FACTORS ASSOCIATED WITH UTILIZATION OF CERVICAL CANCER SCREENING SERVICES AMONG WOMEN ATTENDING FAMILY PLANNING CLINIC AT MACHAKOS COUNTY REFERRAL HOSPITAL, MACHAKOS- KENYA

BY

S NTHENYA DAVID

MOI UNIVERSITY

COLLEGE OF HEALTH SCIENCES

SCHOOL OF PUBLIC HEALTH

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DECLARATION

I hereby, declare that this research thesis is my original work and has not been presented to any other University or Institution for the award of the degree.

S NTHENYA DAVID

SPH/PGH/NC/1016/13

Signature: …… Date :……

Supervisors

This research thesis has been submitted with our approval as University Supervisors:

Supervisor 1:

Dr. Samson K. Ndege

Department of Epidemiology and Biostatistics

School of Public Health

Moi University

Signature: …… Date :……

Supervisor 2:

Prof. Ann Mwangi

Department of Mathematics, Physics and Computing

Moi University

Signature: …… Date :……

DEDICATION

I am dedicating this thesis to my supervisors who have guided me during the writing process and above all to God.

ABSTRACT

Background: Cervical cancer is the major cause of mortality globally with close to 500,000 new cases annually**.** The incident of cervical cancer is expected to increase by almost 700,000 cases and cause about 400,000 deaths by year 2030 according to World Health Organization (WHO). Cervical cytology screening reduces cervical cancer rate through early detection and treatment of premalignant lesions.In Machakos County Referral Hospital, the number of women screened in a day is on average 2 which is low compared to daily target of 23. There is little information and knowledge regarding factors associated with cervical cancer screening in Machakos County

Objectives: To determine cervical cancer screening uptake among women attending Machakos County Referral Hospital. To determine social demographic characteristics associated with utilization of cervical cancer screening services. To describe the risks and perceptions associated with cervical cancer screening

Methods: The study was conducted in Machakos County Referral Hospital family planning clinic using a cross sectional survey design. The study population comprised women aged 18 years and above. The sample size was 206 women aged 18 years and above. The women were selected using a systematic sampling method with an interval of 3. Data was collected using an interviewer-administered questionnaire. Frequencies and percentages were used to analyze descriptive data. The relationship between variables was conducted using logistic regression analysis with 95% CI for odds ratio.

Results: A total of 200 participants were interviewed. A total of 41 (20.5%), 95% CI [15.0-26.5]) women attending family planning had been screened for cervical cancer. Social demographic factors did not significantly affect the level of screening; age (p-value= 0.600), Marital status (Value=0.439), level of education (Value=0.349), employment (Value=0.413) and residential area (Value=0.928). Study results from 95% (190) of respondents show that it is important to do cervical cancer screening. Majority of the respondents 94% (188) reported that there's a benefit in early screening for cervical cancer. 45.5% (91) of respondents were not aware that susceptibility to cervical cancer increases with number of pregnancies.

Conclusion: There is low cervical cancer screening uptake among women who attend MRCH as compared to WHO recommendation of 70% coverage for countries. Pain experienced during cervical cancer screening is a barrier

Recommendations: Cervical cancer screening procedures should aim at reducing pain experienced by women during screening. It is essential for women to go for cervical cancer screening Health programmes should come up with better interventions targeting women and sensitize them to go for early screening. There is need for health programmes to educate and sensitize women on cervical cancer risks.

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ABBREVIATIONS AND ACRONYMS

HBM	Health belief model
IARC	International Agency for Research on Cancer
IDCC	Infectious Disease Control Centre
PAP	Papanicolau smear test
SEER	Surveillance, Epidemiology and End Results
WHO	World Health Organization

OPERATIONAL DEFINITION OF TERMS

Cervical cancer screening: Procedure performed to establish women with any kind of cervical changes.

Cues to action: The elements that influence a person's decision to change their behavior.

Health belief model:

High risk: Those with an aggregate Likert scale score of greater than or equal to 75 percent.

Low risk: Those with aggregate score below 75%.

Likert scale: A measurement scale in an ordered one-dimensional scale from one option chose the respondents that best align with their standpoints. Typically, there are 5 options.

Perceived benefits: Refers to how the participant's assessment of the advantages that one gains in conducting cervical cancer screening results to cervical cancer early detection where cervical cancer progression is slowed, and mortality from cervical cancer is reduced.

Perceived barriers: These are an individual’s opinion on what will prevent women from gaining access to services related with cervical cancer screening.

Pap smear: sample which is thinly spread on microscope slide taken from cervix for examining the consistency of cervix tissues.

Perceived susceptibility: Is how participants assess chances of getting cervical cancer.

T-test: A statistical test that is employed to look at the mean variation between two groups.

Uptake: This refers to the action of taking up cervical cancer screening

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CHAPTER ONE

1.0 INTRODUCTION

1.1 Background

Cervical cancer is a significant global health issue, with about 500,000 new cases diagnosed each year. According to GLOBOCAN, global burden of cervical cancer is anticipated to rise by 2030 to approximately 700,000 cases with 400,000 deaths, representing 21 percent and 27 percent increase in cases as well as deaths, respectively. World Health Organization predicted that the global incidence of cervical cancer would rise by 16 million per year by 2020.Globally cervical cancer is the second leading cause of death accounting for 8.7million people worldwide in 2015 according to ng'ang'a et al, 2018.Three-quarters of cases of cervical cancer will take place in developing countries. In 2020 the cervical cancer cases increased to an estimate of 604127 new cases and 342000 deaths. 90% of the reported cases and deaths took place in low and middle countries world wide. Mortality rate varies from <2 per 100,000 in western Europe and New Zealand to 27.6 per 100,000 in Sub-Saharan Africa. Globally, South Africa has the highest burden of cervical cancer accounting for 21% of total cases and 26% of global deaths in 2018 (ecancer medical science 2022. According to (Vaccarella S, Laversanne M,Ferlay J, Bray F,) 2017, countries have incident and mortality of cervical cancer drastically reduced. Cervical cancer incidences in developed countries have drastically reduced over the recent years). The disproportionate burden of cervical cancer in medically underserved populations in developing countries and elsewhere is mainly due to lack of effective screening programs. (Farley j, Shin HR, Bray F, Forman D, Mathers C, Parkin MD, 2012). Cervical cancer is a malignant neoplasm of uterus's cervix uteri, or cervical area, in which cervix's cells turn abnormally and develop uncontrollably, developing

tumors (Bhatla et al, 2018). Human papillomavirus (HPV) attributes to 99% of all cancers, *(GLOBOCAN 2012)*. Symptoms include vaginal bleeding which sometimes may not be visible until cancer progresses to advanced stage. Treatment includes surgery, chemotherapy, and radiotherapy in advanced cancer stages. However, it can be treated and cured if it is detected early. Every woman who has had sex can develop cervical cancer. WHO in 2005 adopted resolution 58.22 and urged member states to increase their action against cancer by creating National cancer Control Programmes due to the increasing burden of cancers. The American society for colonoscopy and cervical pathology recommends screening every one to three years and after one becomes sexually active or by age 21, and screening to continue until age 65. Cervical cancer is a treatable and preventable malignancy disease with a global annual crude incidence rate of 13.1 per 100 000 women worldwide and widely varied among countries, with rates ranging below 2 to 75 per 100 000 women. However the screening strategy is effective in minimizing cervical cancer burden globally, the uptake in developing countries is still low. Sub Saharan Africa has the highest burden of cancer globally. In 2018, Africa accounted for 21% of total cases and 26% of global cervical cancer deaths which approximately accounted for an approximate 15% of all cancer deaths in women. Studies have shown that cervical cancer screening is very limited in low and middle resource countries. On average studies have reported coverage of cervical cancer to be at 19% in developing countries and screening at 63% for developed countries at average. In developed countries cervical cancer incidence has declined due to extensive pap smear screening programs. This is contrary in most developing countries where there are rare extensive screening cancer programs with no follow up mechanisms in place. Nepal has 19.0 per 600,000 age standardized annual cervical cancer incidence making it one

of the highest cervical cancer rates in S. Asia next to India (22 per 100,000) and Bangladesh (19.2% per 100,0000) respectively. (Asian Pac J cancer 2017) conducted a study which found low participation in cervical cancer screening and low follow up of screening in low resource countries like Botswana. Despite advancement in screening and treatment of cervical cancer in the past years, the developing countries are still faced by lack of appropriate programs. Populations in those countries are still at higher risk of cancer mortality and morbidity as a result of delay in diagnosis. The approximate number of women who were diagnosed with cervical cancer in 2018 was over 570 000 with 311 000 dying as a result of the disease. Breast cancer was the leading cancer, followed by colorectal cancer and lung cancer, cervical cancer was the fourth most frequent cancer among women globally. According to HPV Information Centre (2019), Africa had detected around 119,284 recent cases of cervical cancer every year. The highest incident rate of cervical cancer is experienced in Sub-Saharan Africa which is mostly due to low screening programmes or inaccessibility of the screening services. In East Africa the annual crude incidence rate for cervical cancer is 40.1 per 100, 000 women (Arbyn, 2018). Data from world health survey 2017 indicated that cervical cancer screening in Sub Saharan Africa coverage was at 10%. Further only <1% of women in 4 countries in West Africa had ever been screened for cervical cancer

Regular cervical cancer screening as well as follow up reduces incidence of cervical cancer. In 2022 the World Health Assembly endorsed the WHO global strategy for elimination of cervical cancer to regularly screen 70% of women globally for cervical disease and offer appropriate treatment to 90% of those in need of it. The goal of National cancer screening guideline is to isolate the asymptomatic indivinduals who have seemingly indicated that they could be having a precancerous condition and link

them with appropriate diagnosis, care and treatment. WHO set targets to eliminate cervical cancer as a public health problem to reduce the incident below a thresh hold of 4 cases per 100,000 women-years or fewer in every country of the world. Cervical cytology screening has been shown to minimize the rate of cervical cancer by detecting premalignant lesions early (Parmer S et al, 2010).

According to WHO, cervical cancer and Pap-smears screening knowledge among women is low in most of the third world countries (Mengesh & Messele, 2020). Despite the efforts done, a recent study showed that cervical cancer remains a leading cause of mortality in Africa and South-Central Asia. Non-cancer mortality due to acquired immunodeficiency syndrome and tuberculosis, on the other hand, have dominated public knowledge on cervical cancer while immune protection of HPV is poorly understood (Turner TB, et al 2016). However cervical cancer screening has been shown to lower cervical cancer incidence, several factors affect women's screening uptake. Factors such as poor awareness of the benefits of Pap-smear test, lack of knowledge about cervical cancer and its risk factors, fear of being embarrassed by the health care workers, fear of pain and fear of getting a positive result, are major factors hinderring cervical cancer screening (kivuti-Bitok et, a., 2012). Much recent studies have been conducted in developing countries or among ethnic minorities in developed countries on women’s knowledge of cervical cancer and screening. A study done in South Africa indicated that only 40% of participants underwent Pap smear screening. Low levels of knowledge regarding Pap-smear screening, inadequate information on procedure of Pap-smear screening, limited doctors’ access and provider attitudes were identified as major barriers to uptake of Pap-smear.They were also believed to contribute to low uptake of cervical cancer screening (Budkaew J et al 2014). As a result, the aim of this study was to determine and describe the factors

that influence the uptake of cervical cancer screening. In Kenya a population of 10.32 million women aged 15 years and above is at risk of developing cervical cancer. Also, non communicable diseases in Kenya accounts for 50% of hospital deaths. Cancer is the second leading NCD after cardiovascular disease. It accounts to a total of 12% of national mortality thus making it a public health issue. Cervical cancer screening coverage in Kenya is at 3.2% (Morema, Atieli & Onyango, 2014). Approximately, cervical cancer contributed to 12% of all cancers diagnosed in Kenya and in 2020 it was the leading cause of all cancer deaths with over 3200 deaths, (Ng'ang'a A, Nyagasi M, Nkonge NG,et al 2018). According to the Kenya human papillomavirus and related malignancies fact sheet 2018 (ICO/IARC on information on HPV and cancer), cervical cancer is the most frequent female cancer among Kenyan women aged 15 to 44 years. In Kenya, an approximate of 2635 women are diagnosed with cervical cancer per year, with 2111 dying from the disease annually (Kivuti-Bitok et al., 2012). Cervical cancer is the second most common cancer among Kenyan women, and the first most common cancer in women aged between 15 and 44 years. HPV Information Centre (2019) indicates that 33 per 100,000 women in Kenya have cervical cancer and 22 per 100,000 die from the disease. A study done by KNH and MTRH on top 5 cancers, (Macharia, 2018) cervical cancer accounts for 59% of all documented genital cancers. Cervical cancer accounts for 12% of all cancer cases diagnosed in Kenya and is the leading cause of all cancer deaths with over 3200 deaths in 2020 according to (Sung H, Farley J, Siengel RL, et al) 2020. According to Human papilloma virus and related cancers fact sheet 2023, Kenya has an annual number of new cases and incidence of 5236 and a mortality of 3211. Kenya cancer policy 2019-2030 provides framework to comprehensively address cancer in Kenya through the systematic implementation of evidence based intervention for prevention,

control, screening, timely diagnosis, treatment, survivorship and palliative care, financing, monitoring and research. This is meant to guide all stakeholders in Kenya.

A study conducted at MTRH reported that 90% of cases present with late stages and thus benefit from radiotheraphy and palliative care.In 2015, the uptake of screening was approximately 16% which indicate low uptake and in 2018 only a quarter of 2927 sampled health facilities were offering screening services. Irrespective of the fact that Kenya has implemented a national screening Programme for more than a decade. In Machakos County Referral Hospital, the cervical cancer screening status is unknown. The facility has a daily screening target of 23 women based on the facility projections.

Therefore, the study aim was to identify and describe factors influencing cervical cancer screening uptake.

1.2 Problem Statement

16.8million women aged 15 years and above in Kenya are at risk of developing cervical cancer. Cervical cancer screening coverage in Kenya is low at 3.2% (4.0% and 2.0%) for urban and rural women respectively). Cervical cancer is the 2nd leading cause of female cancer in Kenya. Cervical cancer screening uptake in Machakos County is unknown and women present with advanced stages of the disease despite the measures taken by the government to offer cervical cancer screening services at a low cost of 200 Kenya shillings per person. Approximately 200 women seen daily, however daily screening rates are not documented. Despite efficient screening initiatives that are readily accessible to prevent cervical cancer screening services in country's health institutions at a lower fee, more women are actually diagnosed with cervical cancer at an advanced stage and finally die from it. According to studies by Ning YE, et al 2020, women often present for treatment too late following the onset of

cervical cancer symptoms. According to Dunkor A, et al 2015, only 14% of women of reproductive age undertook papsmear tests and nearly 50% present with late disease In Kenya. There is little knowledge and information in Machakos County regarding factors associated with cervical cancer screening uptake.

1.3 Justification of the study

The results of this study will come up with recommendations that may enable Ministry of Health as well as other health organizations to re-engineer cervical cancer screening programs in Machakos County to increase screening uptake by women of reproductive age. It may enable early screening to detect cervical cancer at early stages and interventions to be taken in advance and hence reduce the progress of the disease to an advanced stage. This is anticipated to cause a decrease in morbidity and death from cervical cancer.

1.4 Research question

What are the factors associated with cervical cancer screening uptake by women attending Machakos County Referral Hospital?

1.5 Study Objective

1.5.1 Broad objective

To determine the factors associated with cervical cancer screening uptake among women attending Machakos County Referral Hospital.

1.5.2 Specific Objectives

i. To determine the level of uptake of cervical cancer screening at Machakos County Referral Hospital
ii. To establish socio-demographic factors associated with cervical cancer screening among women attending Machakos County Referral Hospital.
iii. To describe perceived barriers to uptake of cervical cancer screening among women attending Machakos County Referral Hospital.

CHAPTER TWO

2.0 LITERATURE REVIEW

2.1 Introduction

This chapter provides literatures on uptake of cervical cancer screening, description on social demographic characteristics, and barriers on cervical cancer screening. It also provides literature information on health belief model in regard to benefits and perceived susceptibility to cervical cancer screening

2.2 Overview of Cervical Cancer Screening

Cervical cancer claimed the lives of over 342,000 women in the year 2020 and 90% took place in developing Countries according to studies by (SUNG H, Ferlay J,) 2020. It is the leading cause of women death globally (Ferlay et al., 2010). The developed countries have well executed cervical cancer screening Programmes. In the United States, there are Programmes for cervical cancer for those with cervical abnormalities. High incidences of cervical cancer and death take place in developing countries. Cervical cancer is generally well controlled in terms of incidence and fatality in developed countries (WHO 2018). High incidences of cervical cancer and death take place in developing countries. It is approximated that 80 percent of global new cervical cancer cases and 85% of cervical cancer deaths occur in developing countries (Simms, KT, et al, 2020). It is estimated that only 5% is spent on cancer prevention in developing countries of the total spent by developed countries worldwide hence the reason for the higher mortalities in developing countries as reported by Prager GW et al, 2018. Except for a few nations like Rwanda, which reached 93% of adolescent girls in grade six in 2011 (Binagwaho et al., 2012), screening and vaccine coverage remain generally quite low despite these milestones and the significant global burden of cervical cancer on Sub-Saharan Africa (SSA) (Ogembo et al., 2014).By primary,

secondary, and tertiary measures such as immunization, early detection, and treatment, cervical cancer is preventable and treatable in its early stages (WHO 2014). Cervical cancer incidence and death have significantly decreased in developed nations as a result of screening and vaccination (Binagwaho et al., 2012).The first and most important step in combating cervical cancer in SSA will be to vastly increase screening accessibility. Despite the fact that nations have begun investigating methods for addressing awareness, prevention, screening, and immunization and that research in these areas is expanding, there is need for more effort to be put in addressing the issue (Perlman et al., 2014).

2.3 Uptake of Cervical Cancer Screening

Great focus to eradicate and minimise new cases and higher mortality of cervical cancer caused by HPV is a global interest. As a result women are encouraged to go for pap-smear test. Women who previously tested negative should repeat the screening every 3 years, (Chatterjee S, Chattopadhyay A, Samantha L, Panigra P,) HVP cancer epidemiology 2016. Women who take up screening for cervical cancer repeatedly and quite often lower their lifetime risk of developing the disease.

Despite cervical cancer being a leading cause of morbidity and mortality in women globally, it has been identified as one of the highly preventable human cancers due to its slow growth, cytological identifiable and effective treatments (Kim JJ, Burger EA, Regan C, SY S,2018). Papsmear test can be used as a primary prevention method for cervical cancer in decreasing the prevalence of the disease. Cervical cytology screening with Papanicolau (Pap) has significantly reduced cervical cancer rates by detecting premalignant lesions early (William W, Ware A, Ejiri AH, Obungoloch J, 2019). Globally, the high incident of cervical cancer is linked to lack of cervical

cancer screening or regular cervical cancer screening and regular follow-up of detected abnormalities. This was evident when cervical cancer screening rates in developing countries were compared to rates in developed countries. Furthermore, in Jamaica, the mortality rate for cervical cancer was nearly six times greater than in United States. Only 5% of eligible females roughly undergo cytology based screening in developing countries. A study conducted by (wong et al 2009) reported that the coverage and screening uptake of pap smear remains a challenge in Malaysia. Unless effective cervical cancer screening programs as well as preventive measures are established, the trend is likely to continue. The national Health and morbidity survey 11 (1997) reported that, there were no significant increase in the number of pap smears for the last 10 years and it constantly ranged from 350,000 to 400,000 (Mond 2008).

Several studies have linked low screening of cervical cancer uptake to high risk women's failure to engage in cervical cancer screening programs. The increase of invasive cervical cancer is widely implicated and attributed by lack of health care access (Mwaka AD,Garimoi CO, Were EM, Roland M,Wabinga H, 2016). Lack of participation in existing cervical cancer prevention programs accessible in health care system was the common attributing factor in cervical cancer development among individuals who had access to health care (Bruni L.A.G et al 2019).

Poor knowledge on benefits of Pap smear test, lack of cervical cancer knowledge and its risks, fear of humiliation by health care workers, and fear of getting a positive result are all factors associated to reduced uptake of cervical cancer screening programs by women (Ampofo AG, et al 2020). Other barriers include lack of female screeners in health facilities, inefficient clinic times, distress caused by getting

abnormal cervical pap smear result, lack of awareness of cervical cancer screening procedures and need for more information on cervical (Spagnoletti B, Bennett LR,Wahdi AE, Wilopo SA, Keenan CA, 2019)

A research conducted by (Chu V, et al, 2014) among Taiwanese women on socio-demographic factors on non participation found that 40 percent had never been screened while 86 percent were not screened in the previous year. Age was identified as the most important factor influencing cervical cancer screening, especially amongst women under 30 and over 65 years. Women with lower education levels, those who are unemployed, poor, those who have never been married, as well as those who reside away from the city were less likely to use Pap smear screening programs, according to a study by (Binka C. et al, 2019). Screening for cervical cancer early and offering treatment have been proven to be effective for cervical cancer prevention. Ministry of health in Kenya came up with a National cancer prevention programme with an adoption plan to run for 5 years. The program was set to run between 2005-2009 which aimed at screening coverage of 20%. The program did not achieve its mandate at the end of that period. Therefore, in 2010-2014, division of reproductive health Kenya identified the uptake of cervical cancer screening services as a key area in adoption of evidence based reproductive health practices. Deaths could be prevented through early screening and treatment. USA and Canada have 0.5 per 1000 female age standardized death rates, whereas, Kenya has 28.7 the total number of people of a given age. Cervical cancer is the second most prevalent disease in Kenyan women but the leading cause of cancer fatalities (Phillips-Howard et al., 2014). Screening uptake is low, estimated at 16% in 2015 as reported by Ng'ang'a, Nyagasi M,Nkonge NG, et al 2018, and only 0.25% of sampled 2927 healthcare facilities offered screening in 2018 irrespective of the fact that Kenya has been implementing a

national programme for more than a decade. Although there is no national cancer record, the Nairobi Cancer Registry reports that 65% of the 2,354 women diagnosed with the disease in 2006 died (Ochako, et al., 2011). Only 14% of women aged 30-49 years in Kenya participated in screening in 2014, according to the most recent Kenya Demographic Health Survey (KDHS) (KDHS, 2014).

Although there are concerning developments, it is noteworthy that awareness of cervical cancer has grown over the previous 10 years because of significant accomplishments and international commitments. These include the invention of three reliable and efficient HPV vaccines since 2006 [30–32], the 2009 World Health Organization (WHO) position paper on HPV vaccines [33], the 2011 Political Declaration on Noncommunicable Diseases (NCDs) at the United Nations High-Level Meeting [34], the 2013 WHO Global action plan for the prevention and control of NCDs 2013–2020 [35], the Global Task Force on Expanded Access to Cancer Care and Control in Developing Countries [36]. The third Sustainable Development Goal (SDG), which was adopted in 2015, calls for reducing premature mortality due to NCDs by one-third by 2030. It is reflected in the 2013 commitment by GAVI Alliance to support cervical cancer immunization at significantly reduced prices of $4.50 per dose for Gardasil vaccine and $4.60 per dose for Cervix vaccine to qualifying countries [37], the 2014 WHO guidelines on cervical cancer screening [38], and the 2015 WHO guidelines.

2.5 Social Demographic Characteristics and Cervical Cancer Screening Uptake

Studies have repeated several factors as contributing to non participation of women in cervical cancer screening such as low education, unemployment, lack of knowledge of about screening and pain during screening. Broberg, Wang and Nemes (2018)

studied socio-economic as well as demographic determinants affecting participation in Swedish cervical screening program. The research design was population-based case-control study design. The findings indicate that women with low disposable family income, low education and not cohabiting were less likely to attend cervical screening. Being unemployed and receiving welfare benefits were also significant variables in non-attendance.

Lee, Park, and Chang (2018) carried out a study among Korean women on socioeconomic variations for cervical cancer screening. A self-administered questionnaire was used to obtain data on participation in cervical cancer screening. Women with lower levels of education and lower household income were much less likely to be screened, owing to socioeconomic factors. Women with highest level of education had adjusted odds ratio of 1.56 in 2016 for screening compared to those who had the lowest education level. A study conducted in India found a higher incidence of cervical lesions among illiterate women due to their late presentation in health facilities. Reports have also shown that women who have more knowledge and are more aware of cervical cancer have higher chances of participating in cervical cancer screening

Woldetsadik, Amhare and Bitew (2020) examined socio-demographic characteristics and associated factors that influence cervical cancer screening among women at St. Paul's Teaching and Referral Hospital (SPTRH) in Ethiopia. A hospital-based cross-sectional study design was used at SPTRH family health department. The findings revealed that rural residence, low monthly income, and lack of understanding were all significant predictors of low cervical cancer screening uptake.

Ebu (2018) investigated the socio-demographic factors that influence HIV-positive women's cervical cancer screening intentions in Ghana's central region. A descriptive cross-sectional study approach was used and a sample size of 660 HIV-positive women aged 20 to 65 years. The results indicated that education level was a factor in deciding whether or not to be screened for cervical cancer. HIV-positive women with low education levels were 2.67 times more likely to have intention to screen than those with no formal education. Age, marital status, religion, capacity to pay for cervical cancer screening and employment status however, did not determine the intentions for screening; However, Alwahaibi NY, et al 2016, survey found that Asian women found that approximately half of the married women had overall knowledge on Papsmear screening as compared to the single women.In Kenya, better screening rates were observed in older, wealthier, more educated, and urban-dwelling women. This is similar to a study conducted in Tanzania (Morema, et al., 2014). Older women are more likely to have interacted with the healthcare system for a longer period of time, which increases their likelihood of having had a cervical cancer screening. Younger women between the ages of 25 and 35 had high screening rates, according to a French study (Sicsic, J et a., 2014). The screening services offered during prenatal visits explained this. To prevent opportunities from being lost, this demands for the integration of cervical cancer services within the Kenyan healthcare system. Despite the fact that this is mentioned in several national health papers, most notably the National Cervical Cancer Prevention Program, the public health system currently lacks cervical cancer services (Phillips-Howard PA et al., 2014). Access to healthcare in rural areas has been identified as a barrier in various African contexts (Sicsic, J et al., 2014), which may help to explain why urban women undergo more screenings. A study conducted among 642 women in rural and urban settings showed that only

17.3% and 9.6% had been screened for HPV in urban and rural areas respectively according to Gakidou E, Norghagen S, 2008. Although cervical cancer screening is free in Kenya's public health system, extra expenses like transportation may contribute to the lower screening rates among women in lower income quintiles. Initiatives to enhance cervical cancer screening should consider unforeseen expenses like transportation or lost wages (Phillips-Howard PA et al., 2014).

2.6 Perceived Barriers to Cervical Cancer Screening

Lack of knowledge and awareness that cervical cancer is preventable is a major cervical cancer screening barrier among women. Others do not know where to get screening services. Alwahaibi NY et al, 2016) conducted a cross sectional study and found insufficient information about pap smear screening procedures and that only 40.1% of participants had pap smear tests in their lifetime. In developing countries, financial constraints are a major challenge as many women could not afford the cost of the services.

Many studies have identified embarrassment, anxiety of getting cervical cancer positive test result, pain, uncooperative and rude health workers as barriers to cancer screening. Others reported lack of convenient clinic times and married women mentioned husbands and partners as the key hindrances to cervical cancer screening, Onyenwenyo OAC et al 2018. Bessler et al., (2007) conducted a study on factors influencing cervical cancer screening uptake among clinic attendees in Trelawny, Jamaica, and found that 42 percent of the study population were worried that their health provider would find cervical cancer if they did Pap smear test, 46 percent reported that pain related with the procedure was their primary concern, and 24 percent revealed that not obtaining the feedback result was the key reason why they were not interested in screening. Cervical cancer screening among Malaysian women

respondents indicated that 45% believed that cervical cancer screening would have impact on their virginity (Abotchie and shokar, 2009).

Further, the results indicated that 82.4 percent of women who underwent Pap smear test were extremely confident or absolutely confident that they could discuss Pap smear test effects with healthcare providers and as a result provider's attitude was not a barrier. Studies have found that women were more likely to undergo screening for cervical cancer if the service was being offered by a female provider. A report from a quantitative study indicated that women who were less concerned or didn't care about the health providers gender performing the screening had five higher chances of likelihood to have been screened in comparison to those who were concerned. Nonetheless, 78 percent of women who never had cervical cancer screening believed they could have Pap test done even though they were afraid it would be painful (74 percent vs. 57 percent) and that they could get pap smear test done even if they were afraid it would be embarrassing (49.6 percent vs. 22 percent) (Getan T, Kaba M, Dersah BT 2020). Ampofo AG et al, 2020, conducted a study on barriers of cervical cancer screening and found that pain, discomfort and embarrassment to undergo pelvic examination.Thus, fear of pain and lack of participation owing to shame were not issues among non-participant sub-group. Further, studies discovered that those who had never had Pap smear test had higher capabilities than those who had pap smear to reveal that they felt very confident that they could schedule for Pap test (87 percent vs. 84 percent) and that they would be most capable of rescheduling in case of a missed appointment (95.5 percent vs. 90 percent) (Leyva et al., 2006). This study reveals that provider attitude, procedure, pain, humiliation, and convenient clinic time were not factors among individuals who did not participate in screening tests for cervical cancer. Ndejjo et al conducted a study and reported that health care providers

had attitude and were rude when screening women. In a study conducted in Jamaica (2007) among Trelawney attendees reported that 18% of respondents who were never screened for cervical cancer said it was not important to do pap smear as it can only cause more anxiety if pap smear results turned positive. Studies conducted by Shoker (2009) and Ambodie indicated that almost half of the respondents reported that pap smear would have effect in their virginity. Humiliation was reported as a barrier by participants in studies done by (Getahun T, Kaba M, Derseh BT, 2020)

Lack of understanding the purpose of pap smear was the most significant predictor of low uptake. Uncertainty regarding the frequency of pap tests was another obstacle to screening uptake. The vast majority are unsure of what age a pap test is required. The majority of study participants, according to Ubah et al., 2022, had no understanding of what a pap smear was and had no notion how to get one. The fact that cervical cancer screening is not routinely taught during health education at the grassroots level in the same way that hypertension, malaria prevention, diabetes, danger signs in pregnancy, and nutrition are done may be the reason why the majority of people were unaware of this screening. The findings of a regional survey conducted in Ethiopia, which revealed that only 21% of the participants had good awareness of cervical cancer prevention, serve as additional support for this argument (Kifle et al., 2020). Women in Ibadan who participated in a qualitative study on awareness, perceptions, and variables influencing the use of cervical cancer screening services expressed that regular hospital discussions do not include teachings on the disease (Urasa, and Djay, 2011).

2.7 Health Belief Model

The Health Belief Model is one of the theoretical frameworks that is used to evaluate people's ideas about healthy behaviors. In order to determine why people did not use preventive health services, this model, which first appeared in the late 1950s, was employed as an exploratory model (Megan and Jacqueline, 2015). This theory holds that people are more likely to act if the potential advantages of doing so, such as getting a cervical cancer test, outweigh the potential risks (Megan, and Jacqueline, 2015).The decision to participate in health programs to prevent and deter disease is determined by several factors such as perceived susceptibility to the health condition, awareness of the impact of the disease on one's health, severity and benefits of undertaking screening methods, (Yacout SM,Moacued S, Gymeay EM, 2016). There have been no studies employing the health belief model in regards to cervical cancer screening to date.

2.7.1 Perceived Benefits of Cervical Cancer Screening

Although attitudes of healthcare professionals, accessibility, and cost are other significant drivers, perceived advantages to cervical cancer are a major factor that influences a woman's likelihoods to get cervical cancer screening (Ibekwe et al., 2010). The majority of women are aware that cervical cancer is a serious condition, and studies on the potential advantages of cervical cancer have not been carried out in many less developed nations. According to the health belief model, reaping the advantages of a behavior is one of the key elements in choosing to undertake proactive health behaviors.

It is a well-known phenomenon that knowledge does not necessarily convert into behavior, yet in most research contexts, better knowledge has been demonstrated to

boost uptake of cervical cancer screening. Cervical cancer screening has been known to be hampered by stigma, misconceptions and fear as well as lack of awareness on screening benefits. A knowledgeable target population is essential to the success of cervical cancer screening programs. This can be achieved by initiatives that enhance awareness of the programs, correct common misconceptions about them, and boost public acceptance of them. According to health belief model, adopting healthy behaviors leads to obtaining benefits of good health. Doctors might be capable of treating cervical cancer patients and save their life if cervical cancer is detected early. The reason provided by 41 percent of the selected women who did not engage in cervical cancer screening related programs was that they did not think they needed it. The same women who said they did not require cervical cancer screening often cited lack of symptoms as the reason (Ndejjo et al., 2017). A few 38% of female university students in South Africa reported that cervical cancer screening is used for prevention or detection of cervical cancer according to a survey on knowledge and attitudes regarding cervical cancer among female university students in South Africa (Hoque et al., 2014). Studies were conducted in Peru and EL Salvador to understand about perceived benefits by women who had Pap smear. Most of them reported peace of mind, 97 percent, especially if they test negative for cervical cancer, increased self-care since cervical cancer can detect changes in the cervix before they become cancerous in 67percent of cases and higher likelihoods of early detection and thus cervical cancer treatment in 83 percent of cases (Parmer S et al, 2010)

2.7.2 Perceived Susceptibility to Cervical Cancer

The Health Belief model was used in 1950's by scientists to predict health behavior. It is presumed that people who perceive to be vulnerable to an illness take preventive measures early in developed countries. In most developing countries, on the other hand, preventive measures are frequently regarded as a waste of time. The health belief model also shows that there is a direct influence on cervical cancer screening and knowledge. Knowledge and awareness of cervical cancer may influence beliefs and perceptions of women about cervical cancer and this may influence screening practices. It has also been indicated by studies that perceptions about benefits, susceptibility and perceived barriers have been linked to cervical cancer screening.

According to a study conducted by Foxall, Barron and Houfek (2011) among women in Finland on ethnic effect on body consciousness, perceived risk and trait anxiety, breast and gynecologic cancer screening techniques affect women of various ethnicity backgrounds differently. Breast and gynecologic cancer screening behaviors (excluding clinical breast examination), body awareness, trait anxiety, and perceived risk were all predicted by ethnicity. Breast self-assessment was more common among Hispanic and American Indian women than among Caucasian and African American women. The majority of women under the age of 40 (73%) felt that older women have higher risk of cervical cancer than they do, whereas 57 percent strongly disagreed or disagreed that each woman of childbearing age has a higher risk of being diagnosed with cervical cancer. Studies show that cervical cancer deteriorates among the elderly, their risk of having the disease increase as they grow older, mainly over 50 years of age (WANG J, et al 2017). A study conducted in (Wang J, et al 2017) on Muslim women about their health beliefs on screening for cervical cancer, found that most of the women strongly disagreed or even disagreed that the risk of cervical cancer

increases with number of pregnancies (68.8 percent). The women also strongly agreed or agreed that cervical cancer in most cases is found among HIV positive women (81.6 percent). There was a link between having many sexual partners and HIV positive, and the risk is greater (79.8 percent) among women with many sexual partners.

According to prior research, those who viewed themselves as being susceptible to an illness and believed they had risk factors for cervical cancer were more inclined to take precautions after contracting the condition (Baskaran et al., 2013). Previous research has supported the assumption that one is not at risk for cervical cancer as a justification for not getting Pap smear examinations (Rajkumar, 2012). The significance of high perceived vulnerability will affect how seriously people take the necessity of preventative measures. In a cross-sectional study of clinic patients in Trelawney, Jamaica, in 2007, 18% of women who had never undergone a Pap smear said that they did not feel the need to do so since doing so would just make them more anxious if the results were found to be suggestive of cervical cancer. Researchers Butho et al, 2015 found a significant prediction of papsmear uptake among married women that single women.

Also, according to Baskaran et al., 2013 there is no connection between reported barriers to cervical cancer screening and perceived susceptibility to cervical cancer. Hence, women's lack of participation in cervical cancer screening is not due to perceived susceptibility. This conclusion is corroborated by earlier research, which indicated that despite strong perceived benefits and no relationship between perceived vulnerability and screening obstacles for cervical cancer, respectively (Boonpongmanee and Jittanoon, 2007). This result fundamentally contradicts earlier

research, which found that perceptions of vulnerability, severity, benefit, and barriers to screening for cervical cancer are important determinants of screening (De Abreu C, et al 2013).As a result, while majority of women are informed that cervical cancer screening detects the disease early, they do not consider themselves as susceptible if they don't have symptoms or a cervical cancer family history according to the studies. A majority felt that cervical cancer risk is higher in older women, those who have multiple sexual partners', early sexual debut as well as those who are HIV positive. Most of the respondents did not believe that the risk of cervical cancer increases with parity and that women of reproductive age are at risk. Moreover, knowledge on these risk factors influences how each woman perceives her vulnerability to cervical cancer, however it has to be explored whether this affects participation in screening programs for cervical cancer, particularly in underdeveloped countries like Kenya.

2.8 Conceptual Framework

Figure 1 shows the relationship between independent variables (socio-demographic factors, perceived susceptibility, perceived benefits and perceived barriers), the dependent variable (cervical cancer screening uptake).

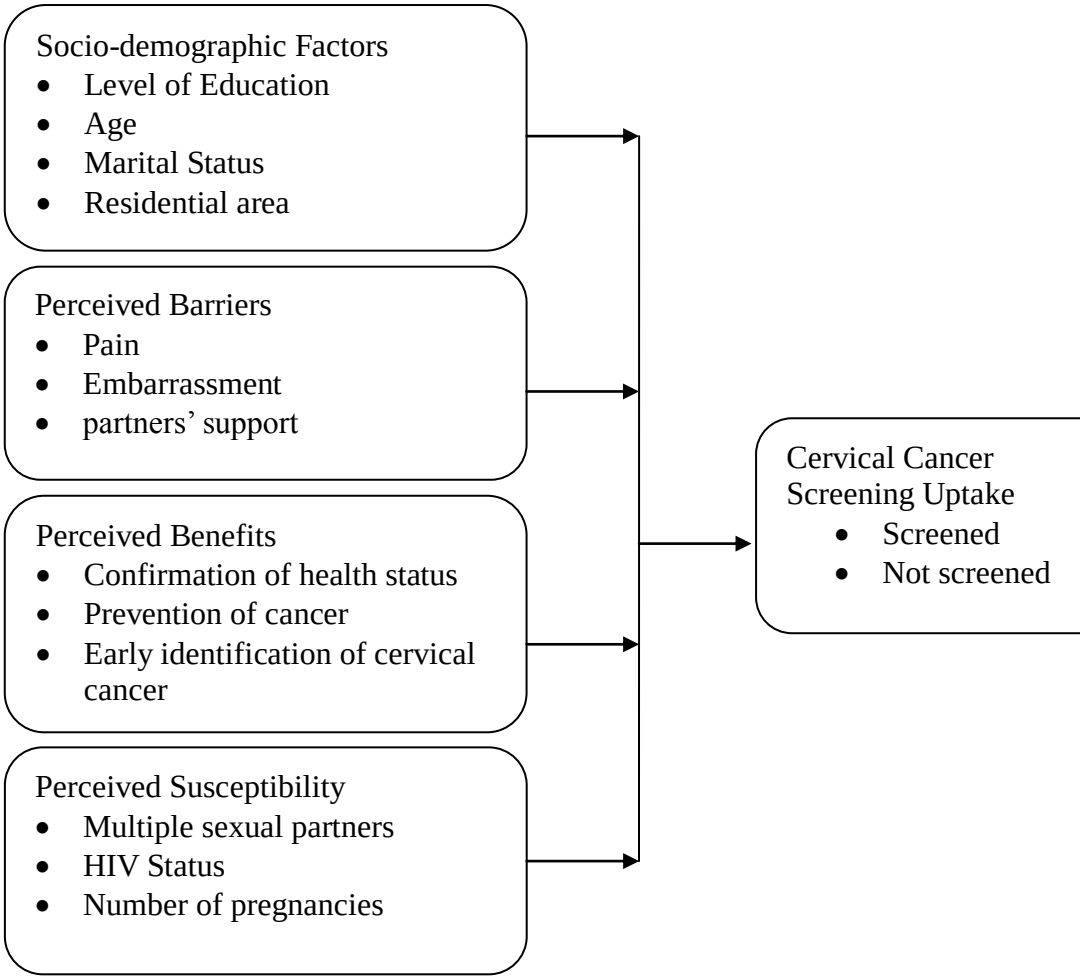

Figure 1: Conceptual Framework

Source: Champion skinner 2008

CHAPTER THREE

3.0 METHODOLOGY

3.1 Introduction

This chapter covers the following; study site, study population and study design. It also covers exclusion and inclusions. It includes information about the study variables, as well as describing how and where pre-test was conducted. It also includes the study variables and information on data collection methodology.

3.2 Study site

The study was conducted in Machakos County Referral Hospital Family Planning Clinic. The hospital is based in Machakos County, Eastern part of Kenya. In Machakos County, it's only two public health amenities that offer cervical cancer screening services. Approximately 700 women visit family planning clinic monthly and roughly 23 women visit in a day.

Machakos County Referral Hospital provides cervical cancer screening cervices but the screening uptake is very low. The hospital has less skilled workers that offer cervical cancer screening services. Studies conducted by Agnes Wavinya Nzioka et al in Machakos level 5 County hospital have shown that healthcare workers who had certificate and diploma were less likely to utilize cervical cancer screening as compared to healthcare workers who had attained postgraduate studies. Further, literature has indicated that lack of relevant and timely knowledge about cervical cancer in the population and among health care workers is a prime barrier for access to cervical cancer. The fertility rate in Machakos County is high with women giving birth between five to ten children. Cervical cancer is related to multiple sexual partners. Around 1.5% (10%) million Kenyans of married population are in polygamous marriage according to Kenya population and housing census. Also most

of the people of the communities in Machakos County are polygamous with men married to more than one wife. Poverty levels are high in Machakos County and unemployment is high especially among the youth as published by International Journal of Science and Research (IJSR, Volume 10 Issue 4, April 2021.

3.3 Study population

The study target population was women aged 18 years to 49years attending a family planning clinic for family planning services in Machakos County Referral Hospital in Kenya.

3.4 Study design

The study design was cross-sectional. This design was preferred since it obtains diverse information about women attitudes and habits associated to cervical cancer. The study enabled the researcher to gather information on women attending Machakos County Referral Hospital at certain points in time.

3.4.1 Sample size determination

Sample size calculation is a complex problem but based on the work of Peduzzi et al (1996), the following guideline for a minimum number of cases to include in the study was suggested.

Let p be smallest proportions of the positive or negative cases in the study population while k is covariates (number of independent variables).

P=21.3% (0.213)

K=4,

The formula for minimum number to include is:

N=10k/p

=10*4/0.213

=187

n=187

The calculated sample size for this study was 187. However, sample size was added by 10% which totaled to 206 to cater for those who refused to take part in the interview. A prevalence rate of 21.3% was taken from a similar study done in Moshi Tanzania (Lymo and Beran, 2012).

3.3.2 Sampling technique

Systematic sampling method was used in sampling study participants and every woman had an equal chance of being selected to participate in the study. An interval was calculated by dividing approximate number of women visiting the clinic monthly by the sample size (700/206=3.3). It was found that every third woman will be selected to represent the sample population. This was being done by counting the women according to the order of arrival at the clinic who met eligibility criteria and consented to take part in the study.

3.5 Inclusion criteria

Women aged 18 years to 49 years who came to Machakos County Referral Hospital for family planning services were included in the study.

3.6 Exclusion criteria

All women of reproductive age, (18-49) years who declined to give consent, were excluded from the study. The study also excluded all women who had not resided in Machakos County for 1 year and above.

3.7 Study Variables

Dependent variables

Cervical cancer screening uptake (screened, and not screened)

Independent variables

- Socio-demographic factors (education level, age, marital status as well as residential area)
- Perceived susceptibility (multiple sexual partners, HIV Status and number of pregnancies)
- Perceived benefits (Confirmation of health status, prevention of cancer and early identification of cervical cancer)
- Perceived barriers (pain, embarrassment of positive result and lack of partners' support) to cervical cancer screening

3.8 Pre-test of Instruments

Pilot test was done at Pumwani Maternity Hospital to test the research instruments using a pilot group of 20 individuals (10% of the sample size). Pumwani Maternity Hospital offers similar services like Machakos County Referral Hospital and receives a similar kind of clientele. The purpose of pre-test was to ensure the validity and reliability of the data collection tools. To ensure validity of the research tools, the exercise was used to make adjustments, clarifications, ideas, and highlight omissions. To ensure validity of research instrument, the questionnaire was structured as per objectives of the study. The questionnaire was given to the experts in the field of study (supervisors) for review. During the interview date, the Research Assistant and the principal investigator keenly identified the eligible respondents. The research

Assistant created rapport and read the consent form to the participant. The researcher also did a back check to ensure that no questions were skipped.

The data was collected using interviewer administered questionnaire. The research instruments' reliability was assessed by using internal consistencies of the responses obtained during the pilot test. This was measured using Cronbach's alpha. Since average Cronbach's alpha (0.872) was higher than the recommended (0.7), the research instrument was considered reliable. The results from the pilot test results showed that the Cronbach's alpha for perceived benefits was 0.891, perceived barriers had Cronbach's alpha of 0.849, perceived susceptibility had Cronbach's alpha of 0.823 and socio-demographic characteristics had Cronbach's alpha of 0.781. Results show that the constructs were available.

Table 1: Cronbach's alpha

Variable	Cronbach Alpha
Perceived benefits	0.891
Perceived barriers	0.849
Perceived susceptibility	0.823
Socio-demographic characteristics	0.781
Average	**0.824**

3.9 Data Collection

The researcher trained the research assistant on how conduct the interviews and complete research tools. They did a role-play and went through the entire process to be followed while completing questionnaires for the respondent

Data was collected using interviewer-administered questionnaire. The questionnaire entailed six parts that assessed socio-demographic characteristics, participation in cervical cancer screening programs, perceived susceptibility of cervical cancer, perceived benefits of cervical cancer screening and perceived barriers to seeking screening services. Respondents were interviewed in the screening rooms in out-

patients' family planning clinic while waiting for consultation. Each interview took an average, 20-25 minutes. The questions were translated to kamba language to allow the respondent to understand the questions better. However, during data entry, the questions were translated to English language to ensure there was no loss of meaning.

3.10 Data Management and Analysis

Data were coded and then entered into SPSS version 20 for purposes of analysis. Relative and absolute frequencies (% and N) were acquired for distributions of selected variables. All analysis was used in comparing women who had ever had "cervical cancer screening" with women who had never had "cervical cancer screening". To test for the association between socio-demographic factors, perceived susceptibility, perceived benefits and perceived barriers and cervical cancer screening uptake, an association using odds ratio with corresponding 95% confidence was calculated. The constructs: susceptibility benefits and barriers scale had 29 items contained in 4 subscales: perceptions of susceptibility (6 items), benefits (5 items), and barriers to cervical cancer screening (12 items). Each item was scored using a 5-point Likert-type scale ranging from strongly agree (5) to strongly disagree (1). Negatively worded questions had their scales reversed.

In order to analyze associations, the total scores, average and percentage were generated for each construct. A score of 75% and above was considered higher and less than 75% was considered as a low score. Data was coded stored, password protected and backed up on alternative secure storage media.

3.11 Ethical considerations

The Moi University Research and Ethics Committee ensured Ethical considerations for conducting the study were followed prior to conduct the study. Permission to

conduct the study was sought from the Ministry of Health, Kenya and Machakos County Referral Hospital Management before conducting the study. To obtain this permission, the researcher visited the management of Ministry of Health at upper-hill Nairobi and Management of Machakos County Referral Hospital in the facility. The participants consented by appending a written signature. Personal information was not included in the questionnaires, and this ensured participants' anonymity was protected at all times.

The respondents were given information of the purpose of the study and requested to participate in the research out of their own volition. They had the right to withdraw from the study any time they felt like without penalty. Only those who agreed to take part were involved during the study. Information collected in the questionnaires was kept confidential. Respondents had a right of refusing to divulge any personal details that may reveal their identity. The information was used by Moi University for only academic purposes.

CHAPTER FOUR

4.0 RESULTS

4.1 Introduction

This section presents the findings as per the study objectives. The main objective of this study was to determine the factors associated with cervical cancer screening uptake among women attending Machakos County Referral Hospital. The chapter is divided in to six main sections. Section one presents socio demographic characteristics of participants. Section two covers the findings on first objective, which was to determine the level of uptake of cervical cancer screening at Machakos County Referral Hospital. Section three presents result on the socio-demographic factors influencing cervical cancer screening among women attending Machakos County Referral Hospital. Section four presents result on perceived susceptibility to cervical cancer. Section five presents result on perceived benefits of doing cervical cancer screening. Last section presents result on perceived barriers to cervical cancer screening uptake in Machakos County Referral Hospital.

The study sample size was 206 women attending family planning clinic for family planning services in Machakos County Referral Hospital in Kenya, out of which 200 responses were obtained. This gives a response rate of more than 97.08%. A response rate of 70% and above is excellent, 60% to 69% is good, while 50% and above is adequate for analysis and reporting according to Norman and Streiner (2008).

4.2 Level of Uptake of Cervical Cancer Screening

From the results, (41) 20.5% 95% CI [15.0-26.5]) of the women attending family planning clinic for family planning services in Machakos County Referral Hospital in Kenya had been screened for cervical cancer. The majority of the study respondents (179) 79.5% had not been screened

Table 2: Level of Uptake of Cervical Cancer Screening

	Frequency	Per cent	Bootstrap for Percent[a]	
			Std. Error	95 percent Confidence Interval
				Lower
Yes	41	20.5	2.9	15.0
No	159	79.5	2.9	73.5
Total	200	100.0	.0	100.0

a. The bootstrap results are based on 1000 bootstrap samples unless otherwise stated.

Of the participants who had been screened for cervical cancer, (33),80.9% had been screened in the last three years while (4),19.5% were screened more than three years ago.

4.3 Social demographic characteristics

As shown in Table 2, the average age was 28.6 and the standard deviation was 6.836. Most of the participants were in marriage (78.5%), while 21.5% were single. Majority had secondary and post secondary education (41% and 32%) respectively while a few (27%) had primary education levels. Most of the women were unemployed (55.5%), 27% were employed while17.5% were self employed. Majority of respondents were living in urban areas (36.5), 34.5% in rural and 29% in Peri-urban areas .

Table 3: Socio-demographic Characteristics

Categories	Frequency (n=200)	Percent (%)	STD Deviation
Marital Status			6.836
Married	157	78.5	
Not Married	43	21.5	
Level of Education			
Primary	54	27.0	
Secondary	82	41.0	
Post-Secondary	64	32.0	
Employment Status			
Unemployed	111	55.5	
Employed	54	27.0	
Self Employed	35	17.5	
Residence Area			
Urban	73	36.5	
Peri Urban	58	29.0	
Rural	69	34.5	

As shown in Table 4, socio demographic characteristics did not significantly affect the level of cervical cancer screening uptake: A participants age whether young or was not significant for screening uptake, (p-value=0.600); Of all 41 women who had been screed, majority (34) 19.9% were aged <35 years old. Marital status was not associated with screening (p-value=0.439) and majority (34) 21.7% of those who had been screened were not married. Level of education was not significant (p-value=0.349); majority of those who had been screened had either primary education level 25.9% or post secondary education level 21.9%. Majority among those who had been screened were self employed followed by those who were unemployed and employed (25.7%, 24.1%, 17.1%) respectively; (p-value=0.413). Women who resided in rural areas had the highest number of screened women (21.7%) followed by those living in urban and peri urban areas 20.5%, 19% respectively; (p-value=0.928).

Table 4: Socio-Demographic Factors and uptake of Cervical Cancer Screening

Variable	Pap smear test n (%)		OR(95%CI)	*p* value
	Screened	Not Screened		
Age Bracket				.600
Below 35 Years	34(19.9)	137(80.1)	*ref.*	
Above 35 Years	7(24.1)	22(75.9)	1.282(0.506-3.249)	
Marital Status				.439
Not Married	34(21.7)	123(78.3)	*ref.*	
Married	7(16.3)	36(83.7)	5.143(0.288-1.720)	.
Level of Education				.349
Primary	14(25.9)	40(74.1)	*ref.*	
Secondary	13(15.9)	69(84.1)	0.800(0.342-1.871)	.607
Post-Secondary	14(21.9)	50(78.1)	1.486(0.643-3.436)	.354
Employment Status				.413
Unemployed	19(17.1)	92(82.9)	*ref.*	
Employed	13(24.1)	41(75.9)	1.676(0.678-4.142)	.263
Self-employed	9(25.7)	26(74.3)	1.092(0.409-2.914)	.861
Residential Area				.928
Urban	15(20.5)	58(79.5)	*ref.*	
Peri urban	11(19.0)	47(81.0)	1.074(0.480-2.405)	.862
Rural	15(21.7)	54(78.3)	1.187(0.497-2.835)	.700

4.4 Perceived barriers to cervical cancer screening

The participants were requested to state their agreement level with various statements in regard to perceived barriers to cervical cancer screening. From the study findings, 42% (84) of the participants agreed that cervical cancer screening is painful. Majority, 81% (162) of the participants disagreed with the statement that everyone will think if a young unmarried woman does cervical cancer screening, she is having sex. Most (138), 69% of the participants disagreed that cervical cancer screening will make one worry. The results also show that (98), 49% of the participants disagreed that cervical cancer screening will take away a woman's virginity if she has never had sex. A substantial (137), 68% of participants stated that the reasons why women don't go for cervical cancer screening is because they don't know where screening services are offered. Majority (187), 93.5% of the participants strongly disagreed that cervical cancer screening is only for women who had children. Further, (183), 91.5% of the participants reported that their spouse will not want them to do cervical cancer screening

From the results, only 20% of women stated lack of female health screeners at health institutions as a reason why women don't go for cervical cancer screening. A total of (147) 73.5% of the participants disagreed that lack of knowledge about cervical cancer screening protocols is a barrier to screening uptake. Further, (146) 73% of the participants disagreed with the statement that lack of finances to pay for cancer screening test is a major reason for not going for cervical cancer screening. The results indicate that (164), 82% of the participants did not agree with the statement that health providers are moody while screening women for cervical cancer and therefore that was not a reason why women were reluctant to seek for the services. Where A represents Agree, NS represents Not Sure and D represents Disagree.

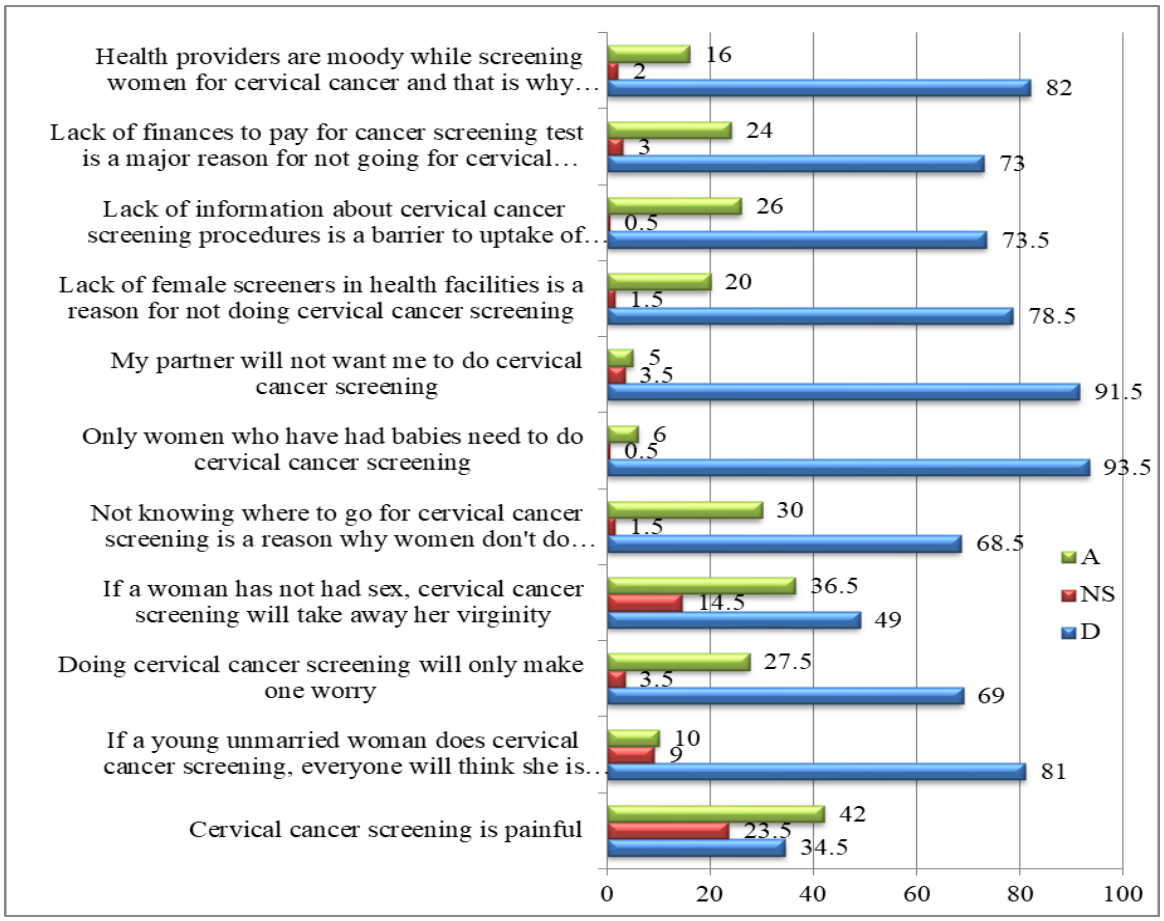

Figure 2: Perceived barriers to cervical cancer screening

According to the results, the belief that cervical cancer screening is painful has a significant effect on cervical cancer screening among women (p-value=0.021). Cervical cancer screening will make one anxious and lack of information about cervical cancer screening were not predictors to cervical cancer screening; (p-value=0.914) (AOR=0.626, 95% 0.073-5.142), (0.792) (AOR=0.899, 95% 0.406-1.990). The following beliefs were not significant for cervical cancer screening uptake: Cervical cancer screening will only make a woman anxious (p-value=0.914); Cervical cancer screening will take away woman's virginity if she has never had sex were screened; OR=0.423(0.117-1.535), (p-value=0.459);.Among women who disagreed that women do not go for cervical cancer screening because they don't know where to access it, (110) 79.1% were not screened for cervical cancer; OR=0.948(0.446-2.014), p-value=0.890; Majority among participants who disagreed that their partners would not allow them to do cervical cancer screening, 149 (79.3) were not screened;OR=1.047(0.214-5.129),p-value=0.955; Majority (129) 80.6.3% of the unscreened participants agreed that lack of female screeners in health institutions is a reason why women do not go for cervical cancer screening, OR=0.721(0.319-1.630), p-value=0.432; Of (152) of the unscreened participants who disagreed with the opinion that lack of information about cervical cancer screening procedures is a barrier to screening, only 32 were screened while majority 117 were not, OR=0.899 (0.406-1.990), p-value=0.792; A few (9) of the screened participants reported that lack of finances to pay for cancer screening test is a major cause for not undertaking cervical cancer screening, OR=0.742 (0.084-6.585)(p-value=0.7308; Majority, (137) 81.5% of the unscreened women were contrally to the opinion that health providers mood while screening women for cervical cancer is a reason why women are reluctant to seek for screening services, 0.498, (0.214-1.157), p-value=0.105. 120 of

participants who reported that lack of information about cervical cancer screening procedures was not a barrier to uptake of cervical cancer screening were not screened; (OR=0.899, 95% CI=0.406-1.990), p-value=0.792

Table 5: Perceived Barriers and Cervical Cancer Screening

	Pap smear test n (%)		**Adjusted OR(95%CI)**	***p* value**
	Screened	**Not Screened**		
Cervical cancer screening is painful				
Disagree	17(15.0)	96(85.0)	*ref.*	
Agree	24(28.6)	60(71.4)	0.072(0.009-0.564)	0.021
If a young unmarried woman does cervical cancer screening, everyone will think she is having sex				0.944
Disagree	37(20.7)	142(79.3)	*ref.*	
Agree	4(20.0)	16(80.0)	0.753(0.2060-2.752)	0.944
Doing cervical cancer screening will only make one worry				0.914
Disagree	30(20.7)	115(79.3)	*ref.*	
Agree	11(20.0)	44(80.0)	0.626(0.073-5.412)	0.914
If a woman has not had sex, cervical cancer screening will take away her virginity				0.459
Disagree	24(18.9)	103(81.1)	*ref.*	
Agree	17(23.3)	56(76.7)	0.423(0.117-1.535)	0.459
Not knowing where to go for cervical cancer screening is a reason why women don't do cervical cancer screening				0.890
Disagree	29(20.9)	110(79.1)	*ref.*	
Agree	12(20.0)	48(80.0)	0.948(0.446-2.014)	0.890
Only women who have had babies need to do cervical cancer screening				0.360
Disagree	39(21.3)	144(78.7)	*ref.*	
Agree	2(11.8)	15(88.2)	2.031(0.445-9.262)	0.360
My partner will not want me to do cervical cancer screening				0.955
Disagree	39(20.7)	149(79.3)	*ref.*	
Agree	2(20.0)	8(80.0)	1.047(0.214-5.129)	0.955
Lack of female screeners in health facilities is a reason for not doing cervical cancer screening				0.432
Disagree	31(19.4)	129(80.6)	*ref.*	
Agree	10(25.0)	30(75.0)	0.721(0.319-1.630)	0.432

Lack of information about cervical cancer screening procedures is a barrier to uptake of cervical cancer screening				0.792
Disagree	31(20.9)	117(79.1)	*ref.*	
Agree	10(19.2)	42(80.8)	0.899(0.406-1.990)	0.792
Lack of finances to pay for cancer screening test is a major reason for not going for cervical cancer screening				0.730
Disagree	32(21.1)	120(78.9)	*ref.*	
Agree	9(18.8)	39(81.2)	0.742(0.084-6.585)	0.730
Health providers are moody while screening women for cervical cancer and that is why women are reluctant to seek for the services				0.105
Disagree	31(18.5)	137(81.5)	*ref.*	
Agree	10(31.2)	22(68.8)	0.498(0.214-1.157)	0.105

4.4.1 Perceived benefits of doing cervical cancer screening

The participants were requested to rate their level of agreement with various statements in regard to perceived benefits of cervical cancer screening. From the findings, 98% (196) the participants indicated that cervical cancer screening is critical for determining whether a woman is healthy or not. In addition, (190) 95% of the participants indicated that cervical cancer screening can detect cervical changes before they progress to cancer. Further, (188) 94% agreed that cervical changes can easily be treated if detected early via cervical cancer screening. (136) 68% of the participants believed that cervical cancer screening cannot increase a woman's chances of becoming pregnant if she is infertile. The results show that (106) 53% of the participants disagreed that cervical cancer screening can reduce a woman's likelihood to have an abortion.

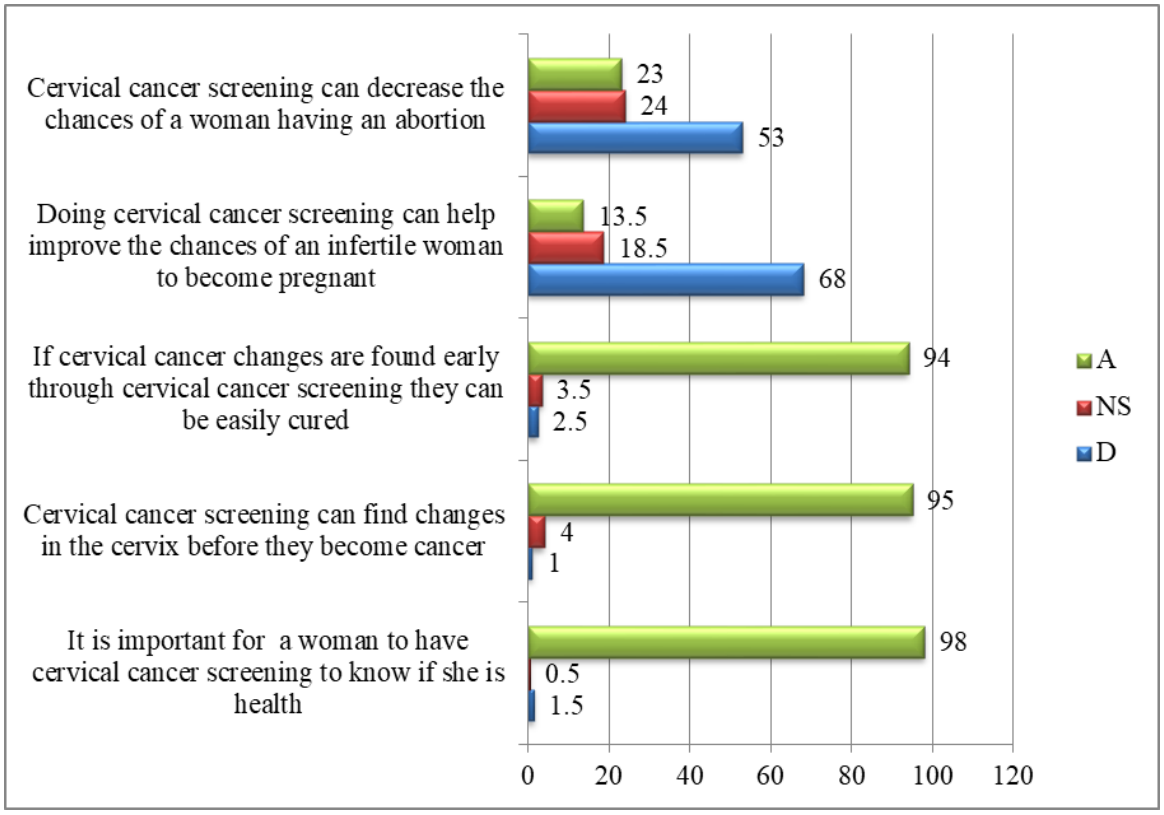

Figure 3: Perceived benefits of cervical cancer screening

Perceived benefits for cervical cancer screening had no significant effect on cervical cancer screening. This include; cervical cancer screening is critical for determining whether a woman is healthy (p-value=0.822); Among (196) participants who responded that it is critical to screen for cervical cancer, only (40) 20.4% were screened. Cervical cancer screening can detect cervical alterations before they progress to cancer (p-value=0.117); (37) 19.5% out of 190 women who stated that cervical screening can detect alterations before they progress to cancer, were not screened. Cervical changes can easily be treated if it is detected early via cervical cancer screening (p-value=0.350); Only one among the screened women disagreed that cervical cancer can be treated if detected early. Cervical cancer screening can increase a woman's chances to get pregnancy if she is infertile (p-value=0.812); (35) 20.2% of 41 who were screened for cervical cancer were contrally to the opinion that cervical cancer screening can increase a woman's chances to get pregnancy if she is

infertile (p-value=0.812); Cervical cancer screening can reduce a woman's likelihood to have an abortion (p-value=0.843); Majority (121) 79.1% among participants felt that cervical cancer screening cannot reduce a woman's likelihood to have an abortion; And doing cervical cancer screening is embarrassing (p-value=0.440). On the other hand, (36) 22.1% among participants who were screened reported that cervical screening is not embarrassing.

Table 6: Perceived Benefits and Cervical Cancer Screening

	Pap smear test n (%)		**OR(95%CI)**	***p* value**
	Screened	**Not Screened**		
It is important for a woman to have cervical cancer screening to know if she is health				0.822
Disagree	1(25)	3(75)	*ref.*	
Agree	40(20.4)	156(79.6)	0.769(0.078-7.594)	0.822
Cervical cancer screening can find changes in the cervix before they become cancer				0.117
Disagree	4(40.0)	6(60.0)	*ref.*	
Agree	37(19.5)	153(80.5)	16154(0.000)	0.117
If cervical cancer changes are found early through cervical cancer screening, they can be easily cured				0.350
Disagree	1(9.1)	10(90.9)	*ref.*	
Agree	40(21.3)	148(78.7)	0.370(0.046-2.977)	0.350
Doing cervical cancer screening can help improve the chances of an infertile woman to become pregnant				0.812
Disagree	35(20.2)	138(79.8)	*ref.*	
Agree	6(22.2)	21(77.8)	0.411(0.135-1.249)	0.812
Cervical cancer screening can decrease the chances of a woman having an abortion				0.843
Disagree	32(20.9)	121(79.1)	*ref.*	
Agree	9(19.6)	37(80.4)	0.340(0.122-0.947)	0.843
It is too embarrassing to do cervical cancer screening				0.440
Disagree	36(22.1)	127(77.9)	*ref.*	
Agree	4(15.4)	22(84.6)	0.641(0.208-1.981)	0.440

4.4.2 Perceived Susceptibility to Cervical Cancer

The participants were requested to specify their agreement level with various statements in regard to perception about susceptibility to cervical cancer. Where A represents Agree, and D represents Disagree. From the findings, as shown in Table 6, (80) 40% of the participants disagreed with the statement that older women have a higher risk of cervical cancer than younger women. Of (156) 78% of the participants who agreed that cervical cancer affects every woman of childbearing age, only (32) 20.5% had been screened. 85% (170) who agreed that cervical cancer is more common in women with many sexual partners, only (37) 20.9% were screened. Futher, (89) 44.5% of the participants disagreed with the statement indicating that cervical cancer is more common among HIV-positive women. It was further observed that many of the respondents 42% were not sure whether cervical cancer is more common to HIV positive women or not. Our findings show that (91) 45.5% of the participants were not sure whether cervical cancer risk increases with parity and only 18, (19.8%) of them had been screened, while among those who agreed, only 10, (18.9%) had been screened. In addition, (105) 52.5% of the participants disagreed with the statement indicating that cervical cancer affects women aged only 50 years and above. Of (36%) of the respondents who reported they were not sure whether cervical cancer affects women above age 50 and above, 13 (18%) were screened for cervical cancer; while (23) of those who agreed with the statement, only (3), 13% had been screened.

Table 7: Perception about Susceptibility to Cervical Cancer

		Frequency (n=200)	Percent (%)
Older women are more at risk of cervical cancer than young women	A	159	79.5
	NS	41	20.5
	D	80	40.0
Every woman of child bearing age is at risk of cervical cancer	A	156	78.0
	NS	26	13.0
	D	18	9.0
Women with multiple sexual partners are more prone to cervical cancer	A	170	85.0
	NS	12	6.0
	D	18	9.0
Cervical cancer is more common to women who are HIV positive	A	27	13.5
	NS	84	42.0
	D	89	44.5
Susceptibility to cervical cancer increases with number of pregnancy	A	53	26.5
	NS	91	45.5
	D	56	28.0
Cervical cancer only affects women who are 50 years and above age 50	A	23	11.5
	NS	72	36.0
	D	105	52.5

From the findings, as shown in Table 8, there was no association between perceived susceptibility and cervical cancer screening uptake. In addition, perceived susceptibility predictors had no significant effect on cervical cancer screening: Cervical cancer is more common in older women than in younger women, OR=0.280 (0.089-0.878),(p-value=0.122); Cervical cancer affects women with many sexual partners; (p-value=0.710); Cervical cancer is more common among HIV-positive women (p-value=0.400); Cervical cancer risk increases with the number of pregnancies OR=1.060 (0.449-2.505), (p-value=0.832),; Cervical cancer only affects women aged 50 years and above, , OR=1.469, (0.379-5.689), (p-value=0.416)

Table 8: Perceived Susceptibility and Cervical Cancer Screening

	Pap smear test n (%)		OR(95%CI)	*p* value
	Screened	Not Screened		
Older women are more at risk of cervical cancer than young women *				**0.122**
Disagree	19(15.7)	102(84.3)	*ref.*	
Agree	22(27.8)	57(72.2)	0.280(0.089-0.878)	0.122
Every woman of child bearing age is at risk of cervical cancer				**0.809**
Disagree	9(20.5)	35(79.5)	*ref.*	
Agree	32(20.5)	124(79.5)	0.833(0.190-3.655)	0.809
Women with multiple sexual partners are more prone to cervical cancer				**0.710**
Disagree	4(22.2)	14(77.8)	*ref.*	
Agree	37(20.9)	140(79.1)	0.700(0.107-4.594)	0.710
Cervical cancer is more common to women who are HIV positive				**0.400**
Disagree	15(16.9)	74(83.1)	*ref.*	0.403
Agree	5(18.5)	22(81.5)	1.644(0.782-3.457)	0.189
Not sure	21(25.0)	63(75.0)	1.467(0.493-4.360)	0.491
Susceptibility to cervical cancer increases with number of pregnancy				**0.832**
Disagree	13(23.2)	43(76.8)	*ref.*	0.832
Agree	10(18.9)	43(81.1)	0.816(0.364-1.827)	0.620
Not sure	18(19.8)	73(80.2)	1.060(0.449-2.505)	0.894
Cervical cancer only affects women who are 50 years and above				**0.416**
Disagree	25(23.8)	80(76.2)	*ref.*	0.423
Agree	3(13.0)	20(87.0)	0.705(0.333-1.492)	0.361
Not sure	13(18.1)	59(81.9)	1.469(0.379-5.689)	0.578

CHAPTER FIVE

5.0 DISCUSSION

5.1 Introduction

This chapter provides discussions on cervical cancer screening uptake and social demographic characteristics and barriers on utilization of cervical cancer screening. It also covers the benefits and perceived susceptibility to cervical cancer and cervical cancer screening uptake.

5.2 Proportion of cervical cancer screening

Despite screening Kenya having surveillance programs for cervical cancer screening, screening rates among women of reproductive age at Machakos County, in Kenya are still low. Our results showed that 20.5% of participants attending family planning clinic in Machakos County Referral Hospital had been screened for cervical cancer. Out of that only, 19.51 % were screened in the last 3 years. The screening programme in Kenya recommends screening every 5 years except for HIV positive females.

This is below the 25% and 15%reported by National cervical cancer program action plan 2005-2009 for the National coverage per district irrespectively. The findings are similar to reports by a study on knowledge attitude practices (KAP) done in Kenyatta National hospital which reported a past pap smear screening at 22%. Our findings demonstrated relatively low uptake of screening. The coverage of cervical cancer in Kenya is female (25-49) years although it can be offered to women beyond this ages. The screening uptake is similar to screening outcomes reported in Kuwait, 22.2%, Jamaica, 21.9%, and Turkey21%, respectively by Isik G, et al 2016.In contrast, cervical cancer screening in is much higher in developed countries at 93% in USA and 72% in the UK.

The outcome of the screening is low following WHO targets to have each country conduct screening tests at 90% of its population yearly. This also does not conform with article 43 of the Kenyan constitution 2010 which guarantees every person should attain the highest standard of health. The findings of our study slightly agree with Ngugi et al (2012) findings that only 17.3% of women had undertaken cervical cancer screening. The findings also comply with what literature's in different parts of the world have reported; For example, Sing et al conducted a study and found that only 7.3% of female interviewed in Delhi had ever done pap smear test before among females visiting the health facility. In addition, only 18.1% of respondents had ever had a pap smear in Sri lanka according to Shivanthan et al. Another study among Turkish women reported that 73% of the respondents had never been screened for cervical cancer before. On the other hand, a study by Wright reported that only 5.1% of female in Lagos had ever had Pap smear test done in Nigeria

5.3 Social demographic characteristics and Cervical Cancer Screening Uptake

Lack of screening programmes indicates that a government has poor support for to healthcare which leads to low screening due to lack of awareness and health promotion activities. Factors that could determine the uptake of cervical cancer screening were explored; age, marital status, employment, perception to cervical cancer and barriers. Our study findings show that socio-demographic factors on cervical cancer screening uptake were not significant predictors. Women age was not a significant predictor in screening behavior, (OR=1.282, 0.506-3.249). This contradicts with studies conducted by Shesha et al in Nepal (p=0.013) Hyacinth et al in North central Nigeria (p=0.01), Esin et al in Turkey (p=0.000) and morema et al in Kenya ($p<0.0001$) which could have been attributed by screening campaigns being

successful enough to involve women of all age groups. Also office for National statistics 2011 in Britain on socio demographic and attitudinal correlates of self-reported cervical cancer screening uptake on national sample reported age and completed level of education as significant on multivariate analysis. Uptake was lowest among singles and widowed women and highest among married, women in higher occupational clubs had higher likelihoods of screening compared to female in lower clubs. Married women and those who are sexually active are encouraged to get screened for cervical cancer at least once in every three years and for those with multiple partners at least once a year. Our findings show that marital status for women whether married or single was not a predictor for cervical cancer screening uptake and thus, there was no difference in screening regardless of whether a woman was married or not married. The findings were contrary to Lee, Park and Chang (2018) findings that married women were more likely to undertake cervical cancer screening as compared to single and widowed. The findings contradicted with Butho el al.; (2015) findings who reported that married women in Portland and Jamaica had two times higher chances to have had pap smear test done compared to single women. Also the study outcome did not confer with Butho et al, 2015 survey who reported that marital status was a significant predictor of cervical cancer screening uptake and that pap smear was more beneficial in married women than in single.. In addition, education level status of the women did not affect cervical cancer screening uptake significantly. People who are educated are expected to be more exposed to information and also have knowledge about taking care of themselves and as a result have regular visit to health facilities for self-care and screening services. Education has been associated with increased knowledge in matters to do with health and behaviors. Studies have shown that having more educated women can contribute to sharing information and

creating awareness to lower educated women within their social set ups hence making them to access health care services. This study revealed that there was no significant difference in screening status among those who had low level of education as compared to those who had higher education levels. These findings did not reflect the findings of Peng P, et al, 2013 that women with lower education levels, those who are unemployed, those who have never been married, and those living away from the city were more likely to underutilize services related with Pap smear screening. The findings were also contrary to Woldetsadik, Amhare and Bitew (2020) findings that the level of education was an important predictor for low utilization of cervical cancer screening practice. Although 65.1% of female interviewed in Gabon had done pap smear test before as reported by Assoumou et al, the difference in the socio economic characteristics of the respondents could have attributed the higher figure in Gabonese study; 63% of respondents were graduates and 51.6% had employment. This is contrally to majority of the respondents in the current study who were of lower socioeconomic class. This shows that majority had no university education and were unemployed. People who are employed are expected to have better access to health information which could enhance them to take appropriate actions towards their health. Having an income can facilitate one with transport to go for health care services as well as screening services. Also women employment has been shown to affect cervical cancer screening positively. Lower screening uptake among unemployed and poor women is contributed by financial burden and has been shown as a barrier to participation in cervical cancer screening services. This contradicted our study findings which revealed that employment status whether (employed, self-employment and unemployed) have no significant effect on cervical cancer screening uptake. The findings are contrary to Broberg, Wang and Nemes (2018) findings that

employment status and low disposable family income affect cervical cancer screening uptake. Aniebue, and Anuebie 2010 reported that 34% of participants didn't know where to go for cervical cancer screening tests. Information is mostly available among to those who live close to cities or urban centers and are more likely to utilize screening services due to increase in knowledge awareness and availability of screening services. A geographical set up is also associated with healthcare seeking behavior and that women who reside in urban centers are likely to have access to awareness Programmes on pap smear testing and health facilities. A study in South Africa reported that women in Western Cape province were found to have undertaken pap smear more compared to women from Limpopo province, SDHS 2016. Another study in Kenya reported that the prevalence of any type of cervical cancer is higher among women who were living in Central Nyanza regions and the prevalence of pap smear test was higher in Nairobi regions. This variation could have been attributed by the fact that Central Nyanza and Nairobi regions have higher socioeconomic status and have easier access to healthcare services.

Our study findings were contrary to those findings, and the place of residence whether (urban, pre-urban or rural) had no significant effect on cervical cancer screening uptake. The findings were also contrary to Woldetsadik, Amhare and Bitew (2020) findings that place of residence was an important predictor for low utilization of cervical cancer screening practice.

5.4 Perceived barriers to cervical cancer screening

The findings of this study indicated that most of the women believed that cervical cancer screening is painful and hence it hindered their participation in cervical cancer screening (40%). The findings are contrary to Leyva *et al*., (2006) findings that among non-participant sub-group, fear as a result of pain was not a challenge. Findings were contrary to Bessler *et al*., (2007) who identified pain, anxiety of having cervical cancer positive result, embarrassment, and uncooperative and rude health workers as challenges to uptake of cervical cancer screening. The pain and discomfort associated with a pap smear test was reported as a barrier in this study is similar to studies conducted by (Getahun T, Kaka M, Derseh BT, 2020), reported painful test as one of the barriers by participants. Studies conducted in Turkey reported that fear of pain among women made them 4 times less likely to undertake screening tests, Wilding et al, 2020. In addition, the research established that if a young unmarried woman is screened for cervical cancer, everyone will think she is having sex (60%). Further, the study revealed that cervical cancer screening will not make one anxious (55%) and that cervical cancer screening will not take away a woman's virginity if she has never had sex (49%). The findings of this study show that some of the reasons why women don't go for cervical cancer screening is because they don't know where the service is offered (58.5%). It also revealed that it is not only women who have given birth who need to do cervical cancer screening (72%). A supportive partner contributed in encouraging a woman to go for screening and was a motivating factor for cervical cancer screening as reported by Paul et al studies. Further, our study established that the participant's partners did not hinder them from screening for cervical cancer (69.8%). This is in line to a study by Teng et al where spouse's approval did not affect a woman's willingness or decision to screen for cervical

cancer. Another study among women in Malaysia and Tanzania by (Gan et al.; 2013, Igino et al 2014) reported that women who had moral support from their spouses had higher chances to attend cervical screening. Other studies reported that spouses were against their women participating in cervical cancer screening (muppepi et al.; 2011)

From the study, the participants believed that absence of female screeners at health centers was not a reason for failure to screen for cervical cancer (65%). However, these findings are contrary to Fylan (1998) findings that absence of female screeners at health centers was found to be a barrier for uptake of cervical cancer screening programs. In addition, most of the women argued that lack of expertise on cervical cancer screening procedures was not a barrier for cervical cancer screening uptake (63%). Studies documented by (De Abreu C, et al 2013) among Arab Muslim women reported women preference for Female Health care professional workers to perform papsmear tests. Studies revealed that lack of female providers in health facilities, fear of getting abnormal results and lack of knowledge of cervical cancer screening procedures were barriers hindering women from participating in cervical screening. Budkew J, et al 2014 found that lack of knowledge on cervical cancer among women is a major barrier of cervical cancer screening.

Most of the women (58.5%) indicated that lack of finances to pay for cancer screening test were not a major reason for not undertaking cervical cancer screening. These findings are contrary to William M.S, *et al*., (2012) findings that financial constraints are a major challenge to cervical cancer screening uptake as not many women could afford the cost of the services. Also another study in Uganda found that women in four qualitative studies indicated lack of finances to cater for screening services or food as major barrier for cervical cancer screening. Further, health

provider's attitude while screening women for cervical cancer was not a reason as to why women didn't undertake screening services (68%). The findings conform to E, Nyamambi *et al*., (2020) findings that the participants were extremely confident or absolutely confident that they could discuss their concerns with their healthcare provider; concerns about Pap smear tests and, as a result, health provider's attitude was not a barrier.

5.4.1 Perceived benefits of cervical cancer screening

The findings indicated that cervical cancer screening is critical for determining whether or a woman is healthy (50.3%). Only (40) 20.4% of total women felt it is important to have cervical screening had been screened. Our study participants, whether screened or not screened strongly agreed or agreed that it was necessary to screen for cancer of cervix. These findings agree with Hoque *et al*. (Denny et al 2012) argument that majority of women believe that it is important for a women to have cervical cancer screening to know if they are in good health. This is in line with studies by (Parmer S, et al, 2010) who reported that regular pap smear screening gives one peace of mind, will find a problem before they become cancer; On the other hand, Habema et al, 2017 reported that participants felt cervical cancer will make a woman anxious, cause pain and embarrassment. A study done in Trelawny,Jamaica among clinic attendees by (Bessler et al.,2007) found that 18% of female who had never had pap smear reported that it was not important to do pap smear as it will result in increasing a woman's anxiety while 60% of those who had pap smear felt that with early diagnosis from taking a pap smear test, cervical cancer was sometimes cured and therefore can be used to address some issues related with infertility; However, 42% among those who never had papsmear did not think cervical cancer is treatable.

In addition, the study established that cervical cancer screening can detect cervical alterations before they progress to cancer (58.5%). These findings are in line with Lynge E, *et al*. (2014) findings that cervical cancer if detected early, it is possible to treat the patient and hence save their life. Some studies conducted in Peru and Ei Salvador sought to inquire about perceived benefits obtained by female who undertook pap smear. (Studies by Sarah Wington, Daisy Halligann 2020) reported that Psychological facilitators included the peace of mind that screening brings and the belief that cervical cancer screening is potentially life-saving. Further, (Volesky KD, El zein M 2019) studies found that both screened and un screened female believed that it was necessary to do cervical cancer as it could find changes in the cervix before they become cancer and when found early, it can be cured. Further, our study findings revealed that in case cervical cancer changes are detected early they can easily be cured (90%). In comparing screened and unscreened female participants in our study, we found no significant association between benefits of doing cervical cancer screening. This contradicts the health belief model that predicts that those with perceived benefits have more likelihoods to take preventive actions than those with no perceived benefits or low perceived benefits.

From the findings, the study established that cervical cancer screening cannot help enhance the possibilities of infertile woman to become pregnant (53.5%). Further, cervical cancer screening cannot decrease a woman's likelihood to have an abortion (45%). These findings concur with Lee A.W, et al 2021 findings that cervical cancer screening cannot decrease chances of a woman to have abortion. Our findings also agree with control studies done by Mikkelsen AP, Egerup p, (2019) in US and reported that incomplete pregnancy had no association with incident ovarian cancer in either nullipario or as parious women. This study did not find benefits of cervical

cancer to be associated with cancer screening uptake. This is similar to studies done by Ibekwe et al and Esin et al (p value=0.2988), (p=0.075) respectively

5.4.2 Perceived susceptibility to cervical cancer

An individual perception to cervical cancer susceptibility is an important cue to take an action for cervical cancer screening. On the other hand, the perception for not being susceptible to cervical cancer is documented as associated to low screening uptake. Studies have shown that women who reported to have low perception to risk susceptibility were less likely to have been screened compared to those who's risk perceptions were higher. In our study, there were no likelihoods of perception and screening as women responded to the following perception questions in respect to screening and as result we found; older women are more at risk (OR=0.280, 0.89-0.878), women of child bearing age are at risk, (OR=0.833,0.190-3.566, women with multiple sexual partners are at greater risk, (OR=0.700,0.107-4.594). The findings are contrally to a study conducted in Kenya by Morema et al which reported female who perceived cervical cancer as a serious disease were more likely to report as having had a screen($p<0.0001$). Our findings did not report positive association between women's parity and cervical cancer screening, (OR=1.060, 0.449-2.505). This is in line with studies conducted in North central Nigeria by Hyacinth et al (p=0.28) and study by Shresha et al (p=0.153). In a study conducted in JOOTRH, there were higher likelihoods of those who perceived cervical cancer as a serious disease to report having had a screen unlike those who reported they were not aware about the disease or susceptibility, on the other hand had higher likelihoods of not being screened. Another study reported that the likelihoods of not being screened were same for those who didn't know or were aware about the susceptibility to cervical cancer. These facts

were contrally to studies conducted at MTRH and health belief model that states the importance of perceived severity and susceptibility as guide to decision to screening and health service. Perception to risk in this population is not a driver or would not drive a need to uptake of cervical cancer screening

In our study, the participants indicated that older women are at higher risk of cervical cancer than young women (24%). The findings were contrary to Quin BA, Deng X, Colton A, 2019) findings that majority of women believed that older women are at greater risk of cervical cancer than young women. In addition, the study results revealed that participants believed women of child bearing age are at a higher risk of cervical cancer (39%). These findings conform to studies by (Plummer M, Peto J, 2012) where a number of individual studies reported varying results, with some indicating no link between an early sexual debut and an increased risk of cervical cancer, and others indicating a link between an early sexual debut and an increased risk of cervical cancer. Human Papillomavirus and related diseases report findings that most of the women in Finland believed that women of childbearing age are at greater risk of cervical cancer. Further, women with many sexual partners have higher chances of getting cervical cancer (84%).

Most of the women believed that cervical cancer is not more common among HIV positive women (64.5%). The findings disagree with Suwatcharachaitiwong (2004) observation that most women did not know whether cancer is more common among HIV-positive women. The study also revealed that a large number of participants were not aware that cervical cancer susceptibility increases with the number of pregnancies (45.5%). The study also found that cervical cancer not only affects women who are 50 years, but also those above age 50 (52.5%). However, the findings are contrary to Vellozzi (1996) findings that cervical cancer is a disease of the elderly and as a result,

their susceptibility to developing cervical cancer increases with age, usually those above the age of 50 years.

CHAPTER SIX

6.0 CONCLUSIONS AND RECOMMENDATIONS

6.1 Introduction

This chapter covers the study conclusions and recommendations

6.2 Conclusions

6.2.1 Uptake of cervical cancer screening

From the study findings, we conclude that 20.5% of women attending family planning department in Machakos County Referral Hospital had been screened for cervical cancer. Out of that only 19.51 % had been screened in the last 3 years.

6.2.2 Social Demographic Characteristics and Cervical Cancer Screening Uptake

From the findings we conclude that social demographic characteristics had no statistical significant effect on cervical cancer screening uptake. Specifically, marital status, level of education, employment status and area of resident did not significantly affect uptake of cervical cancer screening among women attending Machakos County Referral Hospital.

6.2.3 Perceived barriers to cervical cancer screening

Perceived barriers of cervical cancer screening include pain during cervical cancer screening. In addition, if a young and unmarried woman does screening, everyone will think she is having sex. However, cervical cancer screening will only make one anxious; cervical cancer screening does not take away one's virginity if they have not had sex; knowledge does not affect uptake of cervical cancer screening; Sexual partners did not hinder women from screening for cervical cancer. Further, lack of female screeners at health facilities, lack of information about cervical cancer screening procedures and lack of finances to pay for cancer screening test were not major reasons for not screening for cervical cancer. Also, health provider's attitude was not a reason for not screening.

6.2.3 Cervical cancer screening benefits

This study established that it was essential for women to have cervical cancer screening to know whether they are healthy. It also indicated that cervical changes can be identified before they progress to cancer and increase likelihoods of cure. However, cervical cancer screening cannot help enhance chances of infertile woman to become pregnant and cannot decrease chances of a woman having an abortion.

6.2.5 Perceived susceptibility to cervical cancer

The results indicated that women attending family planning clinic for family planning services in Machakos County Referral Hospital in Kenya perceived that:

- Older women have a greater risk of cervical cancer than younger women
- Every woman of child bearing age is at risk of cervical cancer
- Cervical cancer is more common in women with many sexual partners.

The participants did not know whether cervical cancer risk increases with number of pregnancies and cervical cancer not only affects women who are 50 years but also those above 50 (52.5%).

6.3 Recommendations

1. Cervical cancer screening procedures should aim at reducing pain experienced by women during screening.

2. Health Programmes should come up with interventions that encourage women to go for early screening. They should also encourage regular screening in order to detect and offer treatment at early stages to prevent and cure cervical

cancer. For instance, they can develop posters and provide information on the importance of cervical cancer screening.

3. There is need for health Programmes to sensitize and educate women on cervical cancer risks, perceptions and susceptibility to cervical cancer. This can be done through health campaigns and health education days as well as through organized administrative chief's dialogue meetings.

6.4 Limitations of the Study

The survey questions to cervical cancer were perceptional and the responses provided were depended on the respondent's answer. There was no conflict of interest between the researcher and the research

6.5 Recommendations for Further Studies

Our study recommends for further studies in different settings to compare different population outcomes

REFERENCES

Abotchie PN, Shokar NK. Cervical cancer screening among college students in Ghana knowledge and health beliefs. Int J Gynecol Cancer. 2009;19:412–6. [PMC free article] [PubMed] [Google Scholar]

Abwao, S.P., Greene, H., Sanghvi, T.V. & Winkler, J.L. (2005). Prevention and control of cervical cancer in Eastern and Southern Africa Region. *Summary of proceedings of a regional meeting held in Nairobi, Kenya,* 29th March to 1st April 1998.

Adapting cervical cancer screening for women vaccinated against human papillomavirus infections: The value of stratifying guidelines. Pedersen K, Burger EA, Nygård M, Kristiansen IS, Kim JJ. *Eur J Cancer.* 2018;91:68–75.

Agurto, I., Bishop, A., Sanchez, G., Betancourt, Z. & Robles, S. (2004). Perceived barriers and benefits to cervical cancer screening in Latin America. *Preventive Medicine*, 39(1), 91-98.

Arbyn, M. (2018). Estimates of incidence and mortality of cervical cancer in 2018: a worldwide analysis. *The Lancet Global Health, 8*(2), e191 - e203.

Ayayi, I.O. & Adewole, I.F. (1998). Knowledge and attitude of general outpatient attendants in Nigeria to cervical cancer. *Central Africa Journal of Medicine, 44*, 41–3.

Barron, C, & Houfek J (2001). Ethnic influences on body awareness, trait anxiety, perceived risk, and breast and gynecologic cancer screening practices. *Oncol Nurs Forum,* 28(4), 727-738.

Baskaran, P., Subramanian, P., Rahman, R. A., Ping, W. L., Taib, N. A. M., & Rosli, R. (2013). Perceived susceptibility, and cervical cancer screening benefits and barriers in Malaysian women visiting outpatient clinics. Asian Pacific Journal of Cancer Prevention, 14(12), 7693-7699.

Baskaran, P., Subramanian, P., Rahman, R. A., Ping, W. L., Taib, N. A. M., & Rosli, R. (2013). Perceived susceptibility, and cervical cancer screening benefits and barriers in Malaysian women visiting outpatient clinics. *Asian Pacific Journal of Cancer Prevention*, *14*(12), 7693-7699.

Bessler P, Aung M, Jolly P (2007). Factors affecting uptake of cervical cancer screening among clinic attendees inTrelawny, Jamaica. Cancer Control, 14, 396-4.

Binagwaho, A., Wagner, C. M., Gatera, M., Karema, C., Nutt, C. T., & Ngabo, F. (2012). Achieving high coverage in Rwanda's national human papillomavirus vaccination programme. *Bulletin of the World Health Organization*, *90*, 623-628.

Binka C, Nyarko SH, and Awusabo-Asare K, et al (2019) Barriers to the uptake of cervical cancer screening and treatment among rural women in ghana Biomed Res Int 2019

Boonpongmanee C, Jittanoon P (2007). Predictors of Papanicolaou testing in working women in Bangkok, Thailand. Cancer Nurs, 30, 384-9.

Broberg, G., Wang, J. & Nemes, S. (2018) Socio-economic and demographic determinants affecting participation in the Swedish cervical screening program: A population-based case control study. *PLoS ONE, 13*(1), e0190171.

Cervical cancer screening uptake in Sub-Saharan Africa: a systematic review and meta-analysis N.B. Yimer a, * , M.A. Mohammed b , K. Solomon c , M. Tadese b , S.

Control Program. Kenya National Cancer Screening. Guidelines. 2018:1-122

Day, N.E. (1984). Effect of cervical cancer screening in Scandinavia. Obstet Gynecol, 63,714–8

Denny LA, et al. Recommendations for cervical cancer prevention in subSaharan Africa. Vaccine. 2013;31(Suppl 5):F73Á4.

Duguid, H.L., Duncan, I.D., & Currie, J. (1985). Screening for cervical intraepithelial neoplasia in Dundee and Angus 1962–81 and its relation with invasive cervical cancer. Lancet, 2, 1053–6.

Ebu, N. I. (2018). Socio-demographic characteristics influencing cervical cancer screening intention of HIV-positive women in the central region of Ghana. *Gynecologic oncology research and practice, 5*, 3-19.

Farland MD (2003). Cervical cancer and Pap smear screening in Botswana: knowledge and perception. Intern Nurs Rev, 50, 167-75.

Ferlay J, Bray F, Pisani P, et al (2004).GLOBOCAN 2002.cancer incidence, mortality and prevalence worldwide. IARC.cancer base no. 5, version 2.0. IARC Press, lyon.

Ferlay J, Colombet M, Soerjomataram I. Estimating the global cancer incidence and mortality in 2018: GLOBOCAN sources and methods. *Int J Cancer.* 2019;**144**:1941–1953. [PubMed] [Google Scholar]

Ferlay J, et al. Cancer incidence and mortality worldwide: sources, methods and major patterns in GLOBOCAN 2012. Int J Cancer. 2015;136(5):E359–86. Mukakalisa I, et al. Cervical cancer in developing countries: effective screening and preventive strategies with an application in Rwanda. Health Care Women Int. 2014;35(7-:1065–80.

Ferlay, J., Bray, F., Pisani, P. & Parkin, D. (2002). Global cancer statistics: cancer incidence, mortality, and prevalence worldwide. *Cancer Journal for Clinicians*, *55*(5), 74-108.

Foxall, M & Barron, C & Houfek, Julia. (2001). Ethnic influences on body awareness, trait anxiety, perceived risk, and breast and gynecologic cancer screening practices. Oncology nursing forum. 28. 727-38.

Gamarra CJ, Paz EPA, Griep RH (2005). Social support and cervical and breast cancer screening in Argentinean women from a rural population. Public Health

Nurs, 26, 269-76

Gichangi, P., Estambale, B., Bwayo, J., Rogo, K., Ojwang, S., Opiyo, A. & Temmerman, M. (2014) Treatment and care of cervical cancer patients at Kenyatta National Hospital, Nairobi, Kenya. *Int J Gynecol Cancer, 13*(6), 827-833.

Glanz K, Rimer B, Lewis F. (2002). Health Behaviour and Health Education; Theory, Research and Practice. San Francisco: Wiley & Sons.

HPV Information Centre (2019). *Human Papillomavirus and Related Diseases Report*. Retrieved from https://hpvcentre.net/statistics/reports/XFX.pdf

Ibekwe, C. M., Hoque, M. E., & Ntuli-Ngcobo, B. (2010). Perceived benefits of cervical cancer screening among women attending Mahalapye District Hospital, Botswana. *Asian pac j cancer prev*, *11*(4), 1021-1027.

J. Ferdous, S. Islam, and T. Marzen, "Attitude and practice of cervical screening among women of Bangladesh," Mymensingh Medical Journal, vol. 23, no. 4, pp. 695–702, 2014.

Janz, N.K., Champion, V.L. & Strecher, V.J. (2002). The health belief model. In: Glanz K, Rimer BK, Lewis FM (eds). *Health Behavior and Health Education: Theory, Research, and Practice*. 3rd edn. Jossey Bass, San Francisco: 45–66.

Jaramogi Oginga Odinga Teaching and Referral Hospital, Kisumu, Kenya. *BMC Health Serv Res* **14**, 335 (2014).https://doi.org/10.1186/1472-6963-14-335

K. O. Wright, O. Aiyedehin, M. R. Akinyinka, and O. Iluzumba,"Cervical cancer: community perception and preventive practices in an urban neighborhood of Lagos (Nigeria)," ISRN Preventive Medicine, vol. 2014, Article ID 950534, 9 pages, 2014.

Kenya National Bureau of Statistics. Ministry of Health. National AIDS Control Council. Kenya Medical Research Institute. National Council for Population and Development. The DHS Program ICF International. *Kenya Demographic and Health Survey 2014.*

Kifle K, Kebede L, Taye J, et al (2020). Assessment of Awareness and Attitude on Cervical Cancer Prevention among Female Preparatory Students in Ziway town, Oromia Regional State, Ethiopia. Asian Pac J Cancer Care, 5, 265-71.

Kim JJ, Burger EA, Regan C, Sy S. *Screening for Cervical Cancer in Primary Care: A Decision Analysis for the US Preventive Services Task Force*. Rockville, MD: Agency for Healthcare Research and Quality; 2018. AHRQ publication 15-05224-EF-2.

Kivuti-Bitok, L. W., McDonnell, G., Pokhariyal, G. P., & Roudsari, A. V. (2012). Self-reported use of internet by cervical cancer clients in two National Referral Hospitals in Kenya. *BMC research notes*, *5*(1), 559.

Kumar, V, Abbas Abul, K, Fausto, N, & Mitchell, R (2007). *Robbins Basic Pathology (8th ed.),* Saunders Elsevier, Sydney.

L Feinstein, R Sabates, TM Anderson… - Measuring the effects of …, 2006 – Citeseer

La Toya, T., Mc Nally, M. & & Stewart, D. (2002). Breast and cervical cancer screening in Hispanic women: a literature review using the health belief model. *Women Health Issues, 12*(3), 122- 129.

Lee, J, Seow, A, & Ling, S (2002). Improving adherence to regular pap smear screening among Asian women: a population-based study in Singapore, *Health Education Behaviour, 29*(5), 207-218.

Lee, M., Park, E. & Chang, H. (2018). Socioeconomic disparity in cervical cancer screening among Korean women: 1998–2010. *BMC Public Health,* 13, 553-593.

Leopold, G. & Koss, M.D. (1993). Cervical (Pap) Smear, New Directions. *Cancer, 71*, 1406-12

Lewis, M. (2004). *A situational analysis of cervical cancer in Latin America and the Caribbean*. Washington, DC: Pan American Health Organization.

Leyva M, Byrd T, Tarwater P (2006). Attitudes towards cervical cancer screening: A study of beliefs among women in Mexico. Californian J Hlth Promot, 4, 13-24.

Leyva, M., Byrd, T. & Tarwater, P. (2006). Attitudes towards cervical cancer screening: a study of beliefs among women in Mexico. *Californian Journal of Health Promotion*, 4(2), 13-24.

M. C. Shivanthan, K. Arunakiri, S. I. Wickramasinghe, R. D.Sumanasekera, S. Jayasinghe, and S. Rajapakse, "Low uptake of Pap smear testing among medical clinic attendees in a tertiary care hospital in Sri Lanka," International Health, vol. 6, no. 2, pp. 138–143, 2014

M. Singh, R. Ranjan, B. Das, and K. Gupta, "Knowledge, attitude and practice of cervical cancer screening in women visiting a tertiary care hospital of Delhi," Indian Journal of Cancer, vol. 51,no. 3, pp. 319–323, 2014.

Maaita, M. & Barakat, M. J. (2002). Women's attitudes towards cervical screening and cervical cancer. *Journal of Obstetrics and Gynecology, 22*, 421–2.16.

Macharia, J.W. (2018). Burden of Cancer in Kenya; Types, Infection-Attributable and Trends: A National Referral Hospital Retrospective Survey. *AAS open research, 1*, 25-31.

Mahalapye District Health Team Annual Report, 2005.Mahalapye District Hospital annual Report, 2007.

McFarland DM (2003). Cervical cancer and pap smear screening in botswana: knowledge and perception. Int Nurs Rev, 50,167-75.

Melnikow J, Henderson JT, Burda BU, Senger CA, Durbin S, Weyrich MS. Screening for cervical cancer with high-risk human papillomavirus testing: updated evidence report and systematic

review for the US Preventive Services Task Force [published August 21, 2018]. *JAMA*. doi:10.1001/jama.2018.10400

Ministry of Health. Kenya Health Policy 2014-2030. Vol 1.; 2014. doi:10.1017/CBO9781107415324.004

Morema, E. N., Atieli, H. E., Onyango, R. O., Omondi, J. H., & Ouma, C. (2014). Determinants of cervical screening services uptake among 18–49-year-old women seeking services at the Jaramogi Oginga Odinga Teaching and Referral Hospital, Kisumu, Kenya. *BMC health services research*, *14*, 1-7.

Morema, E.N., Atieli, H.E. & Onyango, R.O. (2014). Determinants of Cervical screening services uptake among 18–49 year old women seeking services at the Jaramogi Oginga Odinga Teaching and Referral Hospital, Kisumu, Kenya. *BMC Health Serv Res*, 14, 335.

Morema, E.N., Atieli, H.E., Onyango, R.O. *et al.* Determinants of Cervical screening services uptake among 18–49 year old women seeking services at the

Nyamongo I, Ngutu M. Exploring the barriers to health care and psychosocial challenges in cervical cancer management in Kenya. Int J Womens Health. 2015;7:791. 2015

Nygard, J., Skare, G., & Thoresen, S. (2002). The cervical cancer screening programme in Norway, 1992–2000: changes in Pap smear coverage and incidence of cervical cancer. *Journal of Medical Screening*, *9*(2), 86-91

O. A. Akinola and R. I. Anorlu, "Knowledge of cervical cancer, awareness and attitude to screening among patients at a cytology clinic," Austin Journal of Obstetrics and Gynecology, vol. 1, no. 1, p. 4, 2014.

Objectives This report reviews the evidence on the hypothesis that education has important
social impacts on health. In reviewing the evidence, we highlight those studies that have …

Ochako, R., Fotso, J. C., Ikamari, L., & Khasakhala, A. (2011). Utilization of maternal health services among young women in Kenya: insights from the Kenya Demographic and Health Survey, 2003. *BMC pregnancy and childbirth*, *11*(1), 1-9.

Ogembo, J. G., Manga, S., Nulah, K., Foglabenchi, L. H., Perlman, S., Wamai, R. G., ... & Tih, P. (2014). Achieving high uptake of human papillomavirus vaccine in Cameroon: Lessons learned in overcoming challenges. *Vaccine*, *32*(35), 4399-4403.

Perlman, S., Wamai, R. G., Bain, P. A., Welty, T., Welty, E., & Ogembo, J. G. (2014). Knowledge and awareness of HPV vaccine and acceptability to vaccinate in sub-Saharan Africa: a systematic review. *PloS one*, *9*(3), e90912.

Phillips-Howard, P. A., Laserson, K. F., Amek, N., Beynon, C. M., Angell, S. Y., Khagayi, S., ... & Odhiambo, F. O. (2014). Deaths ascribed to non-

communicable diseases among rural Kenyan adults are proportionately increasing: evidence from a health and demographic surveillance system, 2003–2010. *PLoS One*, *9*(11), e114010.

Rajkumar, R. (Ed.). (2012). *Topics on Cervical Cancer with an Advocacy for Prevention*. BoD–Books on Demand.

Rimer, B.K. & Lewis, F.M. (2002). Health Behavior and Health Education: Theory, *Research, and Practice.* 3rd edn. Jossey Bass, San Francisco: 45-66

Schulmeister L, Lifsey DS (1999). Cervical cancer screening knowledge, behaviors, and beliefs of Vietnamese women. Oncol Nurs Forum, 26, 879-87.

Sicsic, J., & Franc, C. (2014). Obstacles to the uptake of breast, cervical, and colorectal cancer screenings: what remains to be achieved by French national programmes? *BMC health services research*, *14*(1), 1-12.

Singh GK, Azuine RE, Siahpush M. Global inequalities in cervical cancer incidence and mortality are linked to deprivation, low socioeconomic status, and human development. Int J MCH AIDS (IJMA). 2015;1(1):17–30.

Stuart, G, McGregor, S, Duggan, M, & Nation, J (1997). Review of the screening history of Alberta women with invasive cervical cancer. *Canadian Medical Association Journal, 157*(56), 513–519.

Sung, H., Kearney, K., Miller, M., Kinney, W., Sawaya, G. & Hiatt, R. (2000). Papanicolaou smear history and diagnosis of invasive cervical carcinoma among members of a large prepaid health plan, *Cancer Journal for Clinicians,* 88(10), 2283–2289.

Suvageau, C., Duval, B., Gilca, V., Lavoie, F. & Ouakki, M. (2007). Human Papillomavirus vaccine and cervical cancer screening acceptability among adults in Quebec, Canada. *British Medical Journal of Public Health, 7*(12), 303-304.

Suwaratchai P (1997). Factors affecting the screening for cervical cancer in married women in Maung district, Ubonratchathani Province. Chulalongkorn Med J, 43, 617-30.

Suwatcharachaitiwong, J. (2004). Health beliefs concerning cervical cancer and Pap smear test attendance among Muslim women, *Journal of Medical Association of Thailand*, 83(12), 1492 - 1501.

Taylor, R.J., Morrell, S.L., Mamoon, H.A., & Wain, G.V. (2001). Effects of screening on cervical cancer incidence and mortality in New South Wales implied by influences of period of diagnosis and birth cohort. J Epidemiol Community Health, 55(11), 782–8.

Ubah, C., Nwaneri, A. C., Anarado, A. N., Iheanacho, P. N., & Odikpo, L. C. (2022). Perceived barriers to cervical cancer screening uptake among women of an urban community in south-eastern Nigeria. *Asian Pacific Journal of Cancer Prevention*, *23*(6), 1959-1965.

Urasa M, Djay E (2011). Knowledge of cervical cancer and screening practices of

nurses at a regional hospital in Tanzan. Afr Health Sci, 11, 48-57.

Vellozzi, C., Romans, M. & Rothenberg, R. (1996). Delivering breast and cervical cancer screening services to underserved women: Part 1, literature review and telephone survey. *Women's Health Issues*, 6(4), 65–73.

Wangi, P, & Lin, R (2003). Socio-demographic factors of Pap smear screening in Taiwan. *Acta Obstetrics and Gynecology Scandinavia*, *14*(4), 76-120.

Wellensiek, N., Moodley, M., Moodley, J. & Nkwanyana, N. (2002). Knowledge of cervical cancer screening and use of cervical screening facilities among women from various socioeconomic backgrounds in Durban, KwaZulu Natal, South Africa. *International Journal of Gynecological Cancer, 12*, 376-82.

WHO/ICO, (2010). *Information Centre on HPV and Cervical Cancer (HPV Information Centre) 2010. Human Papillomavirus and Related Cancers in Kenya*. Summary Report 2010.

Wilding S, Wighton S, Halligan D. et al. 2020. What factors are most influential in increasing cervical cancer screening attendance? An online study of UK-based women. *Health Psychology and Behavioral Medicine* 8: 314–28.

Woldetsadik, A.B., Amhare, A.F. & Bitew, S.T. (2020). Socio-demographic characteristics and associated factors influencing cervical cancer screening among women attending in St. Paul's Teaching and Referral Hospital, Ethiopia. *BMC Women's Health*, 20, 70-102.

World Health Organization (2005). *Are the numbers of cancer cases increasing or decreasing in the world? May 13, 2005*. Available at http://www.who.int/features/qa/15/en/index.html. Accessed July 13, 2007.

World Health Organization A Global Strategy for Elimination of Cervical Cancer [https://www.who.int/activities/a-global-strategy-for-elimination-of-cervical-cancer] Sub-Saharan Africa (2019) The Cancer Atlas [https://canceratlas.cancer.org/the-burden/sub-saharan-africa/] Date accessed: 27/07/21

World Health Organization. Comprehensive Cervical Cancer Control A guide to essential practice. Geneve; 2014. [cited 2017 Nov 5]. Available from: http://apps.who.int/iris/bitstream/10665/144785/1/9789241548953_eng.pdf.

Yang, B.H., Bray, F.I., Parkin, D.M., Sellors. J.W. & Zhang, Z.F. (2004). Cervical cancer as a priority for prevention in different world regions: an evaluation using years of life lost. *Int J Cancer, 109*, 418.

Yimer NB, Mohammed MA, and Solomon K, et al (2021) Cervical cancer screening uptake in sub-Saharan Africa: a systematic review and meta-analysis Public Health 195 105–111

APPENDICES

APPENDIX I: CONSENT FORM

Title of the study; Factors associated with utilization of cervical cancer screening services among women attending Family planning clinic at Machakos County Referral Hospital-Kenya

Introduction; The goal of the study is to figure out the factors associated with cervical cancer screening uptake among women attending family planning clinic at Machakos County Referral Hospital. Despite the fact that cervical cancer screening services are accessible at a low cost in some government hospitals, cervical cancer screening uptake remains low, with the same patients returning for follow-up whereas new cases are rare. The outcomes of this research will be utilized to reorganize the procedure in order to improve cervical cancer screening uptake among women who visit Kenya's Machakos County Referral Hospital.

Purpose of the study; This study was carried out for an award of Master's degree in Public Health at Moi University. Moreover, the researcher aimed at finding issues which will enhance uptake of cervical cancer screening among women when addressed.

Eligibility criteria; The participants targeted adult women beyond 18 years and capable of agreeing to take part in the research.

Study Procedure;This is a research that seeks to understand women perception towards cervical cancer screening uptake. During hospital visits, participants are approached and the studies' purpose explained to them. You are requested to participate in this study. Participation in the study is voluntary and you have the right to agree to participate or withdraw from the study at any time. Do you agree to participate in the study? No blood collection or treatment will be included in this study. There is no risk or injury and no reward will be given for anyone taking part in the study. Respondents will not have any benefit from this research, but the findings will be employed to reorganize cervical cancer screening to enhance uptake.

Privacy and Confidentiality;

Confidentiality and privacy will be upheld and no names will be included in this

research tool. Information provided in this interview will be employed for education purposes and results of the findings may be published. Moreover, the study findings will be reexamined by Moi University, School of Public Health and IREC.

Who to contact;

In case you have any questions concerning the study, you can contact the Dean School of Public Health, Moi University through deansphmu@gmail.com or deansph@mu.ac.ke or the Principal Investigator, Selastina Nthenya David +254 720 403 384, email address, nthenyadavid81@yahoo.com.

Consent Statement;

I hereby give approval to take part in the research.

....

Participants' Signature.

....

Place Witness Date.

Statement by Researcher

I gave verbal information in relation to the Study.

I agree to respond to any question in future regarding the research at my level best. I will uphold to approved protocol.

....

Researchers' Name Signature Date Place

APPENDIX II: QUESTIONNAIRE (Kamba version)
Serial Number:

The Kamba version of the questionnaires was given to those who don't understand the English language

SECTION A

SOCIO-DEMOGRAPHIC DATA;

1. UKUU WAKU: Matuku na mwaka wa kusyawa;...../...../.....

2. UTWAE

Nwaatwawa []

Wimutwae []

Niwataanisye na muemeu []

Niwakuiwe ni musee []

Mukitite kwikalany'a []

3. MBAI/LANGI

Mwiu

Musungu

Colored

Muindi

Angi

4. KIWANGO KYA MASOMO

Ndwaasoma

Primary

Secondary

Post-secondary

5. UTHUKUMI

Wimuandike

Nduthukumaa

Niwiyiandikite

Niwaendie litaya

6. WIKALO

Taoni

Taoni nini

Ushagu

Kungi.....

Elesya

SECTION B

KUTHIMWA KANZA YA CERVIX

7. Waathimwa Kanza ya cervix?

Yii

Ayee

8. ***Ethiwa asungia yii ikulyo namba 7*** **Kulya-**Wathimiwe kati wa myaka itatu mithelu?

Yii

Ayiee

SECTION C

	WONI WAKU YIULU WA KANZA YA CERVIX	SA	A	N	D	SD
9	Aka ala ala akuu me muisyoni munene wa ukwatwa nikanza ya cervix mbee wa aka ma muika munini?					
10	Aka ma muika wa kusyaa me muisyoni munene wa kukwatwa ni kanza ya cervix					
11	Aka ala me anyanya aingi ma kumanyana kimwii me muisyoni munene wa kukwatwa ni kanza ya cervix.					
12	Kanza ya cervix yithiawa muno akani ala mena uwau wa muthelo.					
13	Muisyo wa kuwaa uwau wa kanza wongelekaa na oundu uendeeye na kusyaa					
14	Kanza ya cervix ikwataa andu ala mena myaka miongo itano kwambata					
SECTION D: **MAUSEO ALA MAKONANITWE NA KUTHIMWA KANZA YA CERVIX**						
21	Ve vata mundu muka kuthimwa kanza ya cervix nokana amanye kana ni muima					
22	Kuthimwa kanza ya cervix niukwatya vena mauvinduku ma cervix mbee wa utanatwika kanza					
23	Mauvinduku ma cervical cancer makwatikana tene kwisila kuthimwa nimakwataa uvosyo mituki.					
24	Kuthimwa kanza ya cervix nokutume mundu muka aitava..					
25	Kuthimwa kanza ya cervix nokuole ivuso ya mundu muka kutambaika					
SECTION E **ITUMI ILA ITUMAA AKA MATATHIMWA KANZA YA CERVIX**						
26	Kuthimwa kanza ya cervix kwi aivu/nthoni					

27	Kuthimwa kanza ya cervix kwi woo					
28	Kuthimwa kanza ya cervix kwa mundumuka wa muika munini ute mutwae no kutume kila mudu esilya nukumanyana kimwii					
29	Kuthimwa kanza ya cervix niutuma mundu muka akwatwa ni kimako.					
30	Kethiwa mundumuka ndaamanyana kimwii, kuthimwa kanza ya cervix niumumya wiitu wake.					
31	Kulea kumanya vala mundu utonya kuthi kuthimwa kanza ya ivu ni kitumi kila kitumaa andu matathi kuthimwa kanza ya cervix.					
32	No aka ala masyaite oka maile ni kuthimwa uwau wa kanza ya cervix					
33	Musee wakwa ndendeewa ndithimwa kanza ya cervix					
34	Kwithiwa vate aiiti ma aka ma kuthima kanza ya cervix masivitalini ni kitumi kya kulea kuthimwa kanza ya cervix					
35	Kulea kwithwa na umanyi mwianu yiulu wa undu kanza ya cervix ithimanawa ni kitumi kya kulea kuthimwa					

APPENDIX III: QUESTIONNAIRE (English Version)

Serial Number:

The English version was used for those willing to be asked the questions in English

SECTION A

SOCIO-DEMOGRAPHIC DATA;

1. Age.....

2. Marital Status

Single	[ ]
Married (Polygamous)	[ ]
Married (Monogamous)	[ ]
Divorce	[ ]
Widowed	[ ]
Cohabiting	[ ]

3. Educational Level

None	[ ]
Primary	[ ]
Secondary	[ ]
Post-secondary	[ ]

4. Employment Status

Employed	[ ]
Unemployed	[ ]
Self employed	[ ]
Pensioners (*retired*)	[ ]

5. Area of Residence

Peri-urban	[ ]
Urban	[ ]
Rural	[ ]

Specify (Others) ……..

SECTION B

Participation in Cervical Cancer Screening

7. Have you ever been screened for cancer of the cervix?

Yes [ ] No [ ]

8. If answer in Question 7 above is yes, Ask-were you tested in the last three years?

Yes [ ] No [ ]

SECTION C:

9. To what extent do you agree with the following statements in regard to perceived susceptibility, barriers and benefits to cervical cancer. Where SA represents Strongly Agree, Agree represents Agree, DK represents Don't Know, D represents Disagree and SD represents Strongly Disagree.

	Perception about Susceptibility to Cervical Cancer	SA	A	N	D	SD
9	Cervical cancer is more common in older women than in younger women.					
10	Cervical cancer affects every woman of childbearing age.					
11	Cervical cancer is more common among women with several sexual partners.					
12	Cervical cancer is more common among HIV positive women.					
13	The risk of cervical cancer rises with the number of pregnancies.					
14	Cervical cancer affects women with 50 years and above					
SECTION D: Perceived Benefits Of Cervical Cancer Screening						
21	Cervical cancer screening is critical for determining whether or not a woman is healthy.					
22	Cervical cancer screening can detect cervical alterations before they progress to cancer.					
23	Cervical changes can be easily treated if detected early by cervical cancer screening.					
24	Cervical cancer screening can increase a woman's chances of becoming pregnant if she is infertile.					
25	Cervical cancer screening can reduce a woman's likelihood of have abortion.					
SECTION E : Perceived Barriers To Cervical Cancer Screening						
26	Cervical cancer screening is far too humiliating.					
27	Cervical cancer screening is painful					
28	Everyone will think a young unmarried woman is having sex if she has cervical cancer screen done.					
29	Cervical cancer screening will only cause a person to be anxious.					
30	Cervical cancer screening will take away a woman of her virginity if she has never had sex.					
31	One of the reasons why people don't get cervical cancer screening is because they don't know where to go.					
32	Cervical cancer screening is only required for women who have borne children.					
33	Cervical cancer screening is something that my spouse will not want me to undergo.					
34	Cervical cancer screening is not done because of a lack of female screeners at health institutions.					
35	The lack of knowledge about cervical cancer screening protocols is a barrier to screening uptake.					

APPENDIX IV: MACHAKOS MAP

APPENDIX V: IREC LETTER

INSTITUTIONAL RESEARCH AND ETHICS COMMITTEE (IREC)

MOI TEACHING AND REFERRAL HOSPITAL
P.O. BOX 3
ELDORET
Tel: 2033471//2/3

MOI UNIVERSITY
FACULTY OF HEALTH SCIENCES
P.O. BOX 4606
ELDORET
Tel: 2033471/2/3

REF: IREC/2016/14

4th March, 2016

Ms.Selastina Nthenya,
Moi University
School of public health
P.O. Box 4606
Eldoret

Dear Ms.Nthenya,

Subject to review of your proposal titled **"Factors Influencing Utilization of Cervical Cancer Screening Services among Women Attending Machakos Level 5 District Hospital"** *by* the various reviewers within the Institutional Research and Ethics Committee, the attached comments arose.

Please address these comments and resubmit one (1) copy of the revised proposal to the undersigned and highlight the changes made for ease of reference.

Yours sincerely,

MS CATHERINE OKWIRI,
HUMAN SUBJECTS' ADMINISTRATOR,
FOR IREC SECRETARIAT

Enc.

APPENDIX VI: PLAGIARISM REPORT

FACTORS ASSOCIATED WITH UTILIZATION OF CERVICAL CANCER SCREENING SERVICES AMONG WOMEN ATTENDING MACHAKOS COUNTY REFERRAL HOSPITAL

ORIGINALITY REPORT

22%	18%	13%	11%
SIMILARITY INDEX	INTERNET SOURCES	PUBLICATIONS	STUDENT PAPERS

PRIMARY SOURCES

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