PREDICTORS OF CERVICAL CANCER SCREENING UPTAKE AMONG HEALTH CARE PROVIDERS IN SIAYA COUNTY, KENYA

BY

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DEDICATION

I dedicate this work to my family

ABSTRACT

Cancer remains the second most common cause of death among women globally, with cervical cancer exhibiting the highest mortality rate among all cancer types. In Kenya, cervical cancer is the second most commonly diagnosed cancer in women overall and particularly affects those aged 15 to 44. Alarmingly, a growing number of healthcare professionals are being diagnosed with cervical cancer. Despite being instrumental in delivering cervical cancer screening services, few studies have examined the screening behavior of healthcare workers themselves. This study aimed to determine the proportion of healthcare providers who have undergone cervical cancer screening and to identify individual and systemic factors that influence screening uptake. Conducted across various hospitals in Siaya County—including Ambira, Madiany, Yala, Siaya County Referral, Bondo, and Ukwala—the study employed a cross-sectional analytical approach. A total of 186 healthcare providers, including nurses, clinical officers, and medical officers from level four hospitals, participated in the study. Both qualitative and quantitative data were collected. Statistical analysis was performed using SPSS version 28, incorporating descriptive statistics such as measures of central tendency, dispersion, frequencies, and percentages. To evaluate the determinants of cervical cancer screening uptake, bivariate logistic regression was used, and odds ratios (OR) were calculated to measure the strength of associations between variables. Qualitative responses were analyzed thematically, based on the research objectives. The findings revealed that 77.4% of healthcare providers had undergone cervical cancer screening, with the majority being screened between 2019 and 2022. Age significantly influenced screening behavior: individuals aged 20–29 were 60% less likely to have been screened (OR: 0.4; 95% CI: 0.2–0.8; p = 0.009). Marital status also played a role, with married healthcare providers nearly four times more likely to be screened compared to those who were single or widowed (OR: 3.8; 95% CI: 1.9–7.9; p = 0.0002). Parenthood was another factor, with those having no more than two children being three times less likely to have participated in screening compared to those with more children (OR: 0.3; 95% CI: 0.2–0.7; p = 0.004). Additionally, psychological factors such as perceived risk (OR: 0.2; 95% CI: 0.1–0.6; p = 0.003), confidence in one's ability to act (self-efficacy) (OR: 0.3; 95% CI: 0.1–0.6; p = 0.0008), and motivation through reminders or encouragement (cue to action) (OR: 0.4; 95% CI: 0.1–1.1; p = 0.09) were linked to screening uptake. From a healthcare system perspective, both the availability of screening services (OR: 4.4; 95% CI: 1.5–13.2; p = 0.004) and the perceived acceptability of these services (OR: 5.0; 95% CI: 1.7–15.0; p = 0.001) significantly influenced participation rates. In conclusion, although healthcare workers are central to the delivery of medical services, a substantial portion have not undergone cervical cancer screening themselves. The study identified key psychological and system-level predictors—such as perceived vulnerability, self-confidence, motivation, service availability, and service acceptability—as crucial to improving screening uptake. The research recommends targeted awareness campaigns and designated sensitization days to increase understanding of cervical cancer risks among healthcare providers and to encourage routine screening.

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LIST OF ABBREVIATIONS AND ACRONYMS

CDC:	Centers for Disease Control and Prevention
GAVI:	Global Alliance for Vaccines and Immunization
GCT:	Germ Cell Tumors
HBM:	Health Belief Model
HIV:	Human Immunodeficiency Virus
HPV:	Human Papilloma Virus
KDHS:	Kenya Demogracphi Health Survey
MMUST:	Masinde Muliro University of Science and Technology
NACOSTI:	National Council of Science and Technology for Innovation
NCDs:	Non-Communicable Diseases
SPSS:	Statistical Package for Social Sciences
WHO:	World Health Organization

CHAPTER ONE

INTRODUCTION

1.1 Overview

This chapter presents the background of the study, statement of the problem, study objectives, research questions, justification of the study, scope of the study, study limitations, conceptual framework and operationalization of terms used in this study.

1.2 Background of the Study

cancer of the cervixis usually characterized by abnormal growth of the normal cells in the cervix. This is a region of the uterus that joins the vagina. The cause of cancer of the cervixis usually associated with a positive HPV test from the Pap smear (Osazuwa-Peters, 2018). Other risk factors include low socioeconomic status, smoking, family history, and/or diagnosis of HIV or AIDS. If for some reason cancer of the cervixhas gone undetected, the cancer can eventually cause the vaginal bleeding and pain sometimes during intercourse (Nyamasi, Angira & Owenga, 2020).. At this point, education and treatment options such as surgery, radiation, chemotherapy, and other non-pharmacology therapy are discussed with the patient.

Once the cancer has been confirmed, the stage is also being determined which is a clear indication of how far the cancer has spread. Stage O is called carcinoma in situ which means it is confined to the epithelia cells the line the cervix, stage I indicates a spread to the connective tissue that underlies the epithelium tissues, whereas stage II cancer indicates spreading beyond the cervix; upper portion of the vagina or pelvic, stage III indicates spreading to the lower portion of the vagina, and stage IV cancer has spread to organs like bladder, lungs, bones among others (Ayenew, Zewdu & Nigussie, 2020).

Lukorito, Wanyoro & Kimani (2018) argues that cancer of the cervix is one of the most lethal malignancies in women with 239,000 new cases diagnosed in 2018.The 5-year prevalence of women globally living with ovarian cancer is 22.6 per 100,000. The highest incidence for cancer of the cervixis in the perimenopausal and postmenopausal age group, epithelial ovarian cancers (EOC) accounts for 90% of cervical malignancy. The known clinical features of cancer of the cervixcomprise of abnormal bleeding in the uterine among young people. Several reports have indicated that patients have always been demonstrated to be with some ovulating system. The occurrence of GCT is about 0.4 to 1.5 in every 100,000 (Karnezis, Cho, Gilks, Pearce & Huntsman, 2018). Having abnormal cell cycle is closely associated with development and occurrence of cancers. Other signs and symptoms comprise of weight loss, discomfort within the area of the pelvis, changes in habits of bowel like constipation, the frequent desire to urinate, among others.

Statistics by Orang'o, et al. (2018) shows that cancer is among the main cause of mortality globally, responsible for more than 8 million global deaths annually with an average 17.5 million new diagnosis from 2010 to 2019 (Nyamasi, Angira & Owenga, 2020). The worldwide distribution and the continued rising prevalence of cancer portrays a worrisome situation (Morema, Atieli, Onyango, Omondi & Ouma, 2018). cancer of the cervixis believed to be primarily caused by the human papillomavirus (HPV) through sexual intercourse with the sub-Saharan countries such as Kenya carrying the highest burden (Orang'o, et al., 2018). Gatumo, Gacheri, Sayed & Scheibe (2018) identifies, however, that timely screening and diagnosis is usually crucial in ensuring prompt management of any form of cancer and thereby reducing its possible severe impacts. Unfortunately, most health systems across the global do not have functional screening programs for timely detection of precancerous lesions despite the rise in the number of cervical cancers diagnosed yearly in

the individual countries. The few healthcare systems that have screening and treatment programs are faced with a lot of challenges to the extent that the coverage of their cancer of the cervixscreening is far below the recommended target (CDC, 2018).

Many items influence people's decisions about getting screened for cervical cancer. Lower income usually increases the chance of unnoticed gynecological problems, as some women may not have the resources, access to care or awareness of possible screenings (Morema et al., 2018). The more educated an individual is, the more likely they are to notice signs of prostate cancer and take action (Gatumo et al., 2018). Besides, some people are afraid of having pain or being told they may have cervical cancer, so they avoid getting screened which leads to low screening rates. A woman's age, marital situation and the number of pregnancies she has experienced can all be important influences on her decision to get screened, with older, married women having several pregnancies showing higher rates of testing because they interact more often with doctors Nyamasi, et al., 2020). Healthcare system practices, for example, access to screening, support from healthcare workers and campaigns from the government, also control the decision to use screening programs (Osazuwa-Peters, 2018). Promoting awareness efforts, low-cost screening and better access to healthcare is necessary to raise the number of people getting screens for cervical cancer (Nwabichie, et al., 2018).

Further to that, while some studies have investigated the low uptake of cancer of the cervixscreening among women in developing countries in Kenya, none of such studies have been focused on healthcare professionals despite the high incidences of cancer of the cervixcases among the healthcare providers (Lukorito, et al., 2018). Therefore, this study focused on predictors of cancer of the cervixscreening uptake among health care professionals.

1.3 Statement of the Problem

Cervical cancer is one of the most deadly forms of cancer affecting women globally, with approximately 239,000 new cases reported in 2018 alone. The global five-year prevalence rate stands at 22.6 per 100,000 women. Ngugi et al. (2018) noted a significant increase in the likelihood of cervical cancer diagnosis in recent years, with women in lower-income regions, especially sub-Saharan Africa, facing the greatest risk. According to the Centers for Disease Control and Prevention (CDC, 2018), cancer is the second most common cause of death among women worldwide, and cervical cancer has the highest mortality rate among female cancers (Ngutiku, et al., 2021). It is responsible for the deaths of about 231,000 women annually, with over 80% of these fatalities occurring in developing nations (Njuguna, et al., 2018). In Kenya, national cancer prevention guidelines (2012) estimate 2,454 new cervical cancer cases and 1,676 deaths each year (Delie et al. (2024). Without proper screening, diagnosis, and early treatment interventions, this number is projected to increase to over 4,000 cases and 2,955 deaths annually by 2025 (Orang'o et al., 2018). Alarmingly, the number of cervical cancer cases among healthcare workers in Kenya has also been rising, although there is no centralized database to accurately track this trend.

Despite these concerning statistics, awareness and global action on cervical cancer have significantly increased. Key efforts include the introduction of safe and effective HPV vaccines, the 2011 WHO position paper on HPV vaccination, and the United Nations' Political Declaration on Non-Communicable Diseases (NCDs) (Delie et al., 2024). Additional initiatives include the 2013 WHO Global Action Plan for the Prevention and Control of NCDs (2013–2020), and GAVI Alliance's commitment in 2013 to provide the HPV vaccine to eligible countries at a subsidized cost of $4.60 per dose (Gatumo et al., 2018).

The 2014 WHO cervical cancer screening guidelines and the third Sustainable Development Goal (SDG 3)—which aims to reduce premature NCD-related mortality by one-third by 2030—further emphasize the global priority given to this issue.

Nonetheless, early detection and timely screening remain insufficient, particularly among healthcare professionals (Lukorito, Wanyoro & Kimani, 2018). Cervical cancer is highly preventable and treatable when detected in its early stages. Developed nations have witnessed a decline in incidence rates due to routine immunization and screening. However, sub-Saharan Africa, including Kenya, continues to lag behind. The 2019 Kenya Demographic and Health Survey (KDHS) found that only 14% of women aged 30 to 49 undergo cervical cancer screening.

A recent systematic review by Delie et al. (2024) reported that only 49.68% of healthcare workers demonstrated adequate knowledge of cervical cancer screening, 66.63% held favorable attitudes toward it, but just 17.23% had actually been screened. In Siaya County, cases of late-stage diagnosis leading to death among healthcare providers have been documented (Siaya County Health Department, 2022). Although numerous studies have examined cervical cancer screening among the general population, few have specifically focused on healthcare workers (Lukorito, Wanyoro & Kimani, 2018). In Siaya County, previous research has largely excluded this demographic, and no studies have addressed the factors influencing screening uptake among medical professionals. This study, therefore, aimed to investigate the determinants that affect cervical cancer screening behavior among healthcare providers in Siaya County, Kenya.

1.4 Main Objective

To assess the predictors of cancer of the cervix screening uptake among health care providers in Siaya County.

1.5 Specific Objectives

1. To establish the proportion of healthcare providers who have undergone cancer of the cervix screening.
2. To examine individual predictors associated with cancer of the cervix screening uptake among health care providers in Siaya County.
3. To investigate health system predictors of cervical cancer screening uptake among health care providers in Siaya County.

1.6 Research Questions

1. What is the proportion of healthcare providers who undergo cervical cancer screening in Siaya County?
2. What are the individual predictors associated with cervical cancer screening uptake among health care providers in Siaya County?
3. What are the health system predictors that influence uptake of cervical cancer screening among health care providers in Siaya County?

1.7 Justification of the Study

Incidences of late diagnosis among healthcare providers that lead to deaths have been reported in major hospitals in Siaya County (Reports from Siaya County Health Department, 2022). Further studies carried out on cancer of the cervix screening in Siaya County have only majored on the general population. This study therefore is timely and has the potential to contribute towards understanding factors or determinants contributing to low uptake of cancer of the cervix screening services among healthcare professionals. Such information is beneficial to healthcare professionals together with its leadership, members of the public, policy makers, and scholars in the nursing sector and medical fraternity in general. Notably, high number of cases of cancer of the cervix among healthcare professionals remains an issue

of public health concern despite the efforts being made to improve uptake of prevention and screening services.

Establishing the predictors of cancer of the cervix screening among health care professionals is an important step towards establishing the reasons for low uptake of such screening services and thereby recommending appropriate measures that can be used by healthcare professionals together with its leadership, members of the public, policy makers, and scholars in the nursing sector and medical fraternity in general to improve on the prevention and early detection of cancer of the cervix and thereby reduce cases of further complications and deaths associated with the disease. This study is essential as it provide information necessary for national policy formulation on how uptake of cancer of the cervix screening services can be improved not only among the healthcare providers but also among members of the general public. The study also adds to the available scholarly literature on the topic and therefore can always be used as a source of reference by other future scholars.

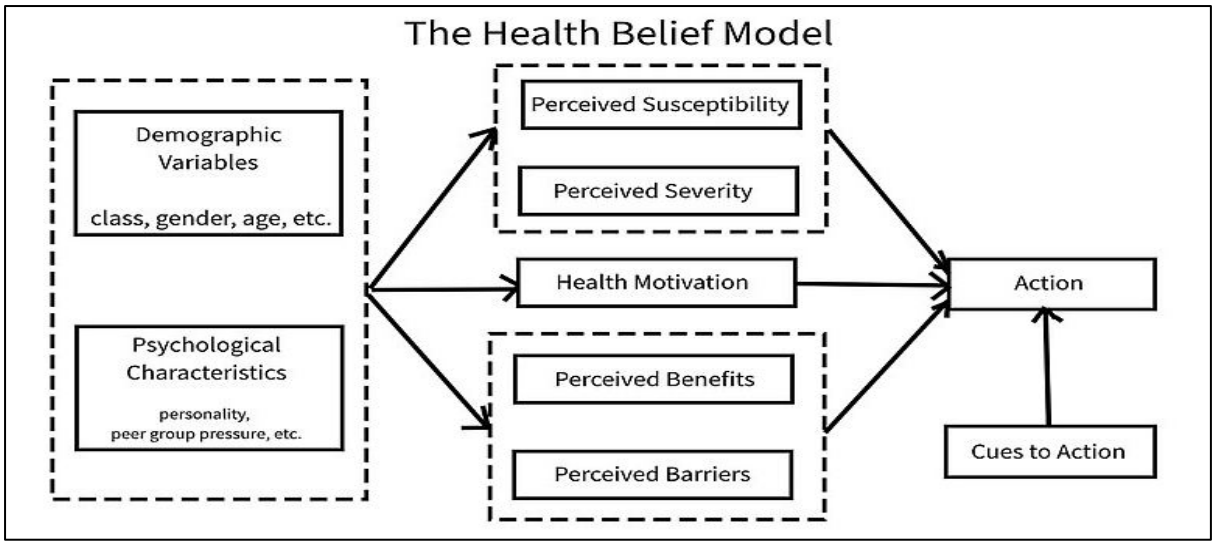
1.8 Limitations of the Study

The study adopted a cross-sectional study design, therefore the findings only present situation on the ground during the period of the study as there was no further follow-up. Moreover, reaching out to a bigger population of healthcare providers with cancer of the cervix screening needs was a challenge considering the fact that healthcare providers are widely distributed throughout the County. Some of these healthcare providers were not reachable during the date of data collection and this severely impacted on the study sample size. However, to address this limitation, mobilization was done through in-charges so as to reach out to as many healthcare providers as possible. Equally, prior arrangements through phones calls to specific health facility managers were done so as to help reach as many healthcare providers as possible. The researcher also tried to reach out to as many healthcare providers as

possible who were working within level 4 hospitals in Siaya County so as to maximize the sample size.

1.9 Theoretical Framework of the Study

The theoretical framework that guided the development of this study was the Health Belief Model (HBM). Health Belief Model (HBM) constitutes the widely used theory in health promotion and health education. It was first developed in a round 1950s for the purpose of explaining why medical programs, especially that on Tuberculosis was not becoming very successful in the US (Rimer & Glanz, 2005). The basic concept of the model is that health behavior is generally determined by individual beliefs or perceptions that one has about a disease and the existing strategies that can be used to reduce the chances of disease occurrence (Keah, Kombe & Ngure, 2020). As argued by Mugai et al. (2020), Health behaviors are based on models and theories, hence the usefulness of HBM. Just like in the case of Tuberculosis, HBM has widely been applied in many scholarly studies (Nyamasi, Angira & Owenga, 2020) and therefore can as well be used to explain individual beliefs or perceptions that influence uptake of cancer of the cervix screening among healthcare providers.



Source: Rimer, & Glanz (2005).

1.10 Conceptual Framework of the Study

This study was guided by the conceptual framework of the Health Belief Model (HBM). The HBM outlines six key constructs that influence health-related behaviors: perceived susceptibility, perceived severity, perceived benefits, perceived barriers, self-efficacy, and cues to action (Rimer & Glanz, 2005). These core components are shaped by various modifying factors, including age, cultural background, education level, socioeconomic status, and number of children, among others.

As illustrated in Figure 1.1, the uptake of cervical cancer screening among healthcare providers is influenced by their personal beliefs and perceptions—these serve as the independent variables in the model. Socio-demographic factors such as age, education, professional role, marital status, social class, and parity affect perceptions related to vulnerability, seriousness of the disease, expected benefits and obstacles to screening, confidence in performing the behavior, and motivating triggers (Denny et al., 2015).

In addition to the individual-level factors defined by the HBM, institutional factors within the healthcare system—such as the availability, affordability, and acceptability of screening services—also significantly influence screening behavior (Denny et al., 2015). Thus, the model integrates the six constructs of the HBM, demographic and social modifiers, and health system-related variables as independent variables, with cervical cancer screening uptake by healthcare workers representing the dependent variable (Rimer & Glanz, 2005). The HBM was therefore modified and used to develop the conceptual framework for this study as shown in the figure below:

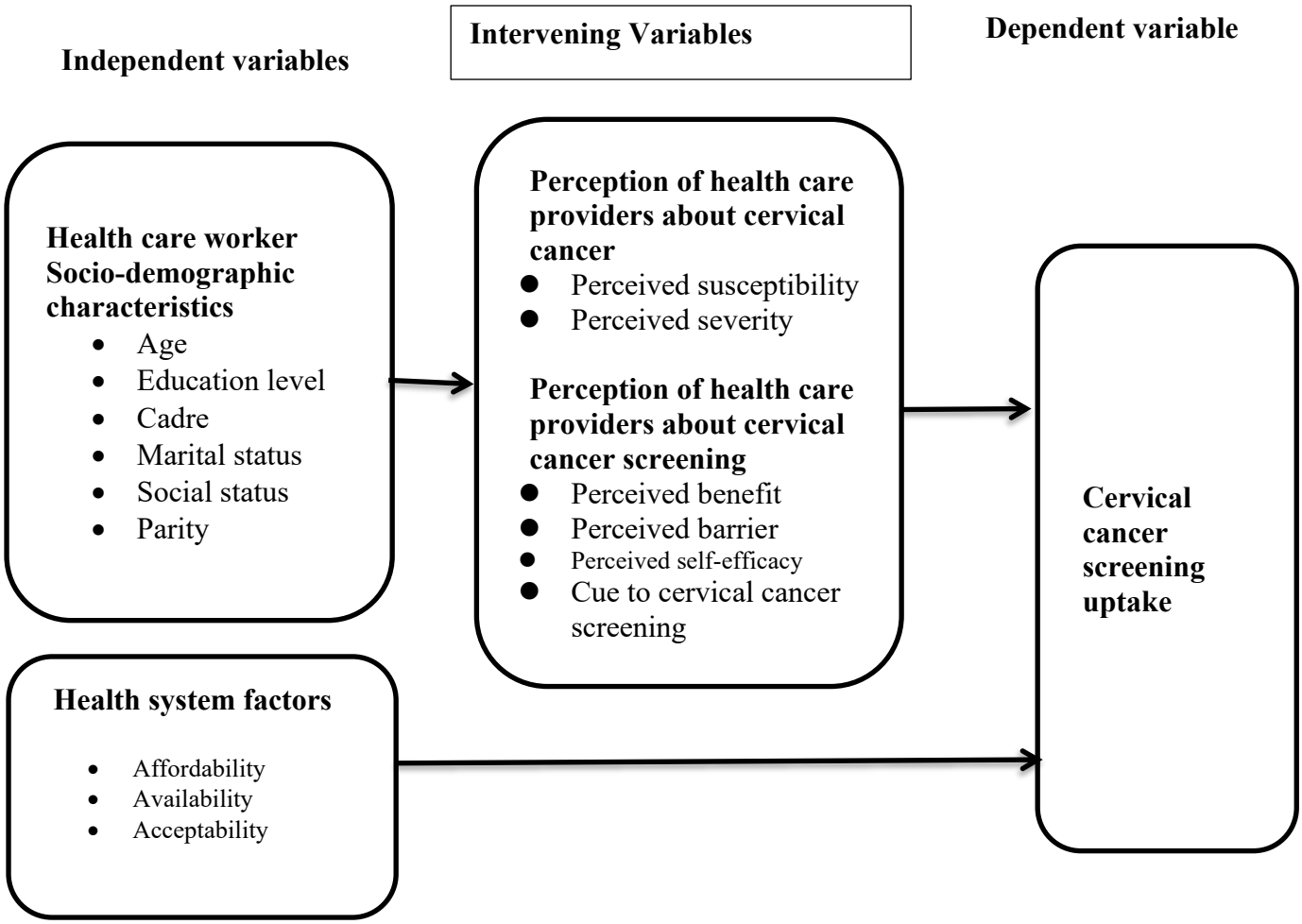


Figure 1.1 Conceptual framework of the Study

Source: Authors own generation as modified from Rimer, & Glanz (2005).

1.10 Operational Definition of terms

Acceptability: cancer of the cervix screening services that is tolerated or accepted by the healthcare providers to be screened in Siaya County

Affordability; Screening services offered at a cost that is inexpensive for the healthcare providers in Siaya County

Availability: cancer of the cervix screening services that are within reach of the healthcare providers in Siaya County

Cervical cancer screening; Steps undertaken to identify healthcare providers in Siaya County who have any form of cervical cells changes and those who do not have such abnormal growth

Cue to Cervical Cancer Screening: External stimuli or triggers that prompt healthcare providers to engage in cervical cancer screening.

Healthcare professionals; these are individuals who are trained to provide healthcare services within Level four hospitals in Siaya County.

Perceived Barrier: The perceived obstacles or negative aspects associated undertaking cervical cancer screening among healthcare providers in Siaya County

Perceived Benefit: The healthcare provider's belief in the effectiveness of cervical cancer screening to reduce the risk or severity of cervical cancer

Perceived Self-Efficacy: The individual healthcare provider's confidence in their ability to successfully seek for cervical cancer screening services

Perceived Severity: The healthcare provider's belief in the seriousness of cervical cancer condition

Perceived Susceptibility: The healthcare provider's belief about their vulnerability to cervical cancer

Predictors; Factors that predicts or cause healthcare providers in Siaya County to undertake cervical cancer screening or not

CHAPTER TWO

LITERATURE REVIEW

2.1 Overview

This chapter dives deep into the existing knowledge surrounding cancer of the cervix, screening methods, and the factors influencing screening uptake. It aligns with the research objectives of this study by providing a comprehensive literature review. The review begins with an exploration of cancer of the cervix itself. The review then explore existing literature on cancer of the cervix screening methods, management strategies, and the factors influencing a woman's decision to undergo screening. Finally, the chapter conclude by summarizing the key findings from the reviewed literature and identifying any critical knowledge gaps that this study aims to address.

2.2 Cervical Cancer

Cervical cancer is characterized by abnormal growth of the normal cells in the cervix. This is a region of the uterus that joins the vagina. This cancer manifests in various forms, including high-grade and low-grade serous carcinoma (Spring et al., 2018). Following a confirmed diagnosis, doctors determine the stage of the cancer, which indicates the extent of its spread. Stage 0, also known as carcinoma in situ, signifies that the cancer cells are confined to the surface layer of the cervix (epithelial cells) (Ayenew, et al., 2020). As the stage progresses, the cancer invades deeper tissues. Stage I represents a spread to the underlying connective tissue (Spring et al., 2018). In Stage II, the cancer extends beyond the cervix, potentially reaching the upper vagina or pelvic tissues. Stage III refers to the spread of cancer to the lower section of the vagina, while Stage IV is the most advanced stage, where the cancer has metastasized to distant organs, including the bladder, lungs, or bones (Becerra-Culqui, et al., 2018).

The known clinical features of cancer of the cervix comprise of abnormal bleeding in the uterine and menometrorrhagia among young people (Bosch, et al., 2002). Several reports have indicated that patients have always been demonstrated to be with some ovulating system. The occurrence of GCT is about 0.4 to 1.5 in every 100,000 (Mboineki, et al., 2020). Having abnormal cell cycle is closely associated with development and occurrence of cancers. Other signs and symptoms comprise of weight loss, discomfort within the area of the pelvis, changes in habits of bowel like constipation, the frequent desire to urinate, among others (Bray, et al., 2018).

2.2.1 Causes of cancer of the cervix

The cause of cancer of the cervix is usually associated with a positive HPV test from the Pap smear. HPV is usually transmitted during sexual intercourse with an individual having the virus and can result into different cancer types, though still preventable (Castellsagué, et al., 2002). Other risk factors include low socioeconomic status, smoking, family history, and/or diagnosis of HIV or AIDS (Njuguna, et al., 2018). If for some reason cancer of the cervix has gone undetected, the cancer can eventually cause the vaginal bleeding, pelvic pain, and pain sometimes during intercourse. At this point, education and treatment options such as surgery, radiation, chemotherapy, and other non-pharmacology therapy were discuss with patient (Castellsagué, et al., 2006).

Persistent infection with high-risk HPV types, accounts for more than 70% of cancer of the cervix cases globally (WHO, 2021). These types of HPV are considered oncogenic. This molecular interaction inhibits normal cell cycle regulation and promotes unrestrained cellular proliferation, a hallmark of cancer development (Bosch et al., 2002). While most HPV infections are transient and cleared naturally by the immune system, chronic infection—

especially in immunocompromised individuals—leads to the accumulation of genetic mutations in cervical epithelial cells, culminating in neoplasia (Delie AM, et al., 2024).

Co-factors such as smoking also significantly upsurge the risk of progression from HPV infection to cervical cancer (Castellsagué et al., 2006). Tobacco carcinogens are known to be concentrated in the cervical mucus of smokers, where they can cause DNA damage in the epithelial cells of the cervix. Similarly, hormonal changes induced by prolonged contraceptive use can affect local immune responses, thereby facilitating the persistence of HPV infections and cervical carcinogenesis (Denny, et al., 2015). Furthermore, having multiple sexual partners or a partner with a history of multiple partners increases the likelihood of HPV exposure and infection.

How immune function works can control an HPV infection, determining if it gets eliminated or keeps multiplying in a person's body (Ngune, et al., 2020). If a woman's immune system is not fully active, especially with HIV, she is more likely to have persistent HPV infections and cervical precancerous lesions and her chance of getting cervical cancer rises (Denny et al., 2015). Due to the weakening of their immune system such women have a higher number of severe cervical lesions. Besides, studies indicate that men who are not circumcised raise the risk of HPV and cervical cancer for their female partners (Castellsagué et al., 2002). This study stresses that cervical cancer is caused by a combination of viruses, ways of life, immunological factors and the environment.

2.2.2 Prevalence of cervical cancer

Public health experts estimate that cervical cancer results in the death of 275,000 women annually and leads to 528,000 additional cases around the globe each year. African countries hit by malaria often see the majority of deaths, with harsh statistics showing that 86% of all deaths in 2018 were reported in the region (WHO, 2018). Most of the sicknesses around the

world (about 70%) are found in poor regions and India accounts for more than 20% of all newly reported cases (WHO, 2018).

While there are a lot of cancer of the cervix prevention tools and technologies, they rarely get to the women who benefit from them most. A similar problem exists for healthcare workers who know about the disease but do not have enough preventive approaches at their disposal (Devarapalli, et al., 2018).

The CDC notes (2018) that cancer of the cervix is the second leading cause of female deaths on a global scale. Among every type of cancer, it also has the greatest percentage of people who pass away due to it. Approximately 231,000 women worldwide lose their lives to cervical cancer each year and 80% of those deaths take place in developing countries (Devarapalli, et al., 2018). According to Njuguna et al. (2018), Kenya has a yearly cancer of the cervix incidence of 2454 which leads to about 1676 deaths every year. When screening, diagnosis and early treatment are lacking, it is expected that new cancer cases and cancer deaths will rise sharply to more than 4000 and 2955 by 2025, respectively (Njuguna et al., 2018). While there is no national cervical cancer database, the number of cases among healthcare workers in Kenya is climbing. The projected increase of cervical cancer cases highlights a disturbing trend—cervical cancer is not only widespread but is also growing more prevalent in younger women, particularly in low-resource areas where organized screening programs are either inadequate or nonexistent (Gakidou et al., 2008). Further compounding the issue is the increasing burden of cervical cancer among healthcare professionals themselves. Despite their awareness of preventive practices, they are often constrained by occupational commitments, stigma, or lack of access to confidential services, which leads to low uptake of screening even within this knowledgeable group (Njuguna et al., 2018). The gap between knowledge and practice in this case is particularly troubling,

given that healthcare workers could otherwise serve as role models and influencers within the broader community.

2.3 Management of Cervical Cancer

2.3.1 Prevention of Cervical Cancer

There are several ways to prevent cervical cancer before it occurs. HPV prevention mainly includes encouraging a healthy lifestyle and HPV vaccination. Taking the HPV vaccine is one of our top preventive methods for cervical cancer (Dike & Ijeoma, 2018). These immunizations are meant to guard against the most dangerous types of HPV (Nwabichie et al., 2018). For best results, vaccination is suggested for children aged 9 to 14 when they have not already become sexually active and been exposed to HPV (WHO, 2014). Many countries have found that HPV vaccines significantly lower both HPV infections and the possibility of precancerous lesions on the cervix (Ngune, et al., 2020).

Just as importantly, health education teaches about the risks, symptoms and ways to prevent cancer of the cervix. Campaigns in schools can help people get the HPV vaccine, get screened for cervical cancer and correct common misunderstandings (Dulla, et al., 2018). Such programs ought to be matched to particular groups by considering their reading skills, cultural values and economic status (Ngutiku, et al., 2021). Health information can be distributed more effectively and behavior changed with smaller groups, public health events and using apps and websites (Ugwu et al., 2018).

Regular early detection with screening helps fight cancer of the cervix as much as preventing initial HPV infection (Gakidou, et al., 2008). Over the years, using the Pap smear to collect samples for examination by microscope to spot changes in cells was the main screening practice (Dike et al., 2018). Yet, HPV testing is now included in the standard array of tests. The test, either alone or with a Pap smear, is able to tell if cervical cells contain high-risk strains of HPV. Identifying these strains at the start lets doctors treat them before they become cancer

(Donatus, et al., 2019). How useful these screening programs are relies greatly on three important points: ease of access, cost and a consideration of cultural differences (WHO, 2019). To increase the number of people taking part and save more lives, it is crucial that screening is simple to access financially and is culturally appropriate.

As well as being used in screening, HPV testing can help identify people who are more likely to get cervical cancer and could benefit from prevention measures (Gatumo, et al. 2018). With HPV testing, experts are able to detect HPV in a woman's body before she has precancerous lesions, so treatment can begin early (Dijkstra et al., 2019). Primary testing for HPV, without the use of cell samples, has had good results in various countries and is considered an important method for screening on its own in some standards (Dulla et al., 2018). Nevertheless, access to infrastructure, qualified staff and reliable quality systems is necessary for proper implementation of HPV testing and its follow-up protocols (WHO, 2014).

2.3.2 Treatment of cervical cancer

Treatment options for cancer of the cervix include the following; eradicating the cells (cancer and noncancerous) through chemotherapy-the use of chemical substance for the treatment of cancer is an option for treatment (Humariya, et al., 2019). Radiation therapy is used in the treatment of cancer, targeting a specific area of the cancer and in conjunction with surgery has shown to be effective as well (Spring, King, Pagoto, Van Horn & Fisher, 2018). Brachytherapy is another option in which radioactive are surgically implanted directly into the cancer tissue (Ichaminya, 2018). A large cone of the cervix can be removed by colonization. Medications approved by FDA to treat cancer of the cervix include: *Topotecan,* an anticancer medicine that belongs to the group *'topoisomerase inhibitors'*.

Another method of treatment is the use of non-pharmacologic and alternative therapies such as complementary and alternative medicine (CAM). CAM may be used by individual to give them

a sense of autonomy and control in the management of their care (Spring, King, Pagoto, Van Horn & Fisher, 2018). At the same time, cultural beliefs may also play a role in their choices. Some non-pharmacology therapy includes acupuncture, reiki, yoga, aromatherapy, and reflexology among others (Kamau, 2019).

Management and recommendations for high-risk patients include clinical and gynecological examinations consecutively for a period of two years (Kamau, 2019). If two consecutive Pap test results show no abnormality, the patient can return to the regular screening scheduled which is every three years if negative (Spring, King, Pagoto, Van Horn & Fisher, 2018). Most cancer of the cervix can be detected early by getting regular, recommended Pap smears. Providers can refer patients for psychological support and provide literature to promote returning to normal life. Patient education regarding avoiding sexual contact with individuals who have had multiple partners can lower the risk (CDC, 2019).

2.3.3 Cervical cancer screening

Early detection of cancer of the cervix is highly achievable through regular Pap smears. If two consecutive Pap tests show no abnormalities, women can return to the recommended screening schedule, typically every three years (Ayenew et al., 2020). Pelvic examinations, where a doctor feels the pelvic organs through the vagina and abdomen, can also be performed.

One of the most common tools for early detection is the Pap smear (Devarapalli et al., 2018). During this procedure, a healthcare provider gently collects cells from the cervix and vagina using a cotton swab, brush, or small wooden instrument. These cells are then examined under a microscope for any signs of precancerous or cancerous changes (Kangmennaang, et al., 2018). Just like any woman, healthcare providers can benefit from regular Pap smears as a preventive measure against cancer of the cervix. Early detection allows for timely intervention before the disease progresses.

2.4 Uptake of Cervical Cancer Screening among healthcare providers

There are still major concerns around preventing and detecting cervical cancer all over the world, even though we know HPV is connected to this cancer (WHO, 2013). A large number of regions are held back by difficulties getting the HPV vaccine and continuing with basic screenings. Also, because many women are unaware of cervical cancer and may face stigma, some of them don't receive suitable healthcare for it (Keah, et al., 2020).

A majority of cervical cancers are caused by HPV which is an STD with multiple strains. Most women have their immune system deal with the virus, but a few will continue to have one after infection (Kangmennaang, et al., 2018). If not checked, the persistent infection may result in changes to cervical cells that could turn into cancer (Nega et al., 2018). Most cases of cancer in the cervix happen in women older than 30.

Experts appreciate how important it is to screen for cancer of the cervix, but few use these services (Mwangi et al., 2018). There is a big problem with people not being aware of screening and in using the available services. Those who did not present early with symptoms, who don't know enough about the disease and who are influenced by cultural beliefs about screening often face greater challenges. It appears from statistics that less than 3% of women ages 15 to 49 in Africa are regularly seeking out cancer of the cervix screening (Mwangi et al., 2018).

Health professionals, who appear knowledgeable, sometimes fail to seek proper screening (Lukorito, et al., 2018). The reasons for not getting cancer screening include too much work, embarrassment, feeling stigmatized or thinking it isn't necessary, according to a study by Ifemelumma et al. A number of nurses and clinicians postpone testing for cancer, anxious that a diagnosis could cause them to lose their job or become a subject of office gossip.

The problem of patient records being split among various healthcare organizations adds more difficulty. If health information is not organized in one place, providers may not easily access and interpret a woman's history of cervical screening or spot health trends for the disease (Mboumba, et al., 2021). To fight cancer of the cervix more effectively, we must greatly improve access to prevention, invest more in public education and develop better healthcare information systems.

2.5 Predictors associated with Cervical Cancer Screening Uptake

Predictors are factors that influence the likelihood of something happening. In this context, they are the reasons why healthcare providers choose to get screened for cancer of the cervix (Mugai et al., 2020). These factors can be categorized as individual or health system-related.

2.5.1 Individual predictors

Socio-demographic predictors

Several research projects have looked at the reasons why some people do and do not use cancer of the cervix screening services. In Kenya, scientists found that things like a person's level of education, type of work and their doctor's recommendation can influence whether they take the medication (Ncube et al., 2018). Lack of children and receiving a recent HIV diagnosis were discovered to play a role in reducing uptake of the intervention. Likewise, Nigerian research showed that people are ready for cervical cancer screening and so adding cancer screening services to HIV programs could help offer more care (Nwabichie et al., 2018).

The data showed that screening services were affected by a person's age; cancer of the cervix was most often diagnosed in women at the end of their 40s. The benefits of screening were greatest for women who were 40 to 60 years old. High perception of risk among HIV-positive women was connected with a greater use of preventive healthcare (Morema, et al., 2018).

Learning about diabetes helped by making users more confident and involved. Besides, the number and age of children played a role, since women with several young kids often did not have enough time for screening.

Women often did not learn about the test in advance, didn't know where it could be taken, were concerned about the amount they would have to pay, did not have any symptoms or had other time commitments (Mugai, et al., 2020). Age plays a major role in attendance at screening tests, mainly among women below 30 and those who are older than 65. Participants who had a lower education, jobless or were not married were more likely to rely less on cancer screening services (Ngune et al., 2020).

According to Ayenew, Zewdu and Nigussie (2020), using Pap smears varies greatly by age and the highest use is found among women aged 40 to 60. According to Mwangi, Gachau and Kabiru (2018), women who lacked literacy skills were most likely to avoid cancer of the cervix screening. According to Mugai et al. (2020), many uninsured individuals, women with less education, young individuals and those without a partner were more likely to not have Pap smear screening. These results demonstrate that different factors play a role in screening uptake for cervical cancer in United Kingdom populations.

The Health Belief Model (HBM)

HBM provides a framework for understanding health-related behaviors, including cancer of the cervix screening uptake. The model proposes six constructs that influence individuals' decisions to engage in preventive health behaviors like screening

Perceived susceptibility: denotes a belief that people have about whether they could get cancer of the cervix. Those who think they are at higher risk usually take advantage of screening services (Ichaminya, et al., 2018). According to research by Kamau (2019), the greater a person feels at risk for cervical cancer, the more likely they are to get screened. Such a view can

develop according to one's or their family's cancer history, how much they learn about cancer's risk factors and the statistics they know about cervical cancer in their community.

Yet, experts have also found that other reasons can cause people to get regular screenings. According to Kangmennaang et al. (2019), it is unlikely to be an important predictor by itself. They point out that items other than benefits and risk can be more important in affecting a person's decision to be screened for cancer (Mwangi, et al., 2018).

This concept matches the results from studies performed at Kenyatta National Hospital (Keah, Kombe & Ngure, 2020). The investigation found that many women shy away from screening because they think they will not get cancer. Because of this view linking cancer of the cervix to death, women in the study felt helpless and didn't want to use preventive options (Mwangi, et al., 2018). As a result, it proves how much awareness campaigns help. Research indicates that how aware people are affects their use of screening services (Keah, Kombe & Ngure, 2020). In a study involving Nairobi residents, most people recognized cancer of the cervix, but only around 3 out of 4 people said they received a Pap smear (Lukorito, Wanyoro and Kimani, 2018). This gap between awareness and action underscores the need for educational initiatives that go beyond simply raising awareness. Effective campaigns should also address misconceptions and empower women to take charge of their health by getting screened.

Perceived severity: describes the impact a person assigns to a particular condition or health concern. Screening is more common among those who believe cancer of the cervix is a serious illness (Keah, Kombe & Ngure, 2020). Study after study reveals that people who view cancer of the cervix as serious are more likely to go for cervical cancer screenings (Becerra-Culqui, et al., 2016). It is possible that becoming aware of what can result from leaving cervical abnormalities untreated such as cancer and death, influences this perception.

Still, researchers have found that indicating a high risk for disease is not always enough to push people to take part in screening. Some individuals may dismiss the seriousness of cervical cancer if they think it can be cured or if they aren't familiar with its later consequences.

Perceived benefit: The belief that having a screening helps identify problems early and decrease the risk of cervical cancer is what we call the perceived benefit. When individuals believe screening will benefit them, they are more likely to take it (Mwangi, et al., 2018). There is a proven link between trusting in the power of screening and doing it (early detection and decrease in cancer chance). Many health promotion and educational programs mention that regular screening can prevent dangerous diseases.

Even so, the way a person sees the benefits may change based on their cultural beliefs, trust in doctors or nurses and any bad experiences they have had during screening (Ifemelumma, et al., 2019). Using messages that reflect the various beliefs about screening might help interventions succeed.

Perceived barriers: Barriers that prevent screening such as money issues, fears of discomfort or trouble reaching screening services, are believed by individuals to exist. As a perceived barrier becomes more significant, a person is less likely to be screened for cancer (Keah, Kombe & Ngure, 2020). Throughout studies, five things have appeared most commonly as discouraging people from screening: fear of pain, embarrassment and the high cost involved (Becerra-Culqui, et al., 2016). If individuals receive information, have their anxiety addressed and have easy access to affordable screening, it can boost the number of people who get screened.

Different cultures may create different feelings about the barriers faced. It has been found that some ethnic minority women may deal with extra difficulties caused by language problems,

problems trusting medical professionals or traditional beliefs about discussing reproductive health (Becerra-Culqui, et al., 2016).

There is now evidence that several things stop women in developing countries from taking part in cancer of the cervix screening (Mugai et al., 2020; Ayenew et al., 2020; Lukorito et al., 2018). People are less likely to get screened because they often do not know about the importance of testing and because they are illiterate (Mugai et al., 2020). Some women think these services are meant just for people with a lot of education. When women feel well, their immediate needs can block their awareness of preventive steps (Mugai et al., 2020).

Views about health in a community and obligations given to men and women can also prevent some people from getting health care (Ayenew et al., 2020). Women could be stopped from obtaining healthcare or swayed by advice that doesn't support cancer screening. Inhospitable healthcare settings may also keep patients from taking part (Ayenew et al., 2020).

The way a family makes its living is another important factor. Researchers in developing countries noticed that people who were younger, had low incomes, less education, lived alone or waited to have a baby until they were over 25 were less likely to get screened (Lukorito et al., 2018). We discovered that verification intervals for cervical cancer can be longer for younger women, those who have financial concerns and are less educated, as well as women without much social support.

Cues to action: are things inside or outside the person that trigger them to do a certain thing. Actions from within or outside a person can greatly affect their decision to be screened for cancer of the cervix (Mwangi, et al., 2018). Cues may arrive as what healthcare workers suggest, as warnings during mass media campaigns or due to personal interactions with cervical cancer (Keah, Kombe & Ngure, 2020). Research shows that clear motivators can help people get tested for cancer. Having your healthcare provider recommend a cancer of the cervix

screening is considered one of the top factors leading to one (Scarinci et al., 2013). Medical staff need to make sure that individuals receive information on the benefits of screening and resolve any worries that people bring up (Ngune, et al., 2020). In addition to healthcare providers, media messages, encouragement from people I know and my own experiences, may lead me to action (Kamau, 2019). People's actions related to cervical cancer screening could be greatly influenced by interventions with multiple prompting elements (Ncube, et al., 2018).

Self-efficacy: means someone having confidence in their ability to handle tasks such as making and keeping an appointment for cervical cancer screening. Those who feel more capable are more likely to get tested for cervical cancer (Keah, Kombe & Ngure, 2020). Trusting in one's ability for screening often leads to getting screened (Keah, Kombe & Ngure, 2020). Taking part in activities that teach your skills, show examples and give support helps increase your likelihood of getting screened.

Nonetheless, individuals who feel unsure of their abilities may need more help to get past the obstacles to screening (Jin et al., 2017). Targeting interventions by helping people deal with fears about diagnosis or explaining where and how to get services may be quite effective.

2.5.2 Health system predictors associated with uptake of cervical cancer screening

Despite the early efforts with the program, some limitations make it less effective in Kenya (Keah et al., 2020). At present, screening isn't widely accessible everywhere in the country. As a result, there is little to no coverage in many areas. Besides, the healthcare system is not equipped with enough resources to determine illnesses and provide treatment at secondary clinics (Nega, et al., 2018). This is reason for concern among HIV-positive women, as they have a greater risk of severe illness (Devarapalli et al., 2018).

A number of difficulties prevent the development and advancement of cancer of the cervix screening efforts. Despite the fact that some screening can be performed cheaply using visual inspections, there are still major challenges due to old policies, improved training and a lack of equipment (Kamau, 2019). There are not enough treatments available for confirmed pre-cancer or cancer which makes the issue even bigger.

An important issue arises because each county does not implement the program the same way. As an illustration, having visual inspection devices is not enough in many areas because centers find it hard to arrange fast treatment on account of logistical challenges or issues with coordinating their referral processes (Kangmennaang et al., 2018). If it takes a while to diagnose and manage a disease, the risk of its progress increases.

Furthermore, healthcare providers are often not trained properly and as a result, rarely do screenings alone. Jordan's health professionals seldom receive regular refresher training, help from mentors or job guides at all sites (Were et al., 2020). Therefore, doctors depend on outsiders for assessment which slows down both screening and diagnosing.

Cervical cancer services are also rarely included in systems for maternal and reproductive health. Although HIV care makes use of outreach and monitoring methods, they are rarely used in cervical cancer programs (Nega, et al., 2018). Using more reliable cancer registries and electronic medical records will ensure we can account for how well the program is working and adjust it to serve the community's needs (WHO, 2018).

Insufficient systems for monitoring and evaluating programs, combined with data and program management problems, slow down improvement. Policymakers generally give more attention to health problems other than cancer of the cervix (Ngugi, et al., 2018). At present, the HPV vaccine which is a significant protection against HPV, is not part of the national immunization program, as the NCCPP strategic plan suggested in 2012-2015.

It is important to secure certain resources to start a complete cancer screening program for cervix at a healthcare facility (Ngugi, et al., 2018). There should be a separate area for screenings and treatments, as well as important tools such as examination tables, lamps, speculums and necessary supplies for checking images or Pap smears (Kangmennaang et al., 2018). Having set times each day or week for these services is necessary in healthcare settings.

The lack of a national program exclusively for cancer of the cervix could also explain why screening is not widely used (WHO, 2018). How widespread cervical cancer is in Kenya cannot be fully known as there are no strong programs to track the disease. Researchers have estimated wide numbers of newly reported cases, with women who live with HIV having a greater likelihood of getting cervical cancer (Ngugi, et al., 2018). Lack of national recommendations and limited money for disease prevention measures have raised the high burden of the disease.

Besides the problems in the healthcare system, cultural ideas, language difficulties and unhelpful attitudes from a few healthcare workers prevent women from wanting to have screening (Dugwi, et al., 2017). People face difficulty using cancer screening services because of money problems, the lack of available healthcare centers and negative opinions about the screenings.

2.6 Summary of Literature Review and Identified Knowledge Gap

Cancer of the cervix is commonly screened for among patients at health facilities, but the rate at which health workers receive these screens is still quite low. Very few studies have been done to explore how often cancer of the cervix screening is offered to Bedouins. There is no evidence to show if the reason for low participation is that healthcare providers are simply not aware of these opportunities. In addition, not much research has looked into how much people know about risk factors for cervical cancer, their choices for screening, available treatments and where to get support.

The current body of research does not fully explore what affects screening behaviors of healthcare professionals in terms of their profession, mental health and workplace. Most studies are focused on normal women and don't consider the particular obstacles experienced by female doctors. Also, there is very little information on how attitudes, seclusion or support from others affect screening procedures in healthcare places. There is also no clear information about how a person's gender, workload and perceived career risks influence their choices for preventing cervical cancer (Kamau, 2019).

Furthermore, not enough broad research has been done to understand how these factors lead to differences in healthcare professionals' cervix cancer screening practices. While other researchers have noticed blocking factors, most have not explored exactly how these factors influence choice or ability regarding screening services for healthcare workers.

CHAPTER THREE

RESEARCH METHODODOLOGY

3.1 Overview

This chapter outlines the methodology and tools employed in conducting the study. It covers several key components, including the research design, location of the study, target population, criteria for inclusion and exclusion, sampling techniques, determination of sample size, creation of research instruments, assessment of validity and reliability, procedures for data collection, data management strategies, methods of data processing and analysis, as well as the ethical guidelines adhered to throughout the research.

3.2 Research Design

This study employed a cross-sectional analytical design, incorporating both qualitative and quantitative approaches to data collection. This design was deemed suitable as it enables the gathering of information from a broad population within a limited timeframe. The research focused on a sample of healthcare professionals—specifically clinical officers, medical officers, and nurses—working in level four hospitals across Siaya County. Participation was voluntary, with the selected respondents contributing to the study by addressing the research questions.

3.3 Study Area

This study was done in Siaya County, one of the counties in the Western region. The County consist of the 6 counties in the previous Nyanza province. The county neighbors Kisumu, Vihiga, Kakamega and Busia. The main economic activities in the County are farming and fishing. It has six level four hospitals distributed within the six sub-counties namely: Gem, Ugunja, Ugenya, Alego Usonga, Bondo and Rarieda. The study was specifically conducted at level four hospitals (Ambira, Madiany, Yala, Siaya County Referral, Bondo, and Ukwala) in Siaya County. It is important to note that these hospitals are drown from all the six sub-counties

of the greater Siaya County. The sub-counties include Alego Usonga Ugenya, Gem, Bondo, Ugunja and Rarieda. From the relevant literature, no single study has been conducted to assess predictors of cancer of the cervix screening among healthcare providers in the county within the last few years.

3.4 Target Population

The study focused on health care providers including clinical officers, medical officers, and nurses working in level four hospitals (Ambira, Madiany, Yala, Siaya County Referral, Bondo, and Ukwala hospitals) in Siaya County. This was informed by the fact that it is only levels four hospitals within the county that have cadre mix. Other levels, health centres and dispensaries mainly comprise of nurses only and thus, such would have limited the study participants to only nurses.

3.5 Inclusion Criteria

- Health care providers (clinical officers, medical officers, and nurses) who had worked in the level 4 health facility for more than 3 months
- Health care providers working in level four hospitals in Siaya County who gave informed consent to participate in the study.

3.6 Exclusion Criteria

- Health care providers who did not give their consent to participate in the study
- Health care providers who met the inclusion criteria but were not on duty during the period of data collection.

3.7 Sampling

3.7.1 Sample size determination

This was determined by using the Fisher's (1999) formula:

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

Where

z = standard normal deviate corresponding to 95% confidence level (=1.96)

n = the required minimum sample size (if the population is more than 10,000)

p = Estimated proportion of nurses with training needs (Taken as 50% since it is not known).

d = degree of accuracy; set as 0.05

$n = (1.96^2 \times 0.5 \times 0.5)/0.05^2$

= 384

Cochran's correction formula was used to calculate the sample size since the population was less than 10,000.

Whereby n_0 is 384 and N is 336 (the population of healthcare providers who are eligible of taking part in the study)

$n = n0 / [1 + \{(n0 - 1) / N\}]$

$= 384/[1+ ((383)/336)]$

= 179

Plus 10% attrition

=197

As such the sample distribution is as shown in the table below: final sample sized was 181 as illustrated in **Table 3.1.**

Table 3.1: Proportionate Allocation of Sample per Health Facility

Hospital	**Population**	**Proportionate Sample**
AMBIRA	26	$197\frac{26}{336} = 15$
MADIANY	24	$197\frac{24}{336} = 14$
YALA	43	$197\frac{43}{336} = 25$

SCRH	141	$197\frac{141}{336} = 84$
BONDO	73	$197\frac{73}{336} = 42$
UKWALA	29	$197\frac{29}{336} = 17$
TOTAL	336	197

3.7.2 Sampling Procedure

The study participants were selected using stratified sampling strategy with each category of target population (Clinical officers, medical officers, and nurses) from the six level four hospitals forming the strata. In stratified sampling, the population is divided into homogeneous subgroups called strata based on certain characteristics such as cadre in this case. Using this strategy, the researcher selected samples of respondents from the strata of cadres and hospitals where they work. Simple random sampling was then applied to select respondents within individual stratum The list of healthcare providers on duty were generated from the duty roster and assigned different numbers from the first to the last. A lottery method was then applied to generate numbers which would take part in the study. It is important to note that the sampling process was done per cadre. In case a selected healthcare provider decline to participate in the study, the nearest neighboring healthcare provider with an eligible qualification was approached for participation.

3.8 Development of Research Instruments

One main research instrument was used in this study, that is, structured questionnaire.

3.8.1 Structured questionnaire

This study used a structured questionnaire to get relevant information related to the topic of study. The questionnaire had different sections. The first section was on socio-demographic information of the respondents including cadre, years in service, gender and age while the

subsequent sections involved questions that aimed to achieve the study objectives. The questionnaire had been chosen since it is best in collecting quantitative data. The questionnaire was adopted from a similar study done in the general population by Kamau (2019).

3.8.2 Key Informant Interview Guide

The data on health facility factors was collected through Key Informant Interviews (KII). This involved one-on-one interviews with the managers at the Sub-County level who were directly involved in overseeing the operation of the hospitals. The nursing officers-in-charge or Medical Officers working in the level four hospitals were interviewed. A Key Informant Interview (KII) Tool (Appendix IV) was used to obtain information. Each KII tool involved note-taking and recording where permission was granted and lasted approximately 45 minutes.

3.9 Validity and Reliability of the Data Collection Tools

3.9.1 Validity

The tools used in the study were examined by the supervisor to confirm their validity. Internal validity was ensured by designing the instrument in a way that directly aligned with the research objectives and questions (Cohen, Manion & Morrison, 2013).

3.9.2 Reliability

Before collecting data, pretesting of the questionnaires was done on 10% (18) of the sample in a similar population but in a different hospitalin the neighboring county (Busia County referral hospital). Data completeness and consistency check was done during the pretest and necessary adjustments done where it deemed fit. Questions that appeared to be redundant and ambiguous during the pre-test were revised accordingly. The reliability was assessed using Cronbach's alpha, which yielded a coefficient of 0.8, indicating an acceptable level of internal consistency. All these were done to ensure that data collected would yield consistent

results when repeated different times. Triangulation (use of many tools like questionnaire and secondary literature in data collection) was also applied to ensure that results obtained were reliable.

3.12 Data Collection Procedure

First, six research assistants, with qualification of at least diploma in health related course were recruited and trained for two days. Research assistant walked into different departments within the hospital, ask for consent from the departmental head and then approached the eligible healthcare providers based on the list of participants generated from the sampling procedure explained in 3.7.2 above (clinical officers, medical officers, and nurses) and asked for their consent to take part in the study. The research assistant then administered questionnaire to the eligible healthcare providers who had accepted to take part in the study according to the sample size. It is important to note that the questionnaire was self-administered, that is, the research assistant gave the healthcare providers the questionnaire to fill by themselves and maybe offered any clarification when needed.

3.13 Data Management

All the questionnaires were reviewed for completeness and then stored in a safe folder and locked in the researcher's office to be accessed only by the researcher and supervisors.

3.14 Data Processing and Analysis

Data was first edited for accuracy, readability, consistence and completeness; thereafter coded and entered into a computer using software SPSS (Statistical Package for the Social Sciences) version 28.0. The data was analyzed using descriptive and inferential statistics. The predictors for uptake of cervical cancer screening were determined using bivariate logistic regression and odds ratio used to assess the strength of the association. All statistical tests were performed at 0.05 level of significance (95% confidence interval). Multivariate logistic regression was done were including all the independent variables with p value of < 0.02 in the model to determine predictors of uptake of cervical cancer screening.

The qualitative data were categorized into themes and coded based on the study's objectives. A thematic analysis approach was used to interpret the data, following the framework outlined by Braun and Clarke (Nowell et al., 2018). Key insights were grouped into thematic categories, and the findings were presented and discussed in conjunction with the quantitative results.

3.15 Ethical Considerations

Ethical clearance was (reference number; MMU/COR:403012 Vol 5(01)) sought from the department of nursing, Masinde Muliro University of Science and Technology. Additionally, the researcher obtained a permit of permission to conduct the research from the National Council of Science and Technology for Innovation (NACOSTI). Thereafter; research permit was sought from County health office –Siaya. Ethical issues were strictly considered. The following ethical principles were equally adhered to:

Informed Consent

Autonomy

This principle highlights the importance of respecting individuals' autonomy and their ability to make informed choices regarding their involvement in research. Participation in the study was entirely voluntary, and individuals had the right to withdraw at any stage without facing

any negative repercussions. Prior to taking part, participants were required to provide written consent by signing their names.

Confidentiality/privacy

Confidentiality refers to the researcher's obligation to protect the information provided by participants from unauthorized disclosure. Participants were assured of anonymity and confidentiality/privacy throughout the study. The informed consent was sought from study participants prior to their participation in the study and the aim of the study explained to them (Nyamasi, et al., 2020).

Beneficence

Beneficence means maximizing potential benefits, while non-maleficence means minimizing potential harm.The principle of beneficence was enhanced as the participants were informed that there was no harm likely to arise from the study and that the study was only geared towards improving the uptake of cervical cancer screening.

CHAPTER FOUR

RESULTS

4.1 Overview

This chapter presents results guided by the research objectives. The chapter includes results on socio-demographic characteristics of the study participants, proportion of healthcare providers who have undergone cervical cancer screening in siaya county, individual predictors associated with cervical cancer screening uptake, and the health system predictors that influence cervical cancer screening uptake.

A total of 186 healthcare providers participated in the study out of the expected 197 giving a response rate of 94.4%.

4.2 Socio-demographic characteristics of the study participants

Table 4.1 shows results on socio-demographic characteristics of the respondents. Most of healthcare workers who participated in the study were in the age group of 30 – 39 (47.3%) followed by the younger age group of 20 – 29 years and a mean age of 34.3 ± 8.2 ranging from 24.0 – 55.0 years. Majority were married (71.0%) with an average parity of 2.7. Most of the respondents were affiliated to protestant denominations (46.2%) with an equal proportion (75.3%) being diploma holders or nurses. The average years of service was 6.8 ± 6.3 and ranged from 1.0 – 30.0 years.

Table 4.1: Socio-demographic characteristics of the study participants

Variable	**Categories**	**Frequency (n)**	**Percent (%)**
Age group in years	20 – 29	58	31.3
	30 – 39	88	47.3
	40 – 49	20	10.7
	≥ 50	20	10.7
Mean in years ± SD (Range)		34.3 ± 8.2 (24.0 – 55.0)	
Marital status	Married	132	71.0

	Single	46	24.7
	Widow	8	4.3
Mean parity ± SD (Range)		2.7 ± 1.0 (1 – 5)	
Religious affiliation	Protestant	86	46.2
	Catholic	82	44.1
	Others	18	9.7
Highest level of education	Certificate	4	2.1
	Diploma	140	75.3
	Higher Diploma / Degree	42	22.6
Cadre	Nurse	140	75.3
	Clinical Officer	46	24.7
Average years of service ± SD Range		6.8 ± 6.3 1.0 – 30.0	

4.3 Proportion of healthcare providers who have undergone cervical cancer Screening

Table 4.2 presents results on respondents' cancer screening status.

The proportion of cervical cancer screening among the participants was 77.4% (n=144) with more than half (58.3%) having been screened in a different facility from where they worked. Majority (77.8%) were offered screening services by their nursing colleagues and a few by clinical officers (15.3%) and medical doctors (4.2%). Generally, decision to go for screening was self-initiated (91.7%) with the main type of cervical screening that was done being VIA/VILI (90.3%) and the least being HPV test (1.4%). The leading frequency preference of doing screening is five yearly (38.2%) followed by three yearly (36.0%

Table 4.2: Cervical cancer screening status

Variable	**Categories**	**Frequency (n)**	**Percent (%)**
Screened for cancer of cervix	Yes	144	77.4
	No	42	22.6
Where screening was done	Current Facility where I work	60	41.7
	A facility different from where I work	84	58.3
Who offered the screening services	Nurse	112	77.8
	Clinical Officer	22	15.3
	Medical Officer	6	4.2

	Others	4	2.8
Who prescribed	Health provider	12	8.3
	Self-initiative	132	91.7
What type of cervical cancer screening was done	Pap Smear	10	6.9
	HPV Test	2	1.4
	VIA/VILI Test	130	90.3
	Others	2	1.4
How often do you do or intend to do cervical cancer screening?	Every year	24	12.9
	Every 3 years	67	36.0
	Every 5 years	71	38.2
	Every 10 years	10	5.4
	Others	14	7.5

Findings from the key informants showed that lack of continuous awareness among staff was a major challenge and had greatly contributed to some staff members not seeking the screening services. The respondents outlined that the institutions do not create any awareness on the need for cervical cancer screening among their staff and even those who seek for such services do so through their own individual initiative. They emphasized that awareness creation would do much better in improving the statistics. The following is a quote from one of the key informants;

'.....There is need for CMEs……Awareness creation through hospital WhatsApp group'(KI1).

When last screened

Figure 4.1 displays year when study participants were last screened for cervical cancer. Nearly one-third (31.2%) were screened in 2021. Less than one in five were screened in 2019 (16.7%). There is a general increasing trend of uptake of cervical cancer screening from 2015 to 2021.

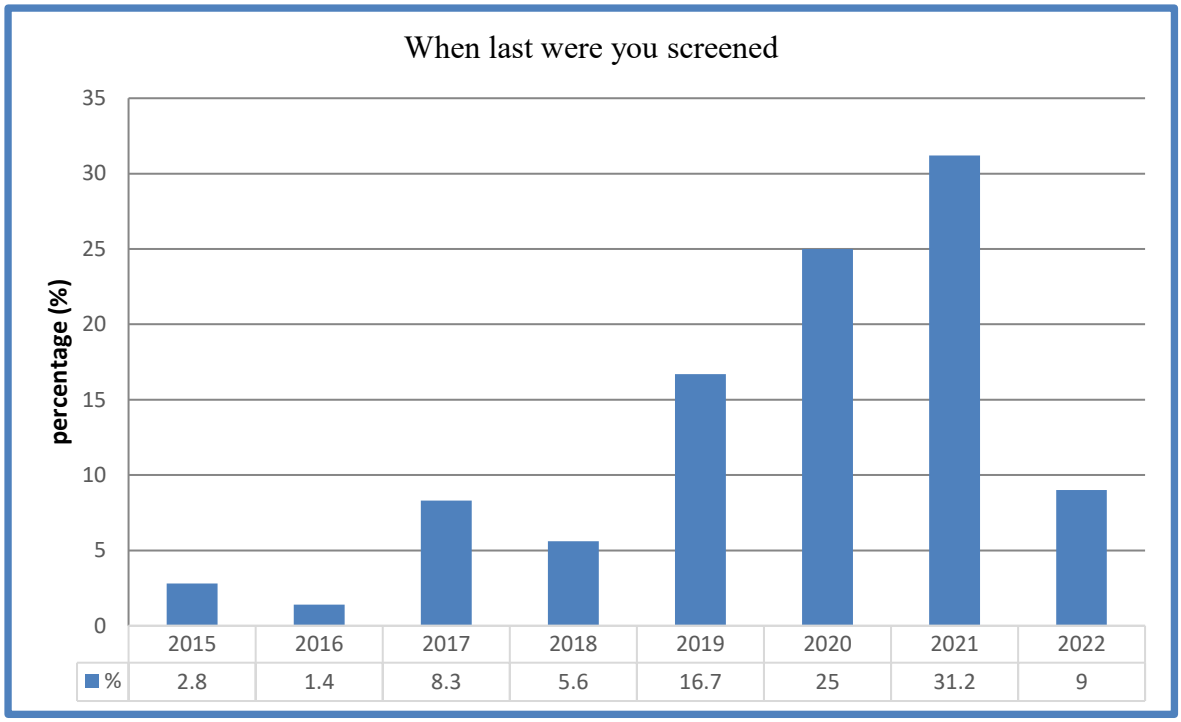


Figure 4.1: When last screened for cervical cancer

4.4 Individual predictors associated with cervical cancer screening uptake

4.4.1 Respondents' perceptions on the uptake of cervical cancer screening

Table 4.3 shows study findings on respondents' perceptions on the uptake of cancer of the cervix screening. A relatively smaller proportion of respondents perceived lack of time (35.5%) or the screening being expensive (14.0%). Again, only a minority did not perceive cancer of the cervix as a severe disease as reported by 12.9% that cancer is not as severe as other diseases like HIV nor a serious disease in this region (11.8%). Majority confirmed the benefits of cancer of the cervix screening by refuting the statements that they do not get the screening service when they need it (84.9%) or that cancer of the cervix screening cannot prevent one from developing the disease (66.7%). Regarding susceptibility of the disease, most of the respondents disagreed with the statements that they do not think it is important for healthcare providers to be screened for cancer of the cervix (92.5%) nor think they are susceptible to cancer of the cervix (89.3%). On self-efficacy, 21.5% have never thought

about cancer of the cervix screening, 41.9% feel embarrassed being examined in my private parts while 38.2% were worried that they could be told that they have the disease. Results on cue to action statements reveal that 89.3% disagreed that their husband or partner cannot approve it.

Table 4.3: Respondents' perceptions on cervical cancer screening

Variables	**Categories**	**Frequecncy (n)**	**Percent (%)**
Perceived barrier			
Lack of time	Agree	66	35.5
	Disagree	120	64.5
Cervical cancer screening is expensive	Agree	26	14.0
	Disagree	160	86.0
Perceived severity			
Cancer is not as severe as other diseases like HIV	Agree	24	12.9
	Disagree	162	87.1
Cervical cancer is not a serious disease in this region	Agree	22	11.8
	Disagree	164	88.2
Perceived benefits			
I do not get the screening service when I need it	Agree	28	15.1
	Disagree	158	84.9
Cervical cancer screening cannot prevent one from developing the disease.	Agree	62	33.3
	Disagree	124	66.7
Perceived susceptibility			
I do not think it is important for healthcare providers to be screened for cervical cancer	Agree	14	7.3
	Disagree	172	92.5
I don't think am susceptible to cancer of the cervix	Agree	20	10.7
	Disagree	166	89.3
Self-efficacy			
I have never thought about it	Agree	40	21.5
	Disagree	146	78.5
I feel embarrassed being examined in my private parts	Agree	78	41.9
	Disagree	108	58.1
I am worried that I can be told that I have the disease	Agree	71	38.2
	Disagree	115	61.8
Cue to action			
My husband or partner cannot approve it	Agree	20	10.7
	Disagree	166	89.3

4.4.2 Individual factors associated with cervical cancer screening uptake among health care providers

Table 4.4 shows bivariate analysis results on individual factors associated with cancer of the cervix screening uptake among healthcare providers. There was statistically significant difference between the younger age group and older ones in terms uptake of cancer of the cervix screening. Those aged between 20 – 29 years were 60% less likely to have undergone screening (OR: 0.4; 95% CI: 0.2 – 0.8; p = 0.009). On the contrary, the married were almost four times more likely to have been screened compared to those who were single or widows (OR: 3.8; 95% CI: 1.9 – 7.9; p = 0.0002). Healthcare providers with at most two children were 70% less likely to have been screened (OR: 0.3; 95% CI: 0.2 – 0.7; p = 0.004). Equally, having worked for less than six years was statistically associated with uptake of cancer of the cervix screening. Those who worked for less than six years were 60% unlikely to have gone for cancer of the cervix screening (OR: 0.4; 95% CI: 0.2 – 1.0; p = 0.04). Although not statistically significant, healthcare providers with diploma were 60% less likely to have been screened for cancer of the cervix (p = 0.07).

Table 4.4: Individual predictors associated with cervical cancer screening uptake among health care providers

Independent variable	**Categories**	**N**	**Uptake of Cervical Screening**		**OR**	**95% CI**	**P value**
			Yes	**No**			
Age group in years	20 – 29	58	65.5	34.5	0.4	0.2 – 0.8	**0.009**
	≥ 30	128	82.8	17.2			
Marital status	Married	132	84.8	15.2	3.8	1.9 – 7.9	**0.0002**
	Single, Widow	54	59.3	40.7			
Religion	Protestants	86	79.1	20.9	1.2	0.6 – 2.4	0.62
	Catholic, Others	100	76.0	24.0			
Parity	≤ 2	79	67.1	32.9	0.3	0.2 – 0.7	**0.004**
	≥ 3	107	85.1	15.9			
Qualification	Diploma	140	74.3	25.7	0.4		0.07

	Certificate, Higher diploma, Degree	46	87.0	13.0		0.2 – 1.1	
Cadre	Nurse	140	77.1	22.9	0.9	0.4 – 2.1	0.87
	Clinical Officer	46	78.3	21.7			
Years of service	≤ 5	107	72.0	28.0	0.4	0.2 – 1.0	**0.04**
	≥ 6	79	84.8	15.2			

Include qualitative results here

4.4.3Predictors of cervical cancer screening among healthcare providers

Table 4.5 presents predictors of cervical cancer screening among health care providers. After controlling for confounders, being married (AOR: 3.0; 95% CI: 1.23 – 7.43; p = 0.02) and finding it hard to get transport to hospital where screening is done (AOR: 18.6; 95% CI: 3.20 – 30.6; p = 0.001) were positively associated with uptake of cervical cancer screening. Having worked for at least five years (AOR: 0.2; 95% CI: 0.08 – 0.75; p = 0.0141) and perceived self-efficacy (AOR: 0.2; 95% CI: 0.06 – 0.53; p = 0.002) were negatively predictors of uptake of cancer of the cervix screening.

Table 4.5: Predictors of cervical cancer screening uptake among healthcare providers

Predictor	**Categories**	**Estimate**	**AOR**	**95% CI**	**P-value**
Age group	≤ 29 years vs ≥ 30	0.15	1.2	0.35 – 3.91	0.80
Marital status	Married vs Single, Widow	1.10	3.0	1.23 – 7.43	**0.02**
Parity	≤ 2 vs ≥ 3	-0.54	0.6	0.22 – 1.57	0.28
Qualification	Diploma vs vs Higher diploma, Degree	-0.59	0.6	0.17 – 1.76	0.31
Years of service	≤ 5 vs ≥ 3	-1.43	0.2	0.08 – 0.75	**0.014**
Perceived susceptibility	Agreed vs Disagreed	-1.46	0.2	0.04 – 1.20	0.08
Perceived Self-efficacy	Agreed vs Disagreed	-1.70	0.2	0.06 – 0.53	**0.002**
Cue to action	Agreed Vs Disagreed	-1.46	0.2	0.04 – 1.22	0.08
Hard for you to get transport to	Yes vs No	2.92	18.6	3.20 – 30.6	**0.001**

go for screening in the hospital					
Hospital has special days when they sensitize their staff about cervical cancer screening	Yes vs No	0.69	2.0	0.33 – 12.29	.45

4.4.3 Relationship between healthcare providers' Perception and cervical cancer screening uptake

Table 4.6 shows results on the analysis of six Health Belief Model sub-domains based on the statements presented to healthcare providers under each sub-domain. The Likert scale responses were summed up in each sub-domain and mean calculated, the denominator being the total number of statements in each sub-domain. A rating of greater than or equal to 3 was treated as 'agreed' while less than 3 was treated as 'disagreed.'

The comparison between the HBM parameters with respect to uptake of cancer of the cervix screening shows statistically significant association between perceived susceptibility, perceived self-efficacy and uptake of cancer of the cervix screening among the healthcare providers. Healthcare providers who agreed that they do not think it is important for healthcare providers to be screened for cancer of the cervix or that they do not think they are susceptible to cancer of the cervix were 80% less likely to have gone for cancer of the cervix screening (OR: 0.2; 95% CI: 0.1 – 0.6; p = 0.003) compared to those who disagreed. Similarly, healthcare providers who agreed that they had never thought about it, felt embarrassed being examined in my private parts or were worried that they could be told that they have the disease (self-efficacy) were 70% less likely to have undergone screening for cancer of the cervix unlike their counterparts who disagreed with the statement (OR: 0.3; 95% CI: 0.1 – 0.6; p = 0.0008). Although not statistically significant, respondents who agreed that they do not get the screening service when they need it or that cancer of the cervix

screening cannot prevent one from developing the disease were upto three times more likely to go for screening (p = 0.53). There was no significant association between perceived barriers (p = 0.56), perceived severity (p = 0.40), cue to action (p = 0.09) and uptake of cancer of the cervix screening.

Table 4.6: Relationship between healthcare providers' behavior and cervical cancer screening uptake

Independent variable	Categories	N	Uptake of Cervical Screening		OR	95% CI	P value
			Yes	No			
Perceived barriers	Agree	30	73.3	26.7	0.8	0.3 – 1.9	0.56
	Disagree	156	78.2	21.8			
Perceived severity	Agree	20	70.0	30.0	0.6	0.2 – 1.8	0.40
	Disagree	166	78.3	21.7			
Perceived benefits	Agree	42	80.9	19.1	1.3	0.6 – 3.1	0.53
	Disagree	144	76.4	23.6			
Perceived susceptibility	Agree	14	42.9	57.1	0.2	0.1 – 0.6	**0.003**
	Disagree	172	80.2	19.8			
Perceived self-efficacy	Agree	58	62.1	37.9	0.3	0.1 – 0.6	**0.0008**
	Disagree	128	84.4	15.6			
Cue to action	Agree	14	57.1	42.9	0.4	0.1 – 1.1	0.09
	Disagree	172	79.1	20.9			

4.5 Health system predictors that influence cervical cancer screening uptake

4.5.1 Availability, acceptability and affordability of cervical cancer screening services

Table 4.7 presents results on healthcare providers views on availability, acceptability and affordability of cancer screening services in the study area. All the respondents confirmed that their hospitals have cancer screening services. Slightly more than a quarter (26.9%) agreed that it would be hard for you to get transport to go for screening in the hospital. Only a few respondents reported their hospital have a special day for conducting cancer of the cervix screening (17.2%). Majority stated that the hospitals have the necessary equipment and materials for performing the cancer of the cervix screening services (93.6%) with 87.1%

stating that equipment and materials for performing the cancer of the cervix screening services are in functional condition.

An overwhelming majority agreed that they are given appropriate privacy as you are being examined at the health facility (98.9%) and health care providers offering screening services polite and approachable (97.8%). However, a smaller proportion accepted that the hospitals have special days when they sensitize their staff about cancer of the cervix screening (29.0%). Generally, cervical screening in hospitals is free as affirmed by majority of respondents (98.9%) making the services be affordable (97.8%).

Table 4.7: Availability, affordability and acceptability of cervical cancer screening services

Variables	**Categories**	**n**	**%**
Availability/Availability			
Hospital has screening services	Yes	186	100.0
	No	0	0.0
Would it be hard for you to get transport to go for screening in the hospital	Yes	50	26.9
	No	136	73.1
Does the hospital have a special day for conducting cancer of the cervix screening?	Yes	32	17.2
	No	154	82.8
Does the hospital have the necessary equipment and materials for performing the cancer of the cervix screening services?	Yes	174	93.6
	No	12	6.4
Condition are these equipment and materials for performing the cancer of the cervix screening services?	Functional	162	87.1
	Dysfunctional	8	4.3
	Unknown	14	7.5
	Out of stock	2	1.1
Acceptability			
Given appropriate privacy as you are being examined	Yes	184	98.9
	No	2	1.1
Hospital has special days when they sensitize their staff about cancer of the cervix screening	Yes	54	29.0
	No	132	71.0
Health care providers offering screening services are polite and approachable	Yes	182	97.8
	No	4	2.2
Affordability			
How much is charged for cancer of the cervix screening	Free	184	98.9
	KSh. 500	2	1.1
Is the price quoted above affordable?	Yes	182	97.8
	No	4	2.2

4.5.2 Relationship between health system factors and cervical cancer screening uptake

Table 4.8 presents results on availability, acceptability and uptake of cancer of the cervix screening. There were higher odds among respondents who agreed that it would be hard to get transport to go for screening in the hospital compared to those who disagreed (OR: 4.4; 95% CI: 1.5 – 13.2; p = 0.004). Equally, respondents who affirmed that the hospital has special days when they sensitize their staff about cancer of the cervix screening were five times more likely to have been screened for cancer of the cervix (OR: 5.0; 95% CI: 1.7 – 15.0; p = 0.001). Though not statistically significant, healthcare providers whose hospitals had have a special day for conducting cancer of the cervix screening were upto 7 times more likely to have been screened for cancer of the cervix (p = 0.13).

The hospitals offers screening services through VIA/VILLI tests. The screening is done throughout the week though through personal decision as explained by one of the key informants: *'…. The facility offers screening throughout the week…..It is individual initiative to seek services' (KI3).* The respondents outlined that the institutions do not create any awareness on the need for cancer of the cervix screening among their staff and even those who seek for such services do so through their own individual initiative.

According to the health care providers, there were no charges for cancer of the cervix screening services in public health facilities. As explained by one of the key informants: '…. *The facility offers screening services at no cost….. (KI5).*

The providers reported that acceptability of the cancer of the cervix screening services was not a major problem in the study area. According to them, there were no major cultural, religious or privacy issues related to uptake of cancer of the cervix screening. The only problems were fear of possible positive test outcome, lack of staff sensitization among others as stated by one of the key informant respondents "……*Some staff members claim there is*

pain as a result of the use of the speculum'(KI2). Others fail to seek for the screening services due to stigma associated with the process.

Table 4.8: Relationship between health system factors and cervical cancer screening uptake

Independent variable	**Categories**	**N**	**Uptake of Cervical Screening**		**OR**	**95% CI**	**P value**
			Yes	**No**			
Availability							
Would it be hard for you to get transport to go for screening in the hospital	Yes	50	92.0	8.0	4.4	1.5 – 13.2	**0.004**
	No	136	72.1	27.9			
Hospital have a special day for conducting cancer of the cervix screening?	Yes	32	87.5	12.5	2.3	0.7 – 6.9	0.13
	No	154	75.3	24.7			
Hospital have the necessary equipment and materials for performing the cancer of the cervix screening services	Yes	77.0	23.0		0.7	0.1 – 3.2	1.00
	No	83.3	16.7				
Condition are these equipment and materials for performing the cancer of the cervix screening services	Functional	162	77.8	22.2	1.2	0.4 – 3.1	0.76
	Non-functional or out of stock	24	75.0	25.0			
Acceptability							
Hospital has special days when they sensitize their staff about cancer of the cervix screening	Yes	54	92.6	7.4	5.0	1.7 – 15.0	**0.001**
	No	132	71.2	28.8			
Affordability							
How much is charged for cancer of the cervix screening	Free	184	98.9	2.1	4.3		0.77
	KSh. 500	2	78	22			

Is the price quoted above affordable?	Yes	182	97.8	77	4.1	1.6 – 14.0	0.68
	No	4	2.2	23			

CHAPTER 5

DISCUSSIONS

5.1 Overview

This study assessed the predictors associated with cancer of the cervix screening uptake among health care providers. This chapter present discussion of the results presented in chapter four guided by the specific objectives. The chapter begins with discussion on proportion of health care providers who have undergone cancer of the cervix screening, followed by individual predictors that are associated with cancer of the cervix screening uptake among health care providers, and lastly health system predictors that influence uptake of cancer of the cervix screening

5.2 Proportion of healthcare providers who have undergone cervical cancer screening

The proportion of healthcare providers who have undergone cervical cancer screening in Siaya County among the study participants was 77.4%, majority of whom were screened within the last three years (2019-2022). Similar study carried out by Oyekale, et al. (2022) on the predictors of cancer of the cervix screening among female health care workers working within hospitals in Osogbo, Osun State revealed that 75.3% of the healthcare providers were utilizing the cancer of the cervix screening services. Screening services are mostly offered by nurses (80.6%), clinical officers and medical officers (Ayenew, Zewdu & Nigussie (2020). Moreover, the decision to undergo the screening was out of individual's own prescription as confirmed by the findings of WHO (2018) that most uptake of cancer of the cervix screening services are as a result of individual motivations.

Though most of the studies (Devarapalli, Labani, Nagarjuna, Panchal & Asthana, 2018) had recorded Pap test as the commonly used method to screen for cancer of the cervix in which

a piece of cotton, a brush, or a small wooden stick is used to gently scrape cells from the cervix and vagina, the findings in the present study have shown that the most common type of cancer of the cervix screening in the population studied was VIA/VILI test (91.7%).

Unfortunately, most of the respondents reported that they often do cancer of the cervix screening after at least every five years, something that is not recommended. Devarapalli, Labani, Nagarjuna, Panchal & Asthana (2018) recommends that for healthcare providers, like any other women to avoid this killer disease, they have to screen for cancer of the cervix lesions frequently, 1-2 years.

5.2 Individual predictors that are associated with cervical cancer screening uptake among health care providers

The study also aimed to identify personal factors influencing the uptake of cancer of the cervix screening among healthcare workers, using elements of the Health Belief Model (HBM). Key variables examined included age, marital status, number of children (parity), and length of professional service. The Health Belief Model was utilized to assess various psychological and perceptual constructs that might impact screening behavior. These constructs included perceived susceptibility, perceived severity, perceived benefits, perceived barriers, self-efficacy, and cues to action.

Findings revealed a significant link between age and screening uptake. Healthcare providers aged 20–29 were found to be 60% less likely to have undergone cancer of the cervix screening. Additionally, married participants were nearly four times more likely to have been screened compared to their single or widowed counterparts. These results align with findings from a study by Ifemelumma et al. (2019), which also reported significant associations between age, marital status, years of practice, and parity with the utilization of cancer of the cervix screening services among female healthcare professionals. The study by Dulla, Daka, & Wakgari (2018) reported that as the married female healthcare providers become older and

with increased duration in service, they tend to develop reduced perceive fear of feeling embarrassed about the service as they consider themselves more susceptible to cancer of the cervix and will therefore, mostly like undertake the screening services.

The number of children the healthcare providers had given birth to also influences their uptake of cancer of the cervix screening services as those with at most two children were three times less likely to have been screened compared to those who had less than two children. Equally, years of service had a statistical association with uptake of cancer of the cervix screening. A similar study by Ngutiku, et al.(2021) had also reported that the more one stay in service, the more they are likely to undertake cancer of the cervix screening services probably because of reduced perceive fear of feeling embarrassed about the service. The study, however, established that there were no significant association between qualification, religion and profession, and the uptake of cancer of the cervix screening services. The study by Ifemelumma, et al. (2019) had also deduced that the cadre of a healthcare provider does not influence their uptake of cancer of the cervix screening services. The reason behind this could be that healthcare providers, despite the qualification or profession, are already trained in medical field and are knowledgeable and competent in matters related to cancer of the cervix information and screening needs and therefore their action for uptake can only be influenced by other factors.

Among the Health Belief Model constructs examined, only perceived susceptibility and self-efficacy were found to be significantly associated with the utilization of cancer of the cervix screening services. This supports the findings of Nwabichie, Manaf, and Ismail (2018), who noted that individuals with low levels of perceived susceptibility and self-efficacy were less likely to engage in preventive healthcare, as they did not consider themselves at risk for developing cervical cancer. Similarly, research conducted at Kenyatta National Hospital by Keah, Kombe, and Ngure (2020) showed that many female doctors and nurses did not

undergo cancer of the cervix screening because they believed they were not at risk. Additionally, the perception of cancer of the cervix as a terminal illness further discouraged them from seeking screening, as it was associated with an inevitable death.

Self-efficacy refers to a person's belief in their ability to successfully carry out a specific behavior. In this context, healthcare providers who had never considered getting screened, felt uncomfortable with genital examinations, or feared receiving a positive diagnosis were less likely to participate in cancer of the cervix screening.

Such arguments contradict the findings by Ngutiku, Mwenda & Maranga (2021) that had shown that education increases the uptake of preventive care. Healthcare providers are already trained in medical field and are expected to be knowledgeable and competent in matters related to cancer of the cervix information and screening needs which should increase their level of self-efficacy. The study had assumed that with the high level of education among the healthcare providers, all of them would have a higher self-efficacy.

5.3 Health system predictors that influence uptake of cervical cancer screening

This section sought to establish the Health system predictors (availability, acceptability and affordability) that influence cancer of the cervix screening uptake. Only availability and acceptability respectively had a significant association with the uptake of cancer of the cervix screening services.

5.3.1 Availability

There was a significant association between those who said it would be hard for them to get transport to go for screening in the hospital and the uptake of cancer of the cervix screening services. Equally, respondents who affirmed that the hospital has special days when they sensitize their staff about cancer of the cervix screening were five times more likely to have been screened for cervical cancer. The findings support the argument by Ngutiku, Mwenda & Maranga (2021) who clarified that lack of sensitization and awareness as well as transport

is a major contributor to low uptake of cancer of the cervix screening among nurses working at Thika Level 5 Hospital. Study by Becerra-Culqui, et al., (2018) has shown that women are more likely to undergo screening if services are geographically accessible, affordable, and offered at convenient hours. Barriers such as long travel distances, high costs, and limited clinic hours have been identified as deterrents to screening uptake, particularly in rural and underserved communities (Mboineki, et al., 2020).

5.3.2 Acceptability

The hospitals were reported to be offering appropriate privacy when examining women at the health facility. Moreover, the healthcare providers offering the screening services were reported to be polite and approachable. The respondents reported that the general acceptability of the cancer of the cervix screening services was not a major problem in the study area. According to them, there were no major cultural, religious or privacy issues related to uptake of cancer of the cervix screening. A similar study done by Ugwu, et al. (2018) in Nigeria had shown that acceptability of cancer of the cervix screening influenced the uptake of such services among female health-care workers in Enugu, Southeast Nigeria. Acceptability within the health system is a crucial predictor of screening uptake, encompassing various factors related to individuals' and communities' perceptions, attitudes, and beliefs regarding screening services (Becerra-Culqui, et al., 2018).

CHAPTER SIX

CONCLUSION AND RECOMMENDATIONS

6.1 Conclusions

The study results have shown that awareness of cancer of the cervix screening is very high among the healthcare providers. The screening uptake was, however, sub-optimal (at 77.4%), considering the fact that the study mainly involved nurses and clinical officers who were all aware and had advanced knowledge on the need for cancer of the cervix screening. This shows that healthcare providers have higher level of knowledge about cancer of the cervix and its consequences but still not all of them take the step of being screened. Conclusion as per each study objectives is as follows:

6.1.1 Proportion of healthcare providers who have undergone cervical cancer screening

The study results have shown that awareness of cancer of the cervix screening is very high among the healthcare providers. The screening uptake was at 77.4%. This shows that despite the fact that all the healthcare providers (100%) reported to be knowledgeable about cancer of the cervix and its consequences, not all of them take the step of being screened.

6.1.2 Individual predictors associated with cervical cancer screening uptake among health care providers in Siaya County

There was a significant association between age, marital status, parity, qualification and years of service, and the uptake of cancer of the cervix screening services. The study, however, established that there were no significant association between qualification, religion and profession, and the uptake of cancer of the cervix screening services.

With regards to the constructs of health belief model, only perceived susceptibility and self-efficacy had a significant association with the uptake of cancer of the cervix screening services. For instance, though the screening services were identified to be widely available,

some individuals believed that they were not at risk of developing the disease (low perceived susceptibility). Some healthcare providers also reported that they feel embarrassed of the vaginal examination (low self-efficacy).

6.1.3 Health system predictors of cervical cancer screening uptake among health care providers in Siaya County

Availability and acceptability were the main health system predictors that had significant association with the uptake of cancer of the cervix screening services. All the six level four hospitals in Siaya County offer cancer of the cervix screening services, during all the working hours of the week. Despite offering the services during their daily routines, hospitals do not have special days when they sensitize their staff about cancer of the cervix screening. Though not having significant association with uptake, cervical screening services is done free of charge at the respective hospitals, indicating that the service is affordable. Acceptability of the cancer of the cervix screening services is not a major problem in the study area as there are no major cultural, religious or privacy issues related to uptake of cancer of the cervix screening.

6.2: Recommendations for practice

6.2.1 Proportion of healthcare providers who have undergone cervical cancer screening

There should be a deliberate effort by both the Conty government of Siaya, individual health providers and the national government to enhance uptake from 77.4% currently to 100%.

6.2.2 Individual predictors associated with cervical cancer screening uptake among health care providers in Siaya County

There is need for hospitals within Siaya County to establish special days awareness and sensitization programs on susceptibility of healthcare providers to cancer of the cervix and the need for uptake of cancer of the cervix screening on a routine basis. This will eventually improve the individual predictors associated with cancer of the cervix screening uptake among

health care providers in Siaya County. During the sensitizations, healthcare workers need to be informed that they are all susceptible to cancer of the cervix and therefore need to develop high self-efficacy of undertaking cancer of the cervix screening on a regular basis.

6.2.3 Health system predictors of cervical cancer screening uptake among health care providers in Siaya County

c) The department of health in the study area needs to establish routine health screening days per hospital so as it increase availability and subsequently uptake.

6.3 Recommendations for future further study

Research should be conducted to investigate the gap between high awareness and low participation in cancer of the cervix screening. To better understand this discrepancy, a longitudinal cohort study would be more appropriate than a cross-sectional survey, as it would allow for a more in-depth exploration of the influencing factors over time.

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APPENDICES

Appendix 1: Consent Form

Informed Consent Form

MASINDE MULIRO UNIVERSITY OF SCIENCE AND TECHNOLOGY

DEPARTMENT OF NURSING RESEARCH, EDUCATION & MANAGEMENT

PARTICIPANT INFORMATION SHEET

Form number_____

Consent to participate in study:

Hallo, My Name is Imbuye Zilper Auma, I am conducting Research on PREDICTORS OF CERVICAL CANCER SCREENING UPTAKE AMONG HEALTH CARE PROVIDERS IN SIAYA COUNTY, for the award of degree of master of Science in nursing at Masinde Muliro University of Science and Technology.

Aim of the study

To determine the predictors of cervical cancer screening uptake among health care providers in Siaya County.

What participation Involves

If you decide to take part in this research, you will be asked to respond to a set of questions presented in the questionnaire, which has been designed specifically for this study, in order to gather the desired information. Your participation will require approximately 10 to 20 minutes of your time.

What side effects or risks you can expect from being in the study?

Regarding potential side effects or risks associated with participating in this study, it is important to note that there are no anticipated risks, as your involvement solely entails providing responses to the questionnaire.

Confidentiality

Your confidentiality is of utmost importance. All data collected will be kept private and will be used exclusively for the purposes of this study. Your name or identification number will not be linked to the collected information; instead, each participant will be assigned a unique number for identification purposes.

Are there benefits to taking part in the study?

While there are no direct benefits associated with participating in this study, it is hoped that the insights gained will contribute to the development of strategies aimed at improving the uptake of cervical cancer screening among healthcare providers in the County. This, in turn, may lead to the prevention of complications related to cervical cancer and potential fatalities.

Rights to Withdraw and Alternatives

Participation in this study is voluntary. You may withdraw from the study at any point, even after initially agreeing to take part. Your decision to refuse participation or withdraw will not result in any penalties or loss of benefits.

Who to contact

Contact IMBUYE ZILPER AUMA from School of NURSING, MMUST in case of anything. Mobile phone 0721279438; email address: zilperimbuye@gmail.com.

Do you agree?

Yes, I agree to be part of this study

Signature of Participant _____ Date _____

Appendix II: Study Questionnaire

Structured questionnaire for Healthcare providers

SECTION A: IDENTIFICATION INFORMATION

Questionnaire No……..……..…Sub county…….…...Hospital…... ……. Health Facility Level ……..

Interviewee agreed to be interviewed (signed consent form): Yes ( ) No ( )

Name of the Interviewer……. Signature……..... …….

NOTE: The interviewee must be a clinical officer, medical officer or nurses working in level four hospitals

SECTION B: SOCIO-DEMOGRAPHIC CHARACTERISTICS			
	Questions	**Responses**	**Skip**
1.	What is your age (in Years)?	_____ (Age)	
2.	What is your Marital Status	**1.** Married **2.** Single **3.** Widowed **4.** Divorced **5.** Separated Other (specify)_____	
3.	What is your religion	**1.** Protestant **2.** Catholic **3.** Islam **4.** Other (specify)_____	
4.	What is your highest level of qualification	**1.** Certificate **2.** Diploma **3.** Higher diploma/degree **4.** Masters **5.** PhD	
5.	What is your cadre?	1. Nurse 2. Clinical Officer 3. Medical officer	
6.	How many years have you been working in your current position	_____ (no. of years)	
7.	What is your parity?	**1.** 0 **2.** 1 **3.** 2 **4.** 3 **5.** 4 **6.** 5 **7.** More than 5	
SECTION C: CERVICAL CANCER SCREENING			

8.	Have you been screened for cancer of the cervix? (If yes, continue with question 9, if No, jump to question 14)	1. Yes 2. No	
9.	If YES to question 8 indicate when you were last screened for cervical cancer	_____	
10.	If yes to question 8 indicate where you had the screening done	1. Current Facility where I work 2. A facility different from where I work	
11.	If yes to question 8, who offered the screening services?	1. Nurse 2. Clinical officer 3. Medical officer 4. Others (specify)……	
12.	If you answered yes to question 8, whose prescription was it?	1. Health provider 2. Self-initiative 3. Spouse 4. Others (specify……	
13.	If yes to question 8, what type of cervical cancer screening was done?	1. Pap smear 2. HPV test 3. VIA/VILI test 4. Others (specify) _____	
14.	How often do you do or intend to do cervical cancer screening?	1. Every year 2. Every 3 years 3. Every 5 years 4. Every 10 years 5. Others (please specify)	

SECTION D: INDIVIDUAL PREDICTORS THAT ARE ASSOCIATED WITH CERVICAL CANCER SCREENING UPTAKE

I would like to know some of your perceptions on uptake of cervical cancer screening.

		Strongly disagree	Disagree	Neutral	Agree	Strongly agree
A.	**Perceived barriers**					
17.	Lack of time	1	2	3	4	5
18.	It is expensive for me to afford the cost of cervical cancer screening	1	2	3	4	5
B.	**Perceive severity**					
19.	Cancer is not as severe as other diseases like HIV	1	2	3	4	5
20.	Cervical cancer is not a serious disease in this region	1	2	3	4	5
C.	**Perceived benefits**					
21.	I do not get the screening service when I need it	1	2	3	4	5
22.	Cervical cancer screening cannot prevent one from developing the disease.	1	2	3	4	5

D.	**Perceived susceptibility**					
23.	I do not think it is important for healthcare providers to be screened for cervical cancer.	1	2	3	4	5
24.	I Don't think am susceptible to cancer of the cervix	1	2	3	4	5
E.	**Self-efficacy**					
25.	I have never thought about it	1	2	3	4	5
26.	I feel embarrassed being examined in my private parts	1	2	3	4	5
27.	I am Worried that I can be told that I have the disease	1	2	3	4	5
F.	**Cues to action**					
28.	My husband or partner cannot approve it	1	2	3	4	5

SECTION E: HEALTH SYSTEM PREDICTORS; AVAILABILITY, AFFORDABILITY AND ACCEPTABILITY OF CERVICAL CANCER SCREENING SERVICES			
29.	Does this hospital offer cervical cancer screening services?	1. Yes 2. No ----------	
30.	Does the hospital have a special day for conducting cervical cancer screening?	1. Yes 2. No	
31.	Does the hospital have the necessary equipment materials for performing cervical cancer screening procedures?	1. Yes 2. No	
32.	If Yes in 31, in what condition are these equipment and materials for performing the cervical cancer screening services?	……. ……. ……. ……. ……	
33.	Are you given appropriate privacy as you are being examined at the health facility?	1. Yes 2. No	
34.	Does the hospital have special days when they sensitize their staff about cervical cancer screening?	1. Yes 2. No	
35.	Are the health care providers offering screening services polite and approachable?	1. Yes 2. No	
36.	If no in question 30 above, what is the distance from home to the hospital where cervical cancer screening is offered in this region?	1. Yes 2. No	
37.	Would it be hard for you to get transport to go for screening in the hospital mentioned in 34 above?	1. Yes 2. No	

38.	How much is charged for cervical cancer screening?	1. Free 2. Less than Ksh 500 3. Ksh 500-999 4. Ksh 1000-1999 5. Ksh 2000 and more	
39.	Is the price quoted above affordable?	1. Yes 2. No	
40.	In your own opinion, how can the hospitals improve the uptake of cervical cancer screening among their staff?	…… …… …… …… ……	
-THANK YOU- -END-			

Appendix III: Key informant interview guide

Key informant interview guide with the Hospital In charges

Interview No……..……..…Sub county……..…...Hospital…... ……. Health Facility Level ……...

Date of interview *(dd/mm/yyyy)* ……. /……. /……Time interview started ……..…… Time interview ended ……...……

Interviewee agreed to be interviewed (signed consent form): Yes ( ) No ( )

Name of the Interviewer……. Signature……..... …….

1. What is your cadre?
2. Are your staff aware of cervical cancer screening?
3. Does your hospital have a cervical cancer screening program for staff and how is it being implemented? Probe:
   a. Nature of test?
   b. How it is performed/ taken?
   c. Timing (in which period and frequency is taken)
   d. Actions required if staff does not go for the test)
4. Do your staffs go for cervical cancer screening, and if yes, how often do they seek cervical cancer screening services?
5. How does the institution create awareness among staff on need for cervical cancer screening? What/Which factors supports/encourages/ positive toward institution/ staff to attend cervical cancer screening. Probe: *Personal factors / enabling factors/ assertiveness factors etc*

   d. Health system (Health service and Health provider, Access)
6. Does this hospital offer cervical cancer screening services?
   Probe for special day for conducting cervical cancer screening, special section/department/ward where they conduct the cervical cancer screening, if the hospital has the necessary equipment materials for performing cervical cancer screening procedures)

7. If no, where do your staffs seek for cervical cancer screening services? Why haven't you introduced cervical cancer screening services?
8. What/which factors discourage/negative toward the institution and staff participating in cervical cancer screening? *Probe: Personal factors / enabling factors/ assertiveness factors etc*
9. Which situations/factors would make it easy/easier for the staff to participate (start)/keep participating in cervical cancer screening?
   a. What to know about the test itself?
   b. Information and awareness about the test process and procedure?

Appendix IV: INSTITUTION ETHICS AND REVIEW COMMITTEE (IERC) APPROVAL

MASINDE MULIRO UNIVERSITY OF SCIENCE AND TECHNOLOGY

Tel: 056-31375
Fax: 056-30153
E-mail: ierc@mmust.ac.ke
Website: www.mmust.ac.ke

P. O. Box 190,
50100.
Kakamega,
KENYA

Institutional Ethics and Review Committee (IERC)

REF: MMU/COR: 403012 Vol 5 (01)

Date: December 16th, 2021

To: Ms. Zilper Imbuye

Dear Madam,

RE: PREDICTORS OF CERVICAL CANCER SCREENING UPTAKE AMONG HEALTH CARE PROVIDERS IN SIAYA COUNTY, KENYA.

This is to inform you that ***Masinde Muliro University of Science and Technology Institutional Ethics and Review Committee (MMUST-IERC)*** has reviewed and approved your above research proposal. Your application approval number is **MMUST/IERC/036/2021.**The approval period is ***December 16th, 2021-December 16th, 2022.***

This approval is subject to compliance with the following requirements;

i. Only approved documents including informed consents, study instruments, MTA will be used.
ii. All changes including (amendments, deviations, and violations) are submitted for review and approval by ***MMUST-IERC.***
iii. Death and life threatening problems and serious adverse events or unexpected adverse events whether related or unrelated to the study must be reported to ***MMUST-IERC*** within 72 hours of notification
iv. Any changes, anticipated or otherwise that may increase the risks or affected safety or welfare of study participants and others or affect the integrity of the research must be reported to ***MMUST-IERC*** within 72 hours
v. Clearance for export of biological specimens must be obtained from relevant institutions.
vi. Submission of a request for renewal of approval at least 60 days prior to expiry of the approval period. Attach a comprehensive progress report to support the renewal.
vii. Submission of an executive summary report within 90 days upon completion of the study to ***MMUST-IERC***.

Prior to commencing your study, you will be expected to obtain a research license from National Commission for Science, Technology and Innovation (NACOSTI) https://research-portal.nacosti.go.ke and also obtain other clearances needed.

Yours Sincerely,

Prof. Gordon Nguka
Chairperson, Institutional Ethics and Review Committee

Copy to:
- The Secretary, National Bio-Ethics Committee
- Vice Chancellor
- DVC (PR&I)

Appendix V: RESEARCH LICENCE BY NASCOTI

REPUBLIC OF KENYA

NATIONAL COMMISSION FOR SCIENCE,TECHNOLOGY & INNOVATION

Ref No: 347011

Date of Issue: 21/December/2021

RESEARCH LICENSE

This is to Certify that Ms.. zilper Auma Imbuye of Masinde Muliro University of Science and Technology, has been licensed to conduct research in Siaya on the topic: PREDICTORS OF CERVICAL CANCER SCREENING UPTAKE AMONG HEALTH CARE PROVIDERS IN SIAYA COUNTY for the period ending : 21/December/2022.

License No: NACOSTI/P/21/15020

347011

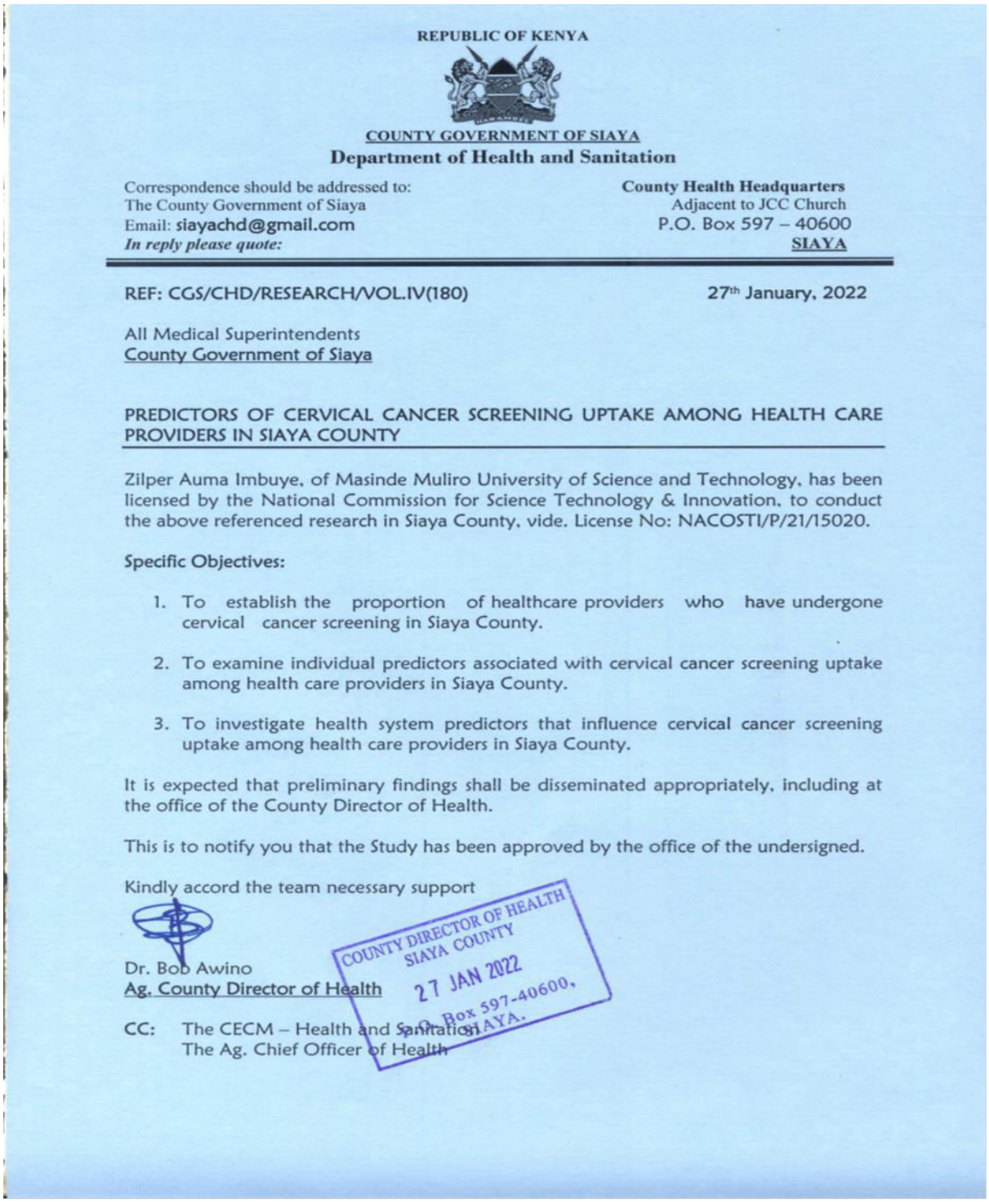
Applicant Identification Number

Director General
NATIONAL COMMISSION FOR SCIENCE,TECHNOLOGY & INNOVATION

Verification QR Code

NOTE: This is a computer generated License. To verify the authenticity of this document, Scan the QR Code using QR scanner application.

Appendix VI: COUNTY APPROVAL



REPUBLIC OF KENYA

COUNTY GOVERNMENT OF SIAYA

Department of Health and Sanitation

Correspondence should be addressed to:
The County Government of Siaya
Email: siayachd@gmail.com
In reply please quote:

County Health Headquarters
Adjacent to JCC Church
P.O. Box 597 – 40600
SIAYA

REF: CGS/CHD/RESEARCH/VOL.IV(180) 27th January, 2022

All Medical Superintendents
County Government of Siaya

PREDICTORS OF CERVICAL CANCER SCREENING UPTAKE AMONG HEALTH CARE PROVIDERS IN SIAYA COUNTY

Zilper Auma Imbuye, of Masinde Muliro University of Science and Technology, has been licensed by the National Commission for Science Technology & Innovation, to conduct the above referenced research in Siaya County, vide. License No: NACOSTI/P/21/15020.

Specific Objectives:

1. To establish the proportion of healthcare providers who have undergone cervical cancer screening in Siaya County.
2. To examine individual predictors associated with cervical cancer screening uptake among health care providers in Siaya County.
3. To investigate health system predictors that influence cervical cancer screening uptake among health care providers in Siaya County.

It is expected that preliminary findings shall be disseminated appropriately, including at the office of the County Director of Health.

This is to notify you that the Study has been approved by the office of the undersigned.

Kindly accord the team necessary support

Dr. Bob Awino
Ag. County Director of Health

COUNTY DIRECTOR OF HEALTH
SIAYA COUNTY
27 JAN 2022
P.O. Box 597-40600,
SIAYA.

CC: The CECM – Health and Sanitation
The Ag. Chief Officer of Health

APPENDIX VII: BUDGET FOR THE STUDY

ITEM	DESCRIPTION	QUANTITY	DURATION	COST	TOTAL COST(K.Sh)
STATIONARY					
	Printing services questionnaire	200		@ 100	20000
				Sub-total	**20000**
	TRAVELING COST DURING STUDY				
4.	Principal Investigator	1	5 days	2000	10000
5.	Research Assistant	2	5 days	2000	10000
				Sub-total	**20,000**
	LUNCHES DURING STUDY				
11.	Principal investigator	1	5 days	1000	5000
13.	Research assistant	2	5 days	2000	10000
				Sub-totals	**15000**
			TOTALS	**=**	**55,500**
55,500 + contingencies 10%					
GRAND TOTAL		**= 61,050**			

APPENDIX VIII: SIAYA COUNTY MAP