTARY ACTIVITIES.

2011: Participated at Kaptumo market cleaning exercise as part of my course work

2013: Public Health Care Club-UEAB Participated in the annual hand washing day. The event took place at University of Eastern Africa Baraton.

2012: Attend and participated in a major cleaning exercise which was organized by the University in collaboration with the county government of Nandi at Kapsabet town.

Positions of responsibility/Leadership Roles.

Being an active and energetic person. I have had the opportunity to handle many responsibilities throughout my Campus life like coordinating various groups and as class leader.

Contributed in the organization of Public Health care club activities.

Arranged club's calendar of events and proposed sites for donation.

Coordinated and researched on needs of the community service sites.

SKILLS & COMPETENCIES

Knowledge and ability to implement and Monitor Community Health Strategy.

Knowledge of Basic Primary Health Care Services e.g. Immunization, Family Planning and Health Promotion.

Research skill: Qualitative and quantitative research.

Oral and written communication in English, Kiswahili and Kipsigis knowledge in microcomputer application.

HOBBIES

Travelling and exploring cultures

Participating in Community Services

Participating in charity work

REFEREES

1. Prof Mueni H. Ndiku, Dr PH

Associate Professor of Public Health Nutrition

School of Health Sciences

University of Eastern Africa, Baraton. P.o. Box 2500-30100 Eldoret.

Mobile No. +254 732 513 598/+254 726 404 401

Email: ndikuh@ueab.ac.ke

2. Mr. Philemon K. Rutoh

Chief Officer

County Government of Bomet

P.O. Box 393- 20400

Bomet

Mobile No. +254720134759

Email: rutohphil@gmail.com

APPENDIX VI: ETHICAL APPROVAL LETTER



University of Eastern Africa, Baraton

P.O. Box 2500-30100, Eldoret, Kenya | MOBILE: +254-719-617-586 | EMAIL: infor@ueab.ac.ke | WEBSITE: www.ueab.ac.ke



March 27, 2019

To whom it may concern,

Dear Sir/Madam,

RE: CHELANGAT MARTHA; STUDENT ID: SCHEMA1112

Warm greetings.

This is to inform you that I am thesis supervisor to the above named, who is a student in the Master's Program in Public Health in our university. Currently, her study is in the area of Women Reproductive Health and Cancer, with a research title of:

Factors Associated with Utilization of Cervical Cancer Screening among Women of Reproductive Age in Gelegele Location, Bomet County

She plans to use a survey questionnaire to collect data from the target population who are in your County, and as a requirement, this study was approved by our institutional ethics committee of the University of Eastern Africa, Baraton.

Kindly consider her request to enable her to conduct this study, which is a requirement for Master of Public Health (MPH) degree. We will greatly appreciate if you accord her any necessary assistance to enable her accomplish this study. Thank you in advance for your kind assistance.

Yours Sincerely,

Patrick Opiyo Owili, Ph.D. (PubHlth), Ph.D. (EnvOccHlthSci)
Supervisor and Lecturer, Department of Public Health
Master of Public Health Program
Master of Science in Global Health
University of Eastern African, Baraton



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TECHNOLOGY AND INNOVATION**

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When replying please quote

NACOSTI, Upper Kabete
Off Waiyaki Way
P.O. Box 30623-00100
NAIROBI-KENYA

Ref. No. **NACOSTI/P/19/35582/29346**

Date: **6th May 2019**

Martha C Chelang` at
University of Eastern Africa Baraton,
P.O. Box 2500-30100
ELDORET.

RE: RESEARCH AUTHORIZATION

Following your application for authority to carry out research on *“Factors associated with utilization of cervical cancer screening among women of reproductive age (15-49 years) at Gelegele location, in Bomet County, Kenya.”* I am pleased to inform you that you have been authorized to undertake research in **Nandi County** for the period ending **3rd May, 2020.**

You are advised to report to **the County Commissioner, County Director of Health Services and the County Director of Education, Bomet 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.

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

Copy to:

The County Commissioner
Bomet County.

The County Director of Education
Bomet County.



**OFFICE OF THE DIRECTOR OF GRADUATE STUDIES
AND RESEARCH**

UNIVERSITY OF EASTERN AFRICA, BARATON

P. O. Box 2500-30100, Eldoret, Kenya, East Africa

October 31, 2018

Martha Chelangat
University of Eastern Africa Baraton
Department of Public Health

Dear Martha,

Re: ETHICS CLEARANCE FOR RESEARCH PROPOSAL (REC: UEAB/11/10/2018)

Your masters thesis proposal entitled "*Factors Associated with Utilization of Cervical Cancer Screening among Women of Reproductive Age (15-49 years) at Gelegele Location, in Bomet County Kenya*" was discussed by the Research Ethics Committee (REC) of the University and your request for ethics clearance was granted approval.

This approval is for one year effective October 31, 2018 until October 29, 2019. For any extension beyond this time period, you will need to apply to this committee one month prior to expiry date.

Note that you will need a research permit from the National Commission for Science, Technology, and Innovation (NACOSTI) and clearance from the study site before you start gathering your data.

We wish you success in your research.

Sincerely yours,

A handwritten signature in blue ink, which appears to read "Jackie K. Obey".

Prof. Jackie K. Obey, PhD
Chairperson, Research Ethics Committee

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CHARTERED 1991