INFLUENCE OF PARENTAL CONSENT ON HUMAN PAPILLOMA VIRUS VACCINE UPTAKE AMONG GIRLS AGED 10-14 YEARS IN KIHARU SUB COUNTY, MURANG'A COUNTY

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DACALRATION AND APPROVAL

Declaration

This thesis/project is my original work and has never been presented for any academic award in any institution.

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DEDICATION

To my family for their unwavering love, support, and encouragement throughout this journey.

My biggest inspiration has come from your confidence in me.

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I give thanks to the Almighty God for His grace and gift of life during my time of study. Am further grateful to My supervisors for their constant support, guidance, encouragement, and valuable input. Am also thankful to my course mate and colleagues for the encouragement not forgetting the Mt. Kenya University staff through the Dean, Head of Department of Mt. Kenya University, and Principals for material support.

ABSTRACT

Cervical Cancer, is the fourth most common cancer affecting women in the world is caused by Human Papilloma Virus (HPV). The HPV is sexually transmitted with most people becoming infected at some points during their lifetime. There are more than 100 types HPV known today with HPV type 16 and 18 accounting for approximately 70% of cervical cancer cases globally. Majority of the people become infected with HPV soon after becoming sexually active. Most of the infected persons are asymptomatic and the infection clears after a few months without any intervention. Almost in 90% of the persons clears within two years after infection, but a small proportion of the infected persons with certain type of HPV persist over time developing to precancerous lesions which if not treated further progress to cancer of the cervix. Cervical Cancer is vaccine preventable if young girls are immunized with two doses of HPV vaccines before they become sexually active. However, this is only achievable if Cervical Cancer prevention and control measures are implemented effectively. This study therefore explored the influence of parental consent on access to HPV vaccination among girls aged 10 to 14 years in Kiharu Sub County; Murang'a County. The objectives were to find out the level of knowledge on HPV among parent with girls 10-14 years, determine parental perception on HIP vaccination, determine individual factor affecting HPV vaccination and identify barriers for parent to give concept to HPV vaccination for girls aged 10 to 14 years. The researcher used a descriptive cross-sectional study approach where interview schedules was used to collect quantitative data. Random sampling method where Community Health Units (CHUs) within the study area were used as the sampling frame to identify the 309-study respondents. Quantitative data was analyzed using SPSS. To test associations, among the variables Chi square test with *P* value of 0.05 was considered significant. The study revealed a significant relationship between level of education and acceptability of the vaccine (χ^2=33.2, df=3, P=<0.003). The odds of accepting the vaccines for respondents aged less than 45 years to respondents aged more than 45 years showed that were 1.92 times likely to accept HPV vaccines compared to their (AOR: 1.92, 95% CI [1.1–2.7]). Perception of HPV vaccine was statistically significant (χ^2=16.2.1, df=1, P=<0.005). Fear of side effects was the highest (43%) reported barrier. Individual with positive HPV perception 1.17 times likely to accept HPV vaccines compared for their girls compared to those categorized as having poor knowledge. The study revealed gaps in knowledge and individual factors such as fear of side effect which influenced on HPV vaccine uptake. The study further revealed negative perception for the vaccine as well as combination of individual, parental, cultural and health system factors influenced the uptake of the vaccines among the girls aged 10-14 years. Robust awareness creation program is required to demystify the fears and other individual and sociocultural factors that are influencing the HPV vaccine uptake in the study area and the County at large.

Key words; HPV vaccine, HPV vaccination, Cervical cancer, involvement.

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LIST OF ABBREVIATIONS AND ACRONYMS

CA	-	Cancer
CHAs	-	Community Health Assistants
CHPs	-	Community Health Promoters
CHU	-	Community Health Unit
ERC	-	Ethic and Research Committee.
FGDs	-	Focused Group Discussion
HBM	-	Health Belief Model
HPV	-	Human Papilloma Virus
IEC	-	Information Education and Communication
KII	-	Key Informant Interview
LMICs	-	Low and Middle Income Countries
MOH	-	Ministry of Health
NACOSTI	-	National Commission for Science Technology and Innovation
PHOs	-	Public Health Officers
RA	-	Research Assistant
SPSS	-	Scientific Package for Social Studies
WHO	-	World Health Organization

CHAPTER ONE: INTRODUCTION

1.1 INTRODUCTION

Human papillomavirus (HPV) is responsible for approximately 70% of cervical cancer cases and is the leading cause of ano-genital cancers globally, with HPV types 16 and 18 being the most prevalent. Cervical cancer remains the most significant cause of cancer-related deaths among women, with over 90% of these fatalities occurring in low- and middle-income countries (LMICs), where access to effective cancer prevention and treatment programs is still limited (Karanja C., 2022).

Although cervical cancer is curable if detected early and treated appropriately, it remains one of the most common cancers affecting women worldwide. Between 2018 and 2030, annual cervical cancer cases are projected to rise from 570,000 to 700,000, and related deaths are expected to increase from 311,000 to 400,000. This represents a 21% rise in incidence and a 27% increase in mortality. Alarmingly, 85% of those affected are young women from developing countries, many of whom are mothers to young children (WHO, 2020).

The global health campaign to eliminate cervical cancer as a public health issue aims to reduce the disease's burden by meeting key targets. These include achieving an incidence rate of less than 4 cases per 100,000 women, ensuring that 90% of girls are fully vaccinated against HPV by age 15, screening 70% of women by ages 35 and 45, and providing effective treatment for 90% of diagnosed cases. The World Health Organization (WHO) has encouraged LMICs to meet these 90-70-90 targets by 2030 (WHO, 2022). Vaccinating boys and girls before their first sexual activity has proven highly effective in preventing HPV infections. In countries like Australia, where vaccination coverage reached 80% among women and 76% among men in 2019, there has been a marked decline in high-grade cervical precancerous lesions and HPV prevalence (Dyda A., 2019).

This decline is expected to significantly reduce future cervical cancer rates (Patel C., 2018). Despite advancements, there are currently no survivors of HPV-related cervical cancer in some regions, particularly in low-resource settings in sub-Saharan Africa, where women face limited access to quality healthcare, inadequate screening, and high treatment costs. Globally, about 530,000 new HPV-related cervical cancer cases are reported annually, with 85% occurring in developing countries. Kenya is among the countries with the highest cervical cancer incidence and mortality rates (Globocan, 2017). Of the over 100 known HPV strains, 14 are classified as high-risk due to their oncogenic potential. Most high-risk HPV types are sexually transmitted and are responsible for the majority of oral and ano-genital cancers. The remaining non-oncogenic types are associated with skin, mucosal, and genital warts (WHO, 2020).

Recent studies in Kenya indicate that adolescents are initiating sexual activity at increasingly younger ages. A 2013 study exploring early sexual debut among 12- to 16-year-olds in Nairobi's informal settlements identified dysfunctional family environments and lack of parental supervision as key predictors. However, it also found that school attendance was associated with delayed sexual initiation (Marston M., 2018).

In response, Kenya joined 115 other countries in launching HPV vaccination programs in late 2019. These programs combined school-based, facility-based, and community-based approaches. Public awareness and mobilization efforts were carried out through schools, healthcare facilities, and media campaigns to promote uptake (MOH, 2019). In 2020, Kenya recorded over 5,000 new cervical cancer cases and approximately 3,000 deaths linked to the disease (WHO, 2021).

Since the 10–14 age group targeted for HPV vaccination was not part of the routine immunization schedule, the government invested in training key stakeholders—such as health workers, educators, and community health volunteers—to support the vaccine rollout. A

variety of awareness strategies were implemented, including radio and TV broadcasts and the use of Information, Education, and Communication (IEC) materials, to inform and engage communities (John Snow Inc., 2021).

Risk factors for HPV infection include having multiple sexual partners, unprotected sex, and early sexual initiation. Prolonged exposure to HPV increases the risk of developing cervical cancer. It is estimated that 75% of sexually active individuals will contract HPV at some point in their lives. Furthermore, over a third (35%) of women become infected within two years of initiating sexual activity (Arbyn M., 2018). While the HPV vaccine provides protection against certain high-risk HPV strains, it does not guard against all types of cervical cancer. Despite the challenges of conducting widespread community-based screening in LMICs, such initiatives remain critical for early detection and effective management of cervical cancer (Islam J. et al., 2018).

1.2 Problem statement

Human Papillomavirus (HPV) is etiologically associated with approximately 99% of all cervical cancer cases globally. Among the numerous HPV genotypes, types 16 and 18 are considered high-risk and are implicated in nearly 70% of cervical cancer incidences. Prophylactic vaccination against these high-risk types has been demonstrated to be an effective primary prevention measure. However, global HPV vaccine coverage remains suboptimal, with significant disparities across different economic strata. Current estimates indicate that vaccine coverage stands at approximately 40% globally, with high-income countries achieving up to 68%, middle-income countries at 28%, and low-income countries reporting a notably low coverage of only 2.7% (Mihretie et al., 2022).

Cervical cancer is characteristically asymptomatic in its early stages and typically develops over a prolonged latency period, often exceeding two decades post-infection. Given this

protracted progression and the low levels of cervical cancer screening—particularly in sub-Saharan Africa, where rates fall below 2% in most countries—primary prevention through HPV vaccination is considered the most feasible and cost-effective strategy (Mihretie et al., 2022). The continued rise in cervical cancer cases in low- and middle-income countries (LMICs) has been attributed to the limited availability and accessibility of national screening programs and HPV vaccination initiatives (Paz-Zulueta, 2018).

In the Kenyan context, the Ministry of Health launched the HPV vaccination programme in late 2019, targeting girls aged 10 to 14 years, with the objective of reducing future cervical cancer morbidity and mortality. Despite this intervention, vaccine uptake remains considerably low in various regions. For instance, in Murang'a County, the uptake of the second dose of the HPV vaccine (HPV2) is currently reported at 27.6%. This figure is significantly below the WHO-recommended coverage threshold required to achieve herd immunity. One of the key challenges identified in the implementation of HPV vaccination programs is the limited engagement of stakeholders, particularly those involved in reproductive health programming. The lack of coordinated stakeholder involvement may impede access to vaccination services and reduce the effectiveness of outreach and sensitization efforts.

Parental knowledge, perceptions, and willingness to consent are critical determinants in the uptake of the HPV vaccine, particularly because the target population—adolescent girls aged 10 to 14 years—relies on parental or guardian authorization. Empirical evidence suggests that misinformation, cultural and religious beliefs, and inadequate health literacy among parents significantly influence vaccine hesitancy or refusal. Therefore, strengthening parental involvement through community-based awareness initiatives, educational interventions, and health communication strategies is essential for improving vaccine coverage.

This study seeks to assess the knowledge levels and willingness of parents, as well as the factors influencing HPV vaccine access among girls aged 10 to 14 years in Kiharu Sub County, Murang'a County, Kenya. The findings of this research will contribute to a deeper understanding of the sociocultural and structural dynamics affecting HPV vaccine uptake. Furthermore, the study aims to generate empirical evidence to inform the development of targeted interventions and policies aimed at enhancing HPV vaccine acceptance and reducing the burden of cervical cancer within the region.

1.3 Study purpose

The assessed the parental influence in access to HPV vaccination for girls as well as the extent to which parental consent influences the access of HPV by girls aged 10-14 years. The study findings will contribute to improved HPV vaccine programming in the Sub County and beyond and informed HPV programming in the future.

1.4 Study Objectives

1.4.1 Broad Objective

To determine the influence of parental consent on access to human papilloma virus vaccine among girls aged 10-14 years in Kiharu sub county, Murang'a county

1.4.2 Specific Objective

1. To assess the level of knowledge on HPV vaccine for girls aged 10-14 years among the parents in Kiharu Sub County
2. To determine the parental perception on HPV vaccination for girls' aged 10-14 years in Kiharu Sub County
3. To find out the individual parent factors affecting HPV vaccination for girls aged 10-14 years in Kiharu Sub County

4. To determine what was the barriers for parent to give concept to HPV vaccination for girls aged 10 to 14 in Kiharu Sub County

1.5 Research Questions

1. What is the level of parental knowledge on HPV vaccine for girls aged 10 to 14 about the HPV vaccine in Kiharu Sub County?
2. What is the parental perception on HPV vaccination for girls' aged 10-14 years in Kiharu Sub County?
3. What are the individual parent's factors affecting HPV vaccination of girls aged 10-14 years in Kiharu Sub County?
4. What were the barriers to HPV vaccination for girls aged 10-14 years in Kiharu Sub County?

1.6 Study Justification

Cervical cancer caused by HPV remains to be life-threatening condition to women in the world. The problem is more obvious in resource constrained setting in sub-Sahara countries where screening is infrequent and quality treatment is not available or unaffordable resulting to poor health outcomes for infected women. Globally, 530,000 new cases occur annually with 85% of the cases occurring in developing countries. Kenya is among the countries with the high rate of morbidity and mortality related to cervical cancer in the world (Globocan, 2017).

The uptake of the HPV vaccine has been sub-optimal due to different challenges and barriers. Since the HPV vaccine roll out in late 2019, Counties have been struggling to improve the HPV uptake among girls a midst HPV vaccine hesitancy phenomenon. Murang'a County is not an exceptional with an average of fully vaccinated HPV coverage of 33.4%. To the best of current knowledge, there is no county specific documented evidence as to parental influence to HPV

vaccine uptake in Murang'a County. Understanding the parental influence to HPV vaccination is critical in order to upscale the overall HPV coverage in Murang'a County.

Several studies conducted to assess predictors to HPV vaccine hesitancy in Kenya have been biased to women since girls aged 10-14 are the current primary recipients of HPV vaccine. In African family set up, men play critical role in decision making including the health seeking behaviour of their family members. Men are the primary transmitter of HPV and are directly or indirectly affected by consequences of cervical cancer. An inclusive HPV hesitancy predicator is therefore required to elucidate the parents' opinion for better HPV vaccine programing.

High HPV vaccine coverage will eventually contribute to reduced rate of cervical cancer cases and morbidity related to cervical cancer complication among the vaccine beneficiaries. The prevention of new cases will have a far-reaching health and wellbeing not only to the individuals, but also for their families and the community at large. Protection from HPV caused cervical cancer is further expected to save families, communities and the country at large from the expensive treatment cost thus improving their economic status resulting to high productivity. The government resources tied to cancer treatment will be available for other prevention programs contributing to improved health indicators in the Country.

1.7 Study Significance

The HPV vaccine has not been embraced to its full potential because of a number of obstacles and hurdles. Counties have struggled to increase girls' HPV vaccination rates since the vaccination's launch in late 2019 due to the phenomenon of HPV vaccine hesitancy. With an HPV vaccination rate of 33.4% on average, Murang'a County does not constitute an anomaly. To the best of our awareness, there is currently no county-specific documentation demonstrating the influence of parents on the use of HPV vaccines in Murang'a County.

Understanding the parental influence to HPV vaccination is critical in order to upscale the overall HPV coverage in Murang'a County.

Several studies conducted to assess predictors to HPV vaccine hesitancy in Kenya have been biased to women since girls aged 10-14 are the current primary recipients of HPV vaccine. In African family set up, men play critical role in decision making including the health seeking behaviour of their family members. Men are the primary transmitter of HPV and are directly or indirectly affected by consequences of cervical cancer. An inclusive HPV hesitancy predicators is therefore required to elucidate the parents' opinion for better HPV vaccine programing.

High HPV vaccine coverage will eventually contribute to reduction in cancer of the cervix, related morbidity and complication among the vaccine beneficiaries. The prevention of new cases will have a far reaching health and wellbeing not only to the individuals, but also for their families and the community at large. Protection from HPV caused cervical cancer is further expected to save families, communities and the country at large from the expensive treatment cost thus improving their economic status resulting to high productivity. The government resources tied to cancer treatment will be available for other prevention programs contributing to improved health indicators in the Country. HPV vaccination is a crucial strategy for preventing cancer of the cervixs, which is a noteworthy public health issue in Kenya and many other low- and middle-income countries. By addressing barriers to vaccination, the study supports efforts to reduce the incidence of HPV disease and, subsequently, cancer of the cervix, helping to achieve national and global health goals. The findings of the study provided evidence-based recommendations to local health authorities, policymakers, and organizations involved in vaccination programs. This information guided the development of targeted public health campaigns, policies, and strategies that promote HPV vaccination by addressing cultural, social, and informational barriers specific to the local context. The study shed light on

gaps in knowledge and misconceptions about the HPV vaccine among parents and guardians. It provided a basis for developing health education programs that effectively communicate the benefits, safety, and importance of the vaccine, ultimately empowering parents to make informed decisions. The study focused on girls aged 10-14 years, a group that may face unique challenges in accessing healthcare due to cultural, social, or gender norms. By highlighting the barriers to HPV vaccination for girls, the study contributed to broader efforts to promote gender equality in healthcare access and outcomes. The study supported global health initiatives, such as the World Health Organization's (WHO) goal to eradicate cancer of the cervixs as a public wellbeing problem by increasing HPV vaccination coverage. By understanding local barriers and facilitators, the study contributed to the global effort to upsurge immunization rates and reduce HPV-related cancers worldwide. The study provided a foundation for future research on HPV vaccination and parental consent in Kenya and other similar contexts. It can help identify areas that require further investigation, such as the role of community influencers, the impact of different communication strategies, or the effectiveness of various interventions to improve vaccine uptake.

1.8 Scope, Delimitation, and Limitations of the Study

This study is confined to assessing the knowledge, willingness, and associated factors influencing parental decisions regarding access to the Human Papillomavirus (HPV) vaccine among girls aged 10 to 14 years in Kiharu Sub County, Murang'a County, Kenya. The focus on this specific age cohort aligns with both national guidelines and World Health Organization (WHO) recommendations that emphasize early HPV vaccination prior to sexual debut as the most effective method of preventing cervical cancer.

The study population is delimited to parents and guardians of girls within the target age bracket, as they are the primary decision-makers regarding health interventions for their children. Key

variables examined include parental knowledge of HPV and cervical cancer, attitudes toward vaccination, sociocultural and religious beliefs, and the extent of access to reproductive health information. The study employs both quantitative and qualitative approaches, utilizing structured questionnaires and key informant interviews to obtain comprehensive data.

Geographically, the study is limited to Kiharu Sub County and does not extend to other sub-counties within Murang'a or neighboring counties. As such, findings may not be generalizable beyond the study area due to potential regional variations in sociocultural dynamics, healthcare infrastructure, and community engagement levels.

everal limitations are anticipated in the course of the study. First, the reliance on self-reported data from respondents may introduce response bias, particularly in relation to culturally sensitive topics such as sexual health, vaccination, and parental attitudes. Respondents may provide socially desirable answers, thus affecting the accuracy of the data collected.

Second, the study may face challenges related to limited availability of reliable secondary data on HPV vaccine uptake, which could restrict comparative analysis or triangulation of findings. Additionally, logistical constraints, including time and financial resources, may limit the scope of data collection, especially in remote or underserved areas.

Third, the study focuses solely on parental perspectives and does not include views from adolescents, healthcare providers, or school administrators, who may also influence HPV vaccine access. Furthermore, the study does not assess the biological effectiveness of the vaccine or clinical outcomes post-vaccination.

Despite these limitations, the study is expected to generate valuable insights into the role of parental knowledge and attitudes in determining HPV vaccine uptake. The findings will contribute to evidence-based policy recommendations aimed at strengthening reproductive

health programming and increasing HPV vaccination coverage in low-resource settings such as Kiharu Sub County and similar contexts.

1.10 Assumption of the Study

It is assumed that all participating parents or guardians will voluntarily consent to take part in the study and will provide honest, accurate, and unbiased responses to the research questions. The study further assumes that participants will fully understand the purpose of the research and respond truthfully without fear, prejudice, or influence from external factors. This assumption is critical to ensuring the validity and reliability of the data collected, as the study heavily relies on self-reported information regarding knowledge, attitudes, and willingness related to HPV vaccination.

CHAPTER TWO

LITERATURE REVIEW

2.0 Introduction

This chapter provides summarized and synthesized literature from published studies on HPV vaccination. The chapter contain empirical literature reviewed on involvement of parents in HPV vaccination consent for girls aged 10-14 years in line with the study variables. The Chapter further discusses the theoretical models and conceptual framework guiding the study.

2.1 Status of HPV vaccines

Over 100 million adolescents' girls have received at least one dose of HPV vaccines since licensing of the HPV vaccine in 2006, however, 95% are in high income countries. However, disparities among countries exist in availability of cancer screening and management services. The focus for global strategy to accelerate elimination of cancer of the cervix as public health problem is geared to prevention and early diagnosis and treatment as cost effective measures to eliminate the disease. In 2019, the UN General Assembly recommended for strengthening of prevention and management strategies through UHC. The global cancer elimination strategy advocates for concerted efforts by all countries to take actions towards ending the suffering caused by cervical cancer in the world (WHO, 2020)

Globally, cancer of the cervix is the fourth most prevent form of cancer among women with approximately 660,000 cases and about 94% (350,000) mortalities in 2022.majority of the cancer morbidities and mortality happen in LMICs. The highest incidences and mortalities occurring in Sub Saharan, Central America and South-East Asia. This is associated with lack of access to HPV vaccination, cervical screening, diagnosis, treatment services and social and economic determinants. Globally, countries are putting concerted efforts to eliminate cervical cancer by 2030 (WHO 2023).

Eastern, Southern and Central Africa are some of the regions with the highest risk of cervical cancer. Unless effective cervical cancer prevention and control strategies are implemented, the report estimated that approximately 800,000 new cervical cases will be diagnosed annually by the year 2030 (WHO, 2016). Countries have made a commitment to eliminate cervical cancer as a public health problem. Theses global strategy set three objectives which are vaccination of 90% of girls by age 15; screening of 70% of women by age 35 and 45 and treatment of 90% of women with cervical cancer. it is estimated that, a total of 72 million of new cases of cervical cancer can be prevented while 62 million mortalities can be avoided by 2120 by attaining the cervical cancer elimination goal. Nine out of 10 cervical cancer mortalities globally occurred in LMICs (WHO, 2022).

Human Papilloma Varus vaccine, cervical cancer screening and early treatment of pre-cancerous lesions are the most cost-effective strategies for cervical cancer prevention and control. However, there exists regional differences in cervical cancer burden associated to inequalities in access to HPV vaccination, screening and early diagnosis and treatment services. Risk factors to cervical cancer includes HIV prevalence, social and economic factors such as sex, gender biases and poverty. Women infected with HIV are 6 times likely to develop cancer of the cervix (Stelza, 2020). Additionally, cervical cancer disproportionately affects young women resulting to 20% of children losing their mother due to cervical cancer (Guida, F., 2020).

2.2 Knowledge on HPV

A comprehensive strategy to reduce cancer of the cervical cavity should prioritize the main means of preventing of HPV illness through the administration of the HPV serum along with consistent and appropriate condom use, abstinence from sexual activity, and commitment to one sexual partner. The HPV vaccination of young adolescent girls (10 to 15 years old) was

added to the regular schedule of vaccinations by the vaccinations Agenda 2030. The Agenda, which operates under the motto "reaching everyone, everywhere," aims to increase vaccination coverage among the population that is difficult to reach (WHO, 2020).

According to a systematic meta-analysis review indicated that, knowledge on HPV vaccine among parents was 35.1% in Ethiopia, 3gely attributed to lack of vaccination advertisement in print and social media (Paz-Zulueta M, 206.5% in Nigeria, 54.8% in United Kingdom, 48% in Kenya and 60% in Thailand. This was lar18).

According to a research investigation conducted by Alene T., parents who were informed about cancer of the cervical cavity and the HPV vaccine were substantially more probable to be willing to immunize their children against the virus than parents who were not. (Taylor A., *et al*., 2020). prior to their children are vaccinated, parents also want extra information and assurances from the medical professionals regarding the safety of the HPV vaccine. Therefore, it is critical that parents' apprehensions and the need for additional info concerning the effectiveness of HPV vaccine uptake among their children be taken into account in policy and strategy aimed at increasing HPV coverage and lowering incidences of cancers of the cervical cavity (Trim K., *et al*. 2018).

After a test run in Kitui County from 2013 to 2015, the Kenyan government began an HPV vaccination program in October 2019. Communities oppose the vaccine, according to a study done to evaluate the understanding, beliefs, and behaviors of parents, healthcare professionals, and locals involved in getting immunized against HPV from Mombasa and Tana River counties. It was shown that the primary factors influencing the HPV vaccination prevalence in the area were strongly held beliefs and an absence of consciousness (Njuguna *et al*., 2021).

Health programmes in LMDCs have over the years left out young adolescent girls in many preventive health programs. These cohort remains vulnerable to many health risks and health

conditions. Preventive and promotive health intervention targeting this group will result to high health impacts on their future health and well-being. Such interventions will further have greater and extensive future impacts on productivity across generations (Karanja C., 2022).

It has been shown that immunizing young teenagers against the virus responsible for cervical cancer before their first sexual encounter is effective in preventing infection with HPV. 2018; Patel, C., *et al*. Significant vaccination rates have led to a significant decrease in high-grade precancerous tumors and high-vaccine-type HPV infection in those nations. Some countries have also seen a notable decrease in the occurrence of cancer of the cervixs. In Australia, for example, 76% of males and 80% of females received HPV vaccinations in 2019.

Achieving the global goa of 90-70-90 targets by 2030 calls for median reduction of cervical cancer incidences by 2%, 42% and 97% by 2030, 2045 and 2120 respectively. This is projected to result in prevention of 74 million cases with over 62 million deaths prevented by 2120. The strategy urges that, for every US$1 used in cervical cancer prevention, there will be US$3.2 return on investment to the economy. High economic benefits will be accrued in LMICs if they achieve the 90-70-90 targets. However, US$ 10.5 billion is needed in LMICs to mprove cervical cancer prevention and treatment interventions by 2030 (WHO, 2022).

The main parties involved in two municipalities in Kenya—the Northeast and Coastal regions—were the subjects of a qualitative research investigation designed to ascertain their awareness, beliefs, and practices concerning the transmission of HPV and vaccination. The findings indicated that interviewees' ignorance was the primary cause of their reluctance to get immunized (Njuguna D., *et al*., 2021).

Immunizations have significantly improved wellness and reduced concern about illnesses that are vaccine-preventable throughout the world. The most economical public health strategy for enhancing population health is to avoid infections. The HPV serum was designated as a top

priority for public health by the WHO in 2016 and ought to be included in national immunization programs(Bitariho *et al*., 2023). In addition to lowering disease-related expenses and preventing another outbreak of infections that can lead to cancer, the HPV vaccine also prevents pandemics and diseases that are preventable. Teenagers must receive vaccinations immediately in order to prevent HPV infection and death from its associated risks in the future(Shin *et al*., 2023).

A contributing factor to the HPV-related illnesses and fatalities was a lack of awareness regarding the vaccination. According to some investigation, a significant obstacle to HPV serum is that the majority of teenagers are unaware of the vaccine (de Munter *et al*., 2021). It can be difficult for most teenagers to embrace the HPV vaccine because they are misinformed about it. Furthermore, a number of important variables related to demographics, including age, level of schooling, work, and place of residence, make it more difficult to execute a vaccination program successfully(Karanja-Chege, 2022).

Adolescents are not the only ones who are affected by inadequate comprehension and negative attitudes; others are also affected(Bitariho *et al*., 2023). As per the data furnished by the Centers for the Control of Disease and Prevention (CDC), most parents decline to immunize their children due to a lack of knowledge about the vaccine (Osaghae *et al*., 2023). Most parents delay getting the vaccination because they think there is little chance of their child getting HPV. According to Rubens-Augustson *et al*. (2019), the subject's negative attitudes, detrimental impressions, and ignorance of the HPV vaccine had a negative impact on the vaccination's implementation.

From their study, More than three-quarters of the girls, or 77.3% (326), had heard of cancer of the cervixs (CC) and the HPV immunization(Yohannes *et al*., 2023). Conversely, approximately 71.7% (297) were aware of the CC mitigation technique. On the other hand, 237

individuals, or 57.2% of the population, were unaware of HPV infection. Approximately three-fourths (73.9%) of the 306 respondents did not know the suggested doses for the HPV vaccine. The percentages of respondents who knew the most about the infection with HPV and the HPV vaccine were 37/414 (8.9%) and 103/414 (24.9%), respectively. Moreover, a very low overall knowledge score about CC, an infection with HPV, and the HPV serums was found in 47/414 (11.4%) (Yohannes *et al*., 2023).

According to their inquiry, only 24.9% (95% CI: 20.8–29.0) of teenage schoolgirls were aware that HPV vaccinations were available (Yohannes *et al*., 2023). The proportion was higher than two previous investigations on teenage girls in Niger (11.4%) and Latvia (9.9%) (Jalani *et al*., 2016; Loke *et al*., 2017a). In dissimilarity to the present investigation, the findings from additional investigations conducted in Puducherry (43.3%) and Uganda (47.7%) demonstrated a greater understanding of HPV immunization(Amu *et al*., 2019; Kisaakye *et al*., 2018). The noticed variation can be attributed to variations in standards of conduct, study settings, sample size, socioeconomic standing, along data access. This might have been caused by a variety of private and public sector campaigns, as well as greater acquaintance to information about the HPV immunizations after the national HPV vaccination program was put into place(Sopian *et al*., 2018).

Their investigation determined that knowledge of the HPV or cervical carcinoma vaccine qualified as being aware (Schwendener *et al*., 2022). Youth who were female were noticeably more knowledgeable about the HPV serums than youth who were male. 176/585 (30%) men and 285/412 (69%) females ($p<0.01$) were the gender distribution of the 997 participants; 461 (46%) of them had heard of the HPV vaccine. 369 (69%) of the 536 people who were unaware of the HPV vaccine were also not conscious of the cervical carcinoma prevention vaccine

($p<0.01$), comprising 255/409 (62%) males and 114/127 (90%) females (Schwendener *et al*., 2022).

Four primary conclusions can be drawn from the research they performed on young males and females in Switzerland who were asked about their knowledge of the HPV vaccine, their knowledge about it, and sources of information. First, compared to young men, young females were more aware of and knowledgeable about the HPV vaccine(Schwendener *et al*., 2022). This supports earlier reports, which state that the HPV vaccine was first made available to the public around the world as a vaccination exclusively for women(Aldawood *et al*., 2023; Barnard *et al*., 2017; Patel *et al*., 2016).

Although the investigation indicated that women knew more about the HPV vaccine than did men, a recent national research carried out in Uganda showed that very few women between the ages of 24 and 26 knew about the vaccine. This implies that women may benefit from intervention at any age, which includes those who are older than the main target age group (Kisaakye *et al*., 2018).

One possible explanation for this might indicate that the older females in their sample had less awareness because of the length of time since their early adolescent HPV vaccination. Put another way, the group of older females may have had lower awareness because of recalling memories bias or, at the time of exposure, less advanced vaccination execution programs.

Second, it appears that knowledge does matter because greater understanding was linked with greater HPV vaccine uptake in both males and females. This validates findings from earlier reports(Loke *et al*., 2017b; Patel *et al*., 2016). The results of the investigation indicate that there is a slight variation in HPV injection comprehension between younger and older age groups. On the other hand, older individuals who participated in other studies scored higher on knowledge than younger ones(Amu *et al*., 2019; Olarewaju *et al*., 2021). Interestingly, in

comparison with previous studies, younger study participants knew more about the HPV vaccine than older participants did(Bitariho *et al*., 2023; Rathod *et al*., 2023).

According to their investigation, 97.2% of those surveyed were aware of cervical carcinoma, suggesting that most university students are knowledgeable about the disease(Khatiwada *et al*., 2021). The fact that more than 90% of students stated that HPV is the chief root of cancer of the cervical cavity suggests that they are aware of the virus. However, only slightly more than two-thirds of those interviewed were knowledgeable about the HPV vaccines that were available, indicating a communication and understanding gap that added to a lack of understanding of the HPV serum. In an associated investigation of Malaysian health science students, it was discovered that 88.2% (241) of the learners out of 273 thought cancer of the cervical cavity was a serious illness, 80.2% (219) said HPV is the primary cause of cancer of the cervical cavity, and 78.7% (215) speculated that cancer of the cervix could be vetoed by the HPV injection(Rajiah *et al*., 2015). The primary factor contributing to the increased awareness of the HPV vaccine in Malaysia is the vaccine's introduction into the country's National Immunization Program (NIP) in 2010. As of 2017, 83–91% of Malaysians had received the full course of vaccinations(Muhamad *et al*., 2018). Their investigation also demonstrated how enhanced understanding can result from increased exposure to health-related information(Muhamad *et al*., 2018).

But according to a study conducted on 368 female partakers at the University of Lagos in Nigeria, only 214 (58.1%) of them were informed about cervical carcinoma, 64 (17.4%) about HPV disease, and 52 (14.1%) about the HPV vaccine (Adejimi & Akanbi, 2018). Based on these findings, it appears that there is a lack of awareness about HPV infection and its vaccine.

These results also suggest that, once the HPV vaccine is made available in the NIP, public awareness of it will probably increase. According to a previous investigation conducted among

parents in Indonesia, only 16.6% of them were aware of HPV, less than 16% were aware of HPV immunization, and roughly 40% had no idea what HPV, HPV immunization, or cancer of the cervixs were(Winarto *et al*., 2022). All things considered, the information presented here suggests that university students know more about HPV-related subjects than do Indonesian parents; however, the research on Indonesian parents was done a few years ago. According to a recent investigation, university students know enough about HPV and cervical cancer, but they don't know as much about vaccinations that can prevent it(Endarti *et al*., 2018).

To enhance the public's understanding of HPV vaccinations, educational materials about the vaccine should be created and distributed. Vaccine education efforts should be coordinated at the university and school levels, as well as targeted at community dropout students. Furthermore, it would be beneficial to incorporate HPV and cervical cancer avoidance strategies into the academic curriculum. Additionally, 85% of students indicated that HPV is spread sexually, which is consistent with research conducted among Italian university students, 464 (89.8%) out of 517 individuals said that HPV is an infection transmitted through sexual contact. This indicates that students have a sufficient understanding of how HPV is spread(Di Giuseppe *et al*., 2022).

Increased parental engagement in educating their daughters about HPV may make them more willing to immunize their daughters against the virus, which would raise immunization rates in Saudi Arabia (Almehmadi *et al*., 2019). Public knowledge of HPV infection, the HPV vaccine, and national HPV vaccination campaigns are essential for raising vaccination rates. According to Gari *et al*. (2023), a population-based study conducted in Saudi Arabia revealed a general lack of knowledge and misinformation about HPV and cancer of the cervixs prevention. The investigation found that 10.9% of men and slightly over 15% of women knew about HPV and cervical carcinoma. In a different Saudi Arabian study with 296 participants, 70.6% of the

parents were unaware of the HPV vaccine, and the majority were unaware that HPV is connected to cervical carcinoma (Alsous *et al*., 2021).

2.3 Perception on Human Papilloma Virus vaccine

A significant number of people will at least once in their lives come into contact with the virus responsible for human papillomavirus, which is mainly transmitted through sexual contact. Once a person engages in sexual activity, HPV is usually spread. The viral infection is asymptomatic for several months and can go away on its own in about 90% of cases if no treatment is given . But a proportion of the population with certain types of HPV infection persist and even progress in to cancer. The persistence of this type of HPV infection over a long period of time exposes women to precancerous lesions which if not treated develop in to cervical cancer. The development cancer of cervix may take 20 to 30 years after initial infection with HPV (WHO, 2016).

Since 2006, private medical centers in Kenya have offered human papilloma. From 2013 to 2015, Kitui County participated in a trial HPV vaccination program run by the Ministry of Health. The two-year school-based pilot program, which focused on girls between the ages of nine and twelve, saw a high 96% vaccination uptake rate. In another school based HPV pilot conducted in Rwanda in 2011, reported a similar high (95%) vaccine uptake rate among girls aged 10-14 years. The high success rate reported in Kitui County was used as the country's readiness indicator for HPV vaccine roll out and its integration to the repetitive vaccination schedule for girls aged 10 years and gradually expand the coverage scope when more doses are procured (WHO 2019).

In spite of the elaborate effort to create awareness on the vaccine safety, efficacy and future benefits to the community and target population (girls aged 10-14), dissenting opinions emerged from different quarters. They included Catholic Church which is a critical societal

voice since approximately 20% Kenyan profess Catholic faith (GLOBOCAN 2018). The Kenya Catholic Doctors' Association opposed the girls' vaccinations, questioning the shelter and efficiency of the vaccines and cited material from unreliable online sources associated with anti-vaccination organizations. The association purported that the vaccine administration to 10 years' girls against sexually transmitted HPV was equivalent to allowing them to involve in sex before marriage against the Christian faith (Nzwili N., 2019).

2.3.1 Parental Involvement in HPV Vaccine

Tested and proven cost-effective strategies for controlling Cervical Cancer incidences exists, however, these strategies are not widely implemented predominantly in regions with high burden of cervical tumor. In order to gain and sustain optimal benefits from these strategies, nations must scale up and sustain the implementation of these measures which include HPV vaccination, screening, early diagnosis and treatment of pre-cancerous lesions (WHO, 2022).

Parental knowledge and willingness on HPV are critical to upscale HPV vaccination among adolescents. Additionally, HPV vaccine acceptance among the eligible population to a large extent determined by parental consent. Research on Ethiopian parents' knowledge and readiness to vaccinate their children against HPV has shown how important parental engagement is in helping their children make this decision. Nevertheless, awareness and desire to obtain the HPV injection were linked to variables like the education of parents level, age, occupation, previous experience with sexually transmitted illnesses (STDs), and anxiety regarding HPV infection (Mihretie N. *et al*, 2022).

2.3.2 HPV Vaccine Acceptance

Since 2006, HPV vaccinations have been offered in Kenya's private sector. In Kitui County, the Ministry of Health ran a trial HPV immunization program from 2013 to 2015. The two years' school based pilot program which targeted girls aged 9-12 years recorded vaccine uptake

rate of high 96%. In another school based HPV pilot conducted in Rwanda in 2011, reported a similar high (95%) vaccine uptake rate among girls aged 10-14 years. The nation's readiness for the HPV vaccine rollout and its incorporation into the regular vaccination program for girls aged 10 was gauged by Kitui County's high success rate, which was used to gradually broaden the vaccination scope as more doses were obtained (WHO 2019).

In spite of the elaborate effort to create awareness on the vaccine safety, efficacy and future benefits to the community and target population (girls aged 10-14), dissenting opinions emerged from different quarters. They included Catholic Church which is a critical societal voice since approximately 20% Kenyan profess Catholic faith (GLOBOCAN 2018). The Kenya Catholic Doctors' Association opposed the girls' immunization, using material from unreliable, pseudoscientific websites associated with anti-vaccination organizations to cast doubt on the safety and effectiveness of the shots. They said that vaccinating 10-year-old girls against sexually transmitted HPV amounted to permitting them to have premarital intercourse, which is against Christian doctrine (Nzwili N., 2019).

Cancer in the cervical region has a universal pathogenesis. The absence of successful screening initiatives for cervical cancer and the poor quality of care provided to patients with invasive cervical carcinoma are the main reasons behind the high rates of illness and mortality in countries with low or middle incomes (WHO, 2022).

Contrarian opinions began to emerge despite a passionate launch event attended by the head of state of Kenya and other dignitaries, as well as a targeted public education campaign regarding the benefits, efficacy, and confidentiality of immunizing young girls against HPV. Given that one-fifth of Kenyans identify as Catholics, the Catholic Church has a vital social voice. As such, the Catholic Church was the source of the loudest and most powerful opposition to

vaccines. Doctors connected to the Kenya Catholic Physician Association used social media to persuade parents not to allow their 10-year-old granddaughters to receive the vaccine.

They claimed data gathered from certain internet channels connected to anti-vaccination organizations that was unsupported by science and made a number of accusations, including concerns about the safety and effectiveness of vaccinations. They made Kenyans aware that permitting young people to get an HPV immunization would be equivalent to granting them consent to have sex before marriage, which is categorically forbidden by Christian doctrine.. Rather, they suggested that medical professionals focus on encouraging married women to stick to one sexual activity partner, single women to abstain from sexual activity, and sexually active women to get screened for cervical carcinoma (Nzwili F., 2019).

As part of the National Vaccinations and immunization Program, the Ministry of Health began running campaigns to catch up on HPV vaccinations. In compliance with COVID 19 prevention and management guidelines, these outreach initiatives were carried out in public areas. The decision to take this action was driven by the serious risk of undoing the progress made in increasing the accessibility of HPV vaccinations (Mburu C., *et al*,. 2021).Real-world examples from other nations, like Australia, which had incorporated HPV vaccinations into regular vaccinations schedules and eradicated cancer of the cervical cavity, were presented to the public to boost their trust in the system (Canfell K., 2019).

2.4 Barriers to HPV vaccination

Finding the barriers to HPV immunization is essential to raising insurance. The biggest obstacle at the regulatory level is the absence of an HPV vaccination requirement. The main obstacles to HPV vaccination among community members appear to be a lack of knowledge, a lack of resources, and an unfavorable mindset. There is documented evidence of parents reporting lack of healthcare provider lack reporting lack of information on vaccine barriers thus

contributing to HPV vaccine hesitancy (Carhart *et al*, 2018). In late 2019, Kenya began immunizing girls between the ages of 10 and 14 with HPV on a regular basis. Since the HPV vaccine's introduction, a number of obstacles have been encountered. The first was the shift in the delivery method from a school-based to a health facility-based approach. The regular vaccination schedule in the nation was further disrupted by COVID-19.

One of the biggest obstacles to protecting against the human papillomavirus (HPV) is ignorance. This obstacle has an impact on vaccination uptake as well as demand for the vaccine among the general public, especially parents and teenagers(Osaghae *et al*., 2022). A lot of people, including parents and teenagers, know very little or nothing about HPV, its transmission mechanism, and the health risks it poses, including the possibility of developing genital warts, cervical cancer, and other malignancies (such as anal or oropharyngeal). It's not always clear how HPV and cervical cancer are related. People may not think the vaccine is essential or necessary if they are unaware that HPV is the main reason of cervical cancer(Osaghae *et al*., 2023). Many times, people are unaware that there is a vaccine to stop HPV infections and the illnesses they are linked to. It's possible that some parents or guardians are unaware of the HPV vaccine's availability or timing, while others may not have even heard of it(Asgedom *et al*., 2024a).

Although there is a substantial amount of study on the factors associated with higher and lower HPV vaccination use, relatively little is known in the field of science about the challenges that vaccine those receiving face that are essential to HPV vaccination (Bitariho *et al*., 2023).When it came to the adoption of HPV vaccination, the most frequently mentioned obstacle was ignorance of cancer of the cervical cavity and HPV infection(Zheng *et al*., 2021). This creates a chance for false information to proliferate on social media. Teens and young adults are particularly susceptible to false information as opposed to other demographics. For instance, a

large number of teenagers declined to receive the HPV vaccination because they claimed they did not engage in illicit sexual conduct and were not prone to infection. It is unfortunate that 80% of women will contract HPV at a point within their lives (Zheng *et al*., 2021).

Practical barriers and prejudice against the HPV vaccine are additional barriers to immunization. Religious prohibitions and cultural biases are examples of prejudice regarding the HPV vaccine; needle phobia, a hectic schedule, restricted access to healthcare, and medical contraindications are examples of practical obstacles. Numerous of these variables are connected to all types of vaccinations. But it appears that sensitivity to culture and religion is unique to the HPV vaccine.

The religious authority of a community was identified as an inhibitor to HPV vaccination in two studies carried out in Singapore and the United Arab Emirates(Lee *et al*., 2014; Widjaja, 2019). Additionally, an earlier investigation found that discussions about sex-related issues are frowned upon in many nations, particularly in Asian communities(Wanderley *et al*., 2019). However, a Scottish survey found that some women would rather learn about HPV from religious organizations than from other types of places of interaction (Islam *et al*., 2021). Programs for culturally competent health literacy that address HPV vaccination disparities are therefore also essential. It might be a good idea to create educational initiatives with the help of locals and religious authorities.

Many parents may not have sufficient knowledge about HPV, its transmission, the diseases it causes, or the benefits of the HPV vaccine(Hittson *et al*., 2023). This lack of awareness can lead to hesitation or refusal to provide consent for vaccination (Asgedom *et al*., 2024b). Misunderstandings about the vaccine's purpose, such as the belief that it is only necessary for sexually active individuals, may cause parents to delay or deny consent, especially if they believe their child is too young for concerns about sexually transmitted infections

(STIs)(Mabeya *et al*., 2018). Parental fears about vaccine safety, potential side effects, or long-term health impacts are common barriers. Parents may worry about perceived risks, such as adverse reactions or vaccine-induced harm, often fueled by misinformation or negative media reports(Schülein *et al*., 2016). Mistrust in vaccines or vaccination programs can result from previous negative experiences, rumors, or a general distrust of pharmaceutical companies or healthcare systems. This mistrust may cause parents to refuse consent for their children(Murfin *et al*., 2019).

2.4.1 Health Facilities Factors

The implementation of an international plan aimed at ending cancer of the cervical cavity as a public health issue requires political will and support, an integrated multisectoral strategy, equitable access to health care for all, resource mobilization, and strengthening of the healthcare system across all service delivery levels, including rigorous health promotion programs. The health system must make concerted efforts to embrace innovations and be responsive to community needs. Additionally, the health system needs to expand population-level initiatives including campaigns for cervical cancer screening and HPV immunization (WHO, 2022).

In Kenya, immunizations against HPV for girls between the ages of 10 and 14 are now routinely administered as of late 2019. Since the HPV vaccine was introduced, there have been many obstacles to overcome. The first was the shift in the delivery method from a school-based to a well-being facility-based approach. The disruption of the nation's regular vaccination schedule was furthered by COVID-19. According to WHO (2020), the healthcare system has to be strengthened primarily in light of infrastructure requirements if cancer prevention and management are to be achieved. Investments for infrastructure strengthening is critical at the primary care levels including the provision of adequate support and capacity building of the

healthcare providers to maintain quality of care and confidence of patients and clients (WHO, 2022).

The health sector has a crucial role in illness prevention and control, as highlighted by the 2022–2030 health strategies. The multisectoral "Health in All Policies" strategy aims to eliminate structural and systemic obstacles to health service access. The global cervical cancer elimination strategy calls for local and international political support, multisectoral coordination, equitable access to UHC, resource mobilization, system strengthening and health education promotion at all levels of healthcare delivery (WHO, 2019). The integration of preventive cervical cancer services into reproductive and sexual health services, school-based health programs, and outreach services is advised by the WHO's global plan for eliminating cervical cancer as a public health problem as a means of starting to reach girls (WHO, 2022).

2.5 Summary of literature review

Numerous studies on the topic demonstrate different factors that contribute to low HPV vaccine use based on the community setting. Systemic issues combined with parental knowledge and consent are one of the main obstacles to HPV use in many contexts. To ensure that demand creation strategies are context-specific, acceptable, and appropriate and contribute to greater HPV acceptance among those who are eligible in the subject matter area and beyond, it is imperative to understand the influence of parents on their girls' HPV vaccination. Enhancing community participation, particularly among women, will help dispel myths and misconceptions, dispel romantic notions, and provide the support their daughters need to give their consent for vaccinations.

2.6 Conceptual Framework

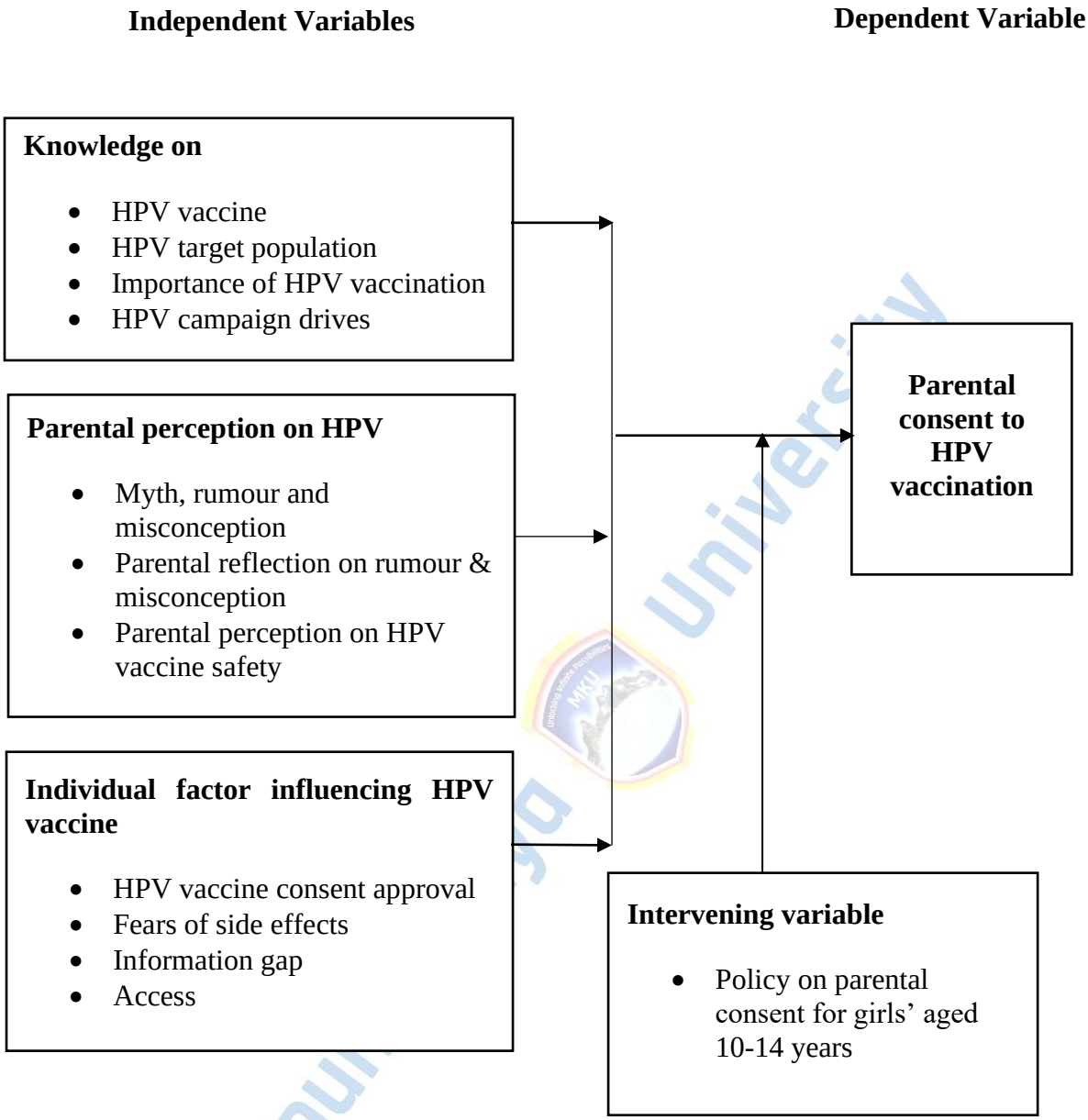

Figure 1: Conceptual framework

2.7 Theoretical Framework

The study was modelled on Health Belief Model (HBM) and the Theory of Planned Behaviour (TPB) for the investigation. Social psychologists in the US Public Health Services created the HBM theory in the 1950s to explain how many people do not participate in initiatives to prevent and detect disease (Hochbaaum, 1958; Rosenstock, 1974). The theory was later extended to study peoples' reaction to symptoms and their behaviour towards diagnosed illness. The HBM has been extensively utilized to determine links between health attitudes and behavior and between health beliefs and behavior (Champion, 1999).

2.7.1 Health Belief Model (HBM)

Programs designed to prevent and promote health were guided by the Health Belief Model (HBM). Since the early 1950s, the Health Belief Model (HBM) has been a commonly used theoretical framework in behavioral studies to understand behaviors related to health. The model predicts and explains each person's health-related behaviors. In order to forecast individual health-related behaviors, the HBM's core components concentrate on each person's views about their health state. Health Belief Model explains primary concepts that stimulates individuals to act to prevent, screen for or control health conditions. These includes individual perception of risks to sickness (perceived susceptibility), seriousness, benefits and barriers, when to act and self-efficacy (confidence to succeed). According to the model, people who believe they are vulnerable to a health condition, think it will have a significant impact on their health, think taking the necessary precautions will reduce risk, and think that the anticipated advantages outweigh the costs of taking action, are more inclined to take the desired health action to avoid the illness (Becker, M. 1974).

Table 1: Health Belief Model Concept

	Concept	Definition	Application
1.	Susceptibility	Belief regarding the probability of contracting a disease or being sick	• Definition of at risk population & risk level • Individual risk based on behaviour/ individual characteristics • Perceived susceptibility consistent with individual actual risk
2.	Severity	Individual conviction of the seriousness of the condition	• Impact/ effects of risks of the condition
3.	Benefits	Efficiency of the desired action in risk and impact reduction	• Action clarity in terms of time, method, place and gains to be accrued
4.	Barriers	Rear and/ or perceived difficulties in action actualization	• Recognition of perceived obstacles by encouragement, information sharing, motivation and support
5.	Cues to action	Approaches to stimulate readiness	• Provide action processes, promote awareness, appropriate feedback mechanism
6.	Self-efficacy	Confidence on individual ability to act	• Capacity building and support in action implementation • Setting of incremental goals • Communication for strengthening • Demonstration of desired conduct • Minimize anxiety

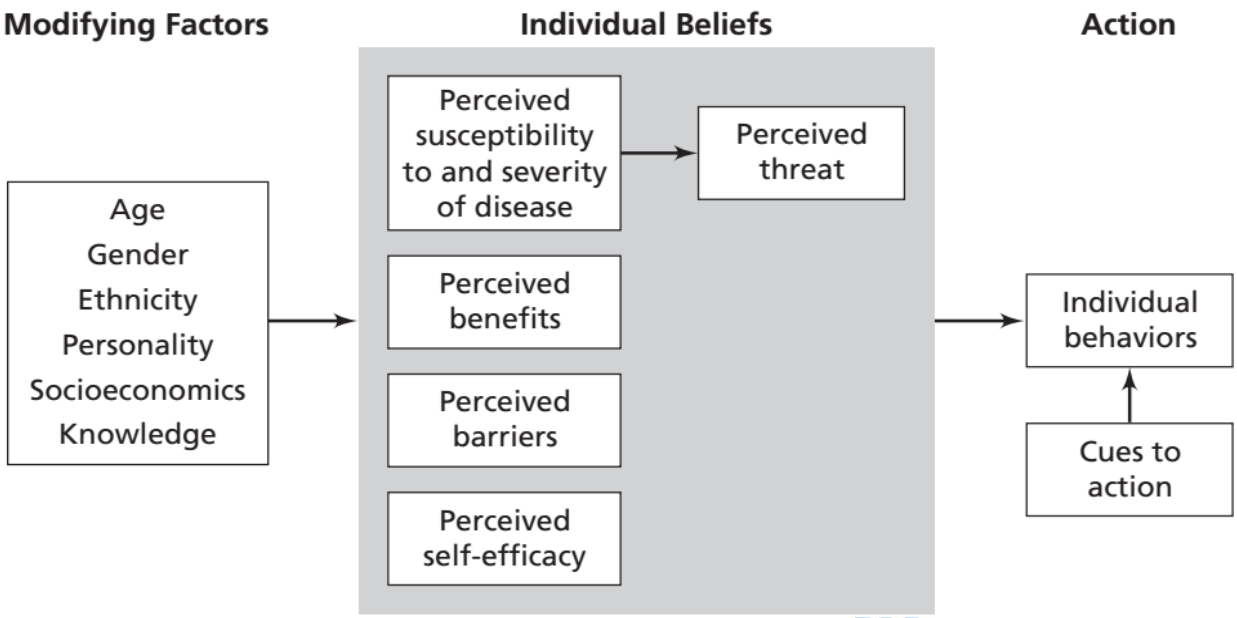

Figure 2: Health Belief Model

2.7.2 Theory of Planned Behaviour (TPB)

The Theory of Planned Behaviour (TPB), developed by Icek Ajzen, remains one of the most widely applied models for explaining and predicting human behaviour in the social sciences. The theory asserts that an individual's intention to perform a behaviour is the most immediate determinant of whether that behaviour will be carried out. These behavioural intentions are shaped by three key constructs: attitude toward the behaviour, subjective norms, and perceived behavioural control (Ajzen, 1988, Ajzen, 2011).

In the context of this study, which seeks to assess parental knowledge, willingness, and associated factors influencing access to the Human Papillomavirus (HPV) vaccine for girls aged 10 to 14 years in Kiharu Sub County, the TPB offers a valuable framework for understanding how parents form intentions regarding vaccination and the extent to which those intentions translate into actual behaviour.

The first component of TPB, attitude toward the behaviour, refers to the individual's overall evaluation of the behaviour in question. For parents, this includes personal beliefs about the

value, safety, and importance of the HPV vaccine. A positive attitude, rooted in accurate knowledge about HPV's link to cervical cancer and the effectiveness of the vaccine, can increase the likelihood of vaccine acceptance. Conversely, negative attitudes, often driven by misinformation, fear of side effects, or misconceptions about the vaccine promoting promiscuity, may lead to hesitancy or refusal. In this study, parental knowledge about HPV and the vaccine will be explored as a key factor shaping these attitudes.

The second element, subjective norms, involves perceived social pressure to engage or not engage in a given behaviour. In the case of HPV vaccination, parents may be influenced by the opinions of significant others such as spouses, peers, religious leaders, healthcare providers, and broader community beliefs. If a parent perceives that these individuals disapprove of the vaccine or associate it with inappropriate behaviour, they may be less likely to support vaccination, regardless of their personal beliefs. Conversely, if respected community figures endorse the vaccine, parents may feel more motivated to vaccinate their children. This is particularly relevant in Kiharu Sub County, where religious and cultural norms can strongly shape health-related decision-making.

The third construct, perceived behavioural control, refers to the degree to which an individual feels capable of performing the intended behaviour. For parents, this encompasses both external and internal factors that may facilitate or hinder vaccine access. Practical barriers such as long distances to health facilities, lack of transport, competing responsibilities, and vaccine availability can limit access, even when willingness is present. Psychological barriers, such as fear, low confidence, or mistrust in the health system, also influence perceived control. In this study, these structural and psychological constraints will be examined as potential obstacles to vaccine uptake.

Importantly, TPB acknowledges that intentions do not always result in behaviour. Even when a parent has a positive attitude, perceives social approval, and intends to vaccinate their child, external challenges, such as health facility disruptions or the COVID-19 pandemic, can prevent the behaviour from occurring. This gap between intention and action is especially relevant to the low HPV vaccine coverage observed in Kenya, despite public sensitization efforts.

By applying the Theory of Planned Behaviour, this study provides a theoretical foundation for analyzing the complex interplay between knowledge, attitudes, social influence, and access in determining parental decisions regarding HPV vaccination. The TPB framework not only supports the identification of specific behavioural drivers and barriers, it also informs the development of targeted interventions to improve vaccine uptake. Understanding these behavioural components is essential for addressing vaccine hesitancy, enhancing health literacy, and ultimately reducing the burden of cervical cancer in low-resource settings like Kiharu Sub County.

2.8 Research gap

The existing literature reveals different factors that contribute to low uptake of HPV vaccine in different community set ups. Knowledge and parental consents coupled with systemic challenges are among the key factors to HPV uptake in many settings. Understanding the parental influence to HPV vaccine among their girls is critical in ensuring a context specific, acceptable and appropriate demand creation strategies to improve HPV uptake among the eligible population in the study area and beyond. This will improve the community participation especially women to counter myths and misconception, romours and offer the necessary support in consenting for the vaccination of their daughters.

CHAPTER THREE

RESEARCH METHODOLOGY

3.0 Introduction

The chapter describes the approach used in assessing the influence of parental consent in HPV vaccine access among girls aged 10 to 14 years in Kihuru Sub County in Murang'a County. The chapter also give details of the design of the study, location of the study, the study's population, variables, sample methods, validity and reliability checks, data gathering methods, data management and analysis, and ethical issues.

3.1 Research Design

The study employed a descriptive cross-sectional survey method and employ quantitative techniques to determine the impact of parental agreement on access to the HPV vaccine among girls aged 10 to 14 years in Kihuru Sub County in Murang'a County. The study design was chosen since it is appropriate in assessing various parental influences that may affect access to HPV vaccine among girls aged 10 to 14 years in Kiharu Sub County, Murang'a County.

3.2 Study area

The study was conducted in one of the seven Sub Counties of Murang'a County, known as Kiharu Sub County. The study was conducted in Kiharu Sub-County of Murang'a County, Kenya. Covering roughly 209.8 km² on the northern side of Murang'a town, Kiharu is one of the county's seven sub-counties and shares boundaries with Kangema Sub-County to the west and Mathioya Sub County to the East.

3.3 Study population

The study was conducted among parents with girls aged 10 to 14 years in Kiharu Sub County, one the seven Sub Counties in in Murang'a County.

3.4 Sample size determination

The study used the Fisher's formula to calculate the sample size which according to Cochran J., *et al.* (2013) is applicable for calculating the sample size of different study designs in scientific research. The target population for HPV vaccination are girls aged 10 to 14 years. According to 2019 census the eligible population for HPV vaccine in Kiharu Sub County is 10, 860 girls.

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

Where;

N = the desired sample size

Z = standard deviation (at 1.96 and corresponds to 95% Confidence Interval (CI).

p = the proportion of the target population with condition of interest

q = 1- p = (1 – 0.31 = 0.69)

d = Minimum error (0.05) is

p = 0.31

q = 0.71

$$n = \frac{1.96^2 \times 0.31 \times 0.71}{0.05^2} = 309.7$$

The desired sample size was 310 respondents.

3.5 Sampling technique

The study area was sampled due to low HPV vaccine coverage in Murang'a County coupled with its convenience to the researcher. The study used random sampling method where Community Health Units (CHUs) within the study area were used as the sampling frame to identify the target population for the study. Community Health Promoters (CHPs) were used to identify the study respondents where by, a list of all parents with girls aged 10-14 years was generated. A simple random sample using table of random numbers was done to identify the

respondents from the list. The parents were contacted through a phone call explained of the intended study and requested for their willingness to participate. Parents willing to participate were visited at their homes or any other location and time convenient with them for the interview.

3.6 Inclusion and exclusion criteria

3.6.1 Inclusion criteria

Resp ondents were Parents who have resided in the study area for over 1 year with children aged 10-14 years who will give consent to the study.

3.6.2 Exclusion criteria

Respondents who were excluded despite having girls aged 10-14 years were those with known mental challenges, those who had not resided in the study area for the last one year, those who were known or found to be under the influence of alcohol and parents who declined to consent to be interviewed

3.7 Data collection instrument

A semi structured questionnaire and with closed and open-ended questions was the primary data collection tool for quantitative study. Data on respondents' demographics, involvement in HPV vaccination, knowledge on HPV and HPV acceptance was captured in the tool.

3.8 Pre-testing of the data collection tools

This was done at Thika Sub County in Kiambu County to check on the tool's validity and reliability prior to data collection. A total of 31 interviews was conducted to identifies any difficulties in understanding the questions or inconsistency in question flow which was addressed before conducting the study. The internal consistence of the tool was tested using Cronbach's alpha test

3.9 Data Validity and reliability

3.9.1 Reliability

This refers to how consistently and reliably the study tool or instrument produces its findings during its use. The respondents were asked the same questions, in the same order, with the same coded answers for closed-ended questions, to ensure reliability. In order to eliminate biasness and minimize on errors, the researcher recruited two research assistants who were trained on data collection using the interview schedule. For simplicity of understanding and response by the respondents, the questions and any written instructions was made in basic and straightforward language. Open ended questions were kept to the possible minimum.

3.9.2 Data Validity

This refers to the capacity of data collection tools to measure what was intended to be measured. Thus, it refers to the test's applicability to the needed data. In order to ensure and maintain validity, a sample pre-test of 31 (10%) households in Thika Sub County, in Kiambu County was done. The tools were critically reviewed and realized irregularities, inconsistence, and vagueness in comprehending the intended measures was revised prior to data collection.

3.10 Data collection technique and methods

Quantitative data was collected through a face-to-face interview at a venue and time convenient to the respondent by the Research Assistants (RA). Quantitative data was collected using an interview guide for the parent. Interview with the health care providers in all the health facilities were conducted by the student researcher.

Research Assistants were recruited for the CHPs who were well familiar with the study area. To minimize bias, the CHP was vetted on bases on integrity, commitment and qualification. The CHPs were trained for four days to effectively understand the purpose of the study and basic data collection and interview techniques.

3.11 Data management

Interview schedule guide and used unique identifiers and no other identification was required. The responses were keyed in to Scientific Package for Social Studies (SPSS) version 22 within 24 hours after data collection. Copies of all the data collection tools was collected by the researcher for custody and reference if need be.

3.12 Data analysis

This was done for quantitative data which was coded entered and cleaned using Scientific Package for Social Studies (SPSS) version 22.0. The result of the descriptive statistic was displayed in tables, graphs, and pie charts as frequencies and percentages. Categorical data was presented in form of frequencies and percentages while continuous variables was described in measures of central tendency and normal distribution. The Chi square test was done to test association between variables with a significant level set at 0.05. Bivariate and multivariate logistic regression was also conducted.

3.13 Ethical consideration

Approval of the study was sought from the Mounty Kenya Ethic and Research Committee (ERC). Further approval was sought from NACOSTI and the County departments of health and education. Consent was sought from sampled respondents before commencement of the face-to-face interviews. Respondents who consented to be interviewed were requested to sign the consent form as an indication of voluntary participation in the study.

CHAPTER FOUR:

RESEARCH FINDINGS AND DISCUSSION

4.0 Introduction

The study's analysis, results and discussion are presented in this chapter. The chapter start by presenting information on response rate after which the sociodemographic information of the respondent is presented. Then findings on the level of HPV vaccine understanding among respondents is presented, followed by finding on parental attitude on HPV vaccination among the respondents, parental factors affecting HPV vaccination among the respondents. The chapter ends by presenting findings on barriers to HPV vaccination among the respondents.

4.1 Response rate

The present investigation looked at the variables impacting parents' consent regarding their girls' acceptability of the HPV immunization in Kiharu Sub County, Muranga County, between the ages of 10 and 14. The study's target group consisted of parents whose girls ranged in age from 10 to 14. A response rate of 100 was obtained from the three hundred and ten (310) questionnaires that were distributed, filled out, and returned by respondents. Few respondents, nevertheless, chose not to respond to a few of the inquiries posed in the interview.

4.2 Social demographic of the respondents

Table 2: Social demographic factors of the respondents

			Acceptability of HPV		
	Frequency	**Percentage**	**χ2**	**df**	**P-Value**
Education level of the of the respondents			**42.1**	**4**	**0.00**
None	53	17.1			
Primary school	94	30.4			
Secondary school	73	23.5			
Tertiary	48	15.5			
University education	42	13.5			
Total	**310**	**100.0**	**χ2**	**df**	**P-Value**
Age of the respondents			**33.2**	**3**	**0.003**
31-35	35	11.3			
41-45	172	55.5			
51-55	58	18.7			
61-65	7	2.3			
71-75	38	12.3			
Total	**310**	**100**	**χ2**	**df**	**P-Value**
Occupation			**23.1**	**2**	**0.08**
Self employed	100	32.3			
Salaried worker	33	10.6			
Casual jobs	177	57.1			
Total	**310**	**100.0**	**χ2**	**df**	**P-Value**
Religion	**Frequency**	**Percentage**	**18.4**	**1**	**<0.001**
Christian	267	55.5			
Muslim	43	13.9			
Total	**310**	**100.0**			

Regarding educational attainment, the majority of respondents (52.5%) had completed secondary school or less. Merely a minor portion had completed their postgraduate studies. A The study employed a Chi-square test with a 95% confidence level to determine if there was a correlation of statistical significance between the respondents' academic achievement level and their acceptability of HPV vaccines.Table 2 indicates a statistically significant correlation between the respondents' educational attainment and their level of acceptability towards the vaccine ($\chi2=42.1$, df=3, P=<0.005). Furthermore, compared to respondents with fewer school

credits, participants with higher education levels had 1.22 times greater likelihood of accepting the vaccinations (AOR: 1.22, 95% CI [1.1–2.2]). This suggests that participants with outmost education levels were 1.22 times more probable to consent to HPV vaccinations than partakers with lower education levels.

A person's level of education may affect whether or not they use healthcare services. This may be due to the fact that education increases a person's capacity to learn about health. These results are consistent with those of additional investigations. According to Muia *et al*. (2015), For example, vaccine acceptability is high even though school teachers have low to moderately high levels of knowledge about the HPV vaccine. The study sought to evaluate the vaccination program's enablers and barriers in Kitui County, Kenya, which is currently supported by the Gavi Alliance, as well as the understanding and acceptance of the vaccines among primary school teachers.Less educated teachers were less inclined to consent to the HPV vaccine than more knowledgeable teachers; if this issue is not resolved, vaccination uptake may be impacted. It might be possible to spread awareness about the HPV vaccine and cancer of the cervical cavity by giving teachers the tools they need to become community vaccine champions.

Additionally, an investigation carried out in Ethiopia by Derbie *et al*. (2023) discovered that an understanding of HPV and its vaccine, a favorable mindset toward the vaccine, and higher maternal/guardian educational attainment were statistically significant predictors for adolescent girls' utilization of the vaccine. Simultaneously, concerns about potential side effects and a lack of knowledge about the vaccine were cited as reasons for not getting it.

In regard to age of the partakers' majority of the respondents (66%) were below the age of 45 years. Further Chi-square test was run to determine if there was any noteworthy statistical relationship between age of the partaker and the acceptability of HPV vaccines among the respondents at 95% confidence level. As can be seen in Table 2 there was a substantial relationship between respondents' age and acceptability of the vaccine (χ^2=34.1, df=3,

P=<0.005). Further, the Odds of accepting the vaccines for respondents aged less than 45 years to respondents aged more than 45 years showed that were 1.92 times likely to accept HPV vaccines compared to their (AOR: 1.92, 95% CI [1.1–2.7]). This implies that a younger respondent is more likely to give consent for HPV vaccines uptake compared to their older counterpart.

These results make sense given that the younger participants are more likely to have accessibility to technology and a good education, both of which facilitate access to a wide range of information, including details on HPV and cancer of the cervical cavity. These findings align with additional investigation sources . To evaluate the extent to which psychological variables are connected to this population's motivations for pediatric HPV vaccination, for example, Aliyah *et al*. (2023) paired the theory of planned behavior and the health belief framewor. Among these factors were the mother's age, the number of daughters, her status as an HPV vaccine recipient, her perceptions of the advantages and disadvantages of the vaccine, her concerns about safety, peer expectations surrounding the vaccine among children, and medical advice. A further investigation conducted in Weihai, Shandong, China, by Yang *et al*. (2016) examined mothers with teenage daughters' awareness and indulgent of HPV, the HPV serums, and the vaccine's interest credibility. discovered that among the variables influencing the acceptability of HPV vaccinations were age and educational attainment.

Moreover, regarding the occupation of the partakers, the investigation found that most of the partakers (57.1%) were either casual labourer followed by self-employed (32.3%). Further Chi square test was run to determine if there was any noteworthy statistical relationship between occupation of the respondents and acceptability of HPV vaccines among the among the respondents at 95% confidence level. As can be seen in Table 2 there was insignificant relationship between respondents' occupation and acceptability of the vaccine (χ^2=23.1, df=2,

P=0.08). This finding contradicts findings on studies done elsewhere. For example, in the study by Yang *et al* (2016), occupation of the parent was a significant determinant of HPV vaccine acceptability.

Regarding religion, the vast majority of study participants (85.6%) identified as Christians, with Muslims coming in second. To find out if there was a significant statistical correlation between participant religion and their acceptance of HPV vaccinations at a 95% confidence level, a Chi square test was also conducted. The acceptability of the vaccine and respondents' religion were significantly correlated, as shown in Table 2 ($\chi 2$=18.1, df=1, P=<0.005). Additionally, the probability of Christian participants recognizing the HPV vaccines was 2.26 times higher than that of their Muslim counterpart (AOR: 2.26, 95% CI [1.1–2.7]). These results are constant with a research investigation by Ifrah *et al*. (2023) that looked into guardians' willingness to get immunized their children against HPV and was carried out in Madera, Kenya. The study discovered that guardians' acceptance of the vaccine was significantly influenced by religion.

Having said that, the findings of the present investigation are at odds with those of other studies. For example, a research investigation by Jennifer *et al*. (2012) found that there was a substantial correlation between positive religious coping and compliance to all appropriate for your age screening, even after managing for pertinent covariates. The investigation sought to identify a probable interactions among the elements of spirituality (church participation, philosophical support, spiritual health locus of control, and spiritual coping) and compliance to cancer detection recommendations. The investigation found that the likelihood of having finished all cancer screenings rose by a factor of 5.3 for every point higher on the positive religious resilience scale.

According to research, a person's likelihood of using medical facilities is inversely correlated with their level of religiosity; the more religious they are, the less inclined they are to use medical care, and the more religious they are, the more inclined they are to use medical care services when they are ill (Mochache *et al*., 2020).

4.3 Level of knowledge on HPV vaccine among the respondents

Finding out how much parents in Kiharu Sub County knew about the HPV vaccine for girls aged 10 to 14 was the main objective of the research. In this context, a series of questions pertaining to knowledge about HPV vaccines were asked on a Likert scale. The order of distribution of the responses is displayed in the following Table 3.

Table 3: level of knowledge on HPV vaccine among the respondents

	SD	D	N	A	SA	Total	Mean	STD
I have heard about HPV	32%	23%	22%	12%	11%	100%	2.1	1.3
An eligible girl that has ever had sex, may not get the HPV vaccine	27%	25%	22%	12%	14%	100%	2.3	1.7
HPV vaccine is only given to girls	24%	19%	26%	9%	22%	100%	2.21	1.2
I know why HPV vaccine is given	37%	21%	22%	13%	7%	100%	2.3	1.4
I am aware of HPV vaccination campaign drives conducted in my area	21%	19%	20%	27%	13%	100%	2.1	1.2

The mean cutoff point in regard to knowledge on HPV based on the five item scale was 2.5. Individuals with cumulative scores below 12.5 were classified as having "iandequate knowledge," while those with scores above 12.5 were classified as having "Being knowlegable." The following chart displays how well respondents understood category proportions.

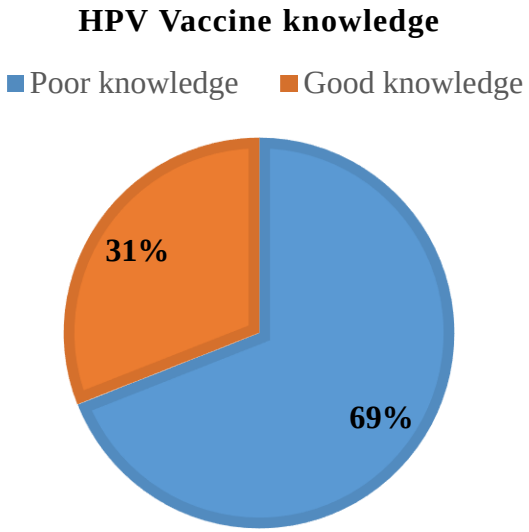

Figure 3: Knowledge on HPV vaccine

Additionally, to ascertain, at a 95% confidence level, whether the respondent's acceptance of the vaccines was correlated with their level of knowledge. A statistically significant test resulted from the test ($\chi 2$=17.1, df=1, P=<0.005). Furthermore, individuals with good knowledge were 1.33 times more inclined to accept HPV vaccines for their girls than those with insufficient understanding, according to the odds of accepting the vaccines for respondents classified as having good knowledge compared to those classified as having poor knowledge. (95% CI [1.1–2.7]; AOR: 1.33). This suggests that people who are well-informed about HPV vaccines are much more inclined to accept them than people who are not as knowledgeable.

It is evident from the data that partakers who knew about the immunization were more likely than non-knowing respondents to give their permission to their children receiving the HPV vaccination. This pattern of behavior has been explained by the possibility that educating people can influence their attitudes toward healthy behaviors and encourage them to adopt the suggested ones (Vriend, 1996).

These results are consistent with those of other studies. For instance, Gregory *et al*. (2018) found that understanding was closely related to vaccine acceptability in a cross-sectional

survey of 454 women using an anonymously finished questionnaire covering understanding and awareness of HPV infection and attitudes toward vaccination. The study's goal was to assess the understanding and opinions of Romanian women about HPV and HPV vaccine.

In a different cross-sectional investigation, Mihretie *et al*. (2023) evaluated the knowledge, acceptance, and related factors of female adolescent students in Debre Tabor Town, Ethiopia. They discovered that while the percentage of the population that discovered the HPV vaccine to be acceptable was average, having access to information had a strong association with vaccine knowledge. Additionally, the investigation found that the adoption of the female adolescent HPV vaccine had a noteworthy relationship with the fathers' academic achievement, where they gave birth, and understanding of the HPV vaccine.

Additionally, a research investigation conducted in Kitui County, Kenya by Masika *et al*. (2015) discovered that teachers had a high level of vaccine consciousness, a moderate level of awareness about HPV and cancer of the cervixs and that female teachers scored more highly than male teachers. The investigation sought to evaluate primary school teachers' knowledge and acceptability of the HPV vaccine as well as to investigate the contributing factors and obstacles of an ongoing vaccination program supported by the Gavi Alliance. The majority of educators, according to the investigation, would advise their daughter or close family members to get the vaccine.

Having said that, Perlman's (2014) observations and the results of this investigation are in conflict. Researchers evaluated people's willingness and acceptance to get vaccinated in sub-Saharan African (SSA) nations, as well as their understanding and awareness of cancer of the cervical cavity, HPV, and the HPV immunization. The review found that while there were high levels of desire and legitimacy for the HPV serum, there were low levels of understanding and awareness regarding HPV, cervical carcinoma, and the HPV vaccine. According to the

investigation, there is a dire requirement for increased public education regarding HPV, the HPV serum, and cancer of the cervical cavity. This education should focus on key populations, such as adolescents, parents, and healthcare professionals, as they can contribute to the effective execution of HPV vaccination programs by showing them how accepting the vaccine is.

4.3 Parental perception on HPV vaccination for girls' aged 10-14 among the respondents

The second objective of the investigation was to find out how respondents' parents felt about HPV vaccinations for girls between the ages of 10 and 14. A multiple-response assessment taken from Matranga, *et al*. (2019) was employed in order to accomplish this. The responses are distributed as shown in Table 4 below.

Table 4: Parental perception on HPV vaccination for girls' aged 10-14

	Yes	Much	Some what	Little	No	Total	Mean	STD
Do you know what vaccines are	12%	32%	23%	10%	23%	100%	2.1	1.3
Are you favourable on pediatrics vaccination	23%	23%	38%	3%	13%	100%	2.3	1.7
Do you know where to get vaccination	12%	10%	23%	22%	33%	100%	2.21	1.2
Do you think vaccines have side effects	33%	12%	15%	15%	25%	100%	2.3	1.4
Can a vaccination prevent you from getting sick?	12%	32%	23%	10%	23%	100%	2.1	1.2
Do you know what HPV is	23%	23%	38%	3%	13%	100%	2.2	1.2
Di you think that HPV is dangerous	12%	32%	23%	10%	23%	100%	2.6	1.4
Do you know lesion related to HPV infection	14%	24%	38%	11%	13%	100%	2.1	1.2
Have you heard about vaccination against HPV	16%	37%	23%	12%	12%	100%	2.5	1.2
Would you consider having you child vaccinated against HPV	23%	23%	38%	3%	13%	100%	1.2	1.3

Based on the response to the 10 Likert scale questions, the cumulative possible score for positive attitude was 50. Consequently, the cutoff point was 25. This implied that respondents who score less than 25 had a negative perception and those with a score of more than 25 were regarded as having a positive perception. The following pie chart shows the distribution of perception based on the above criteria.

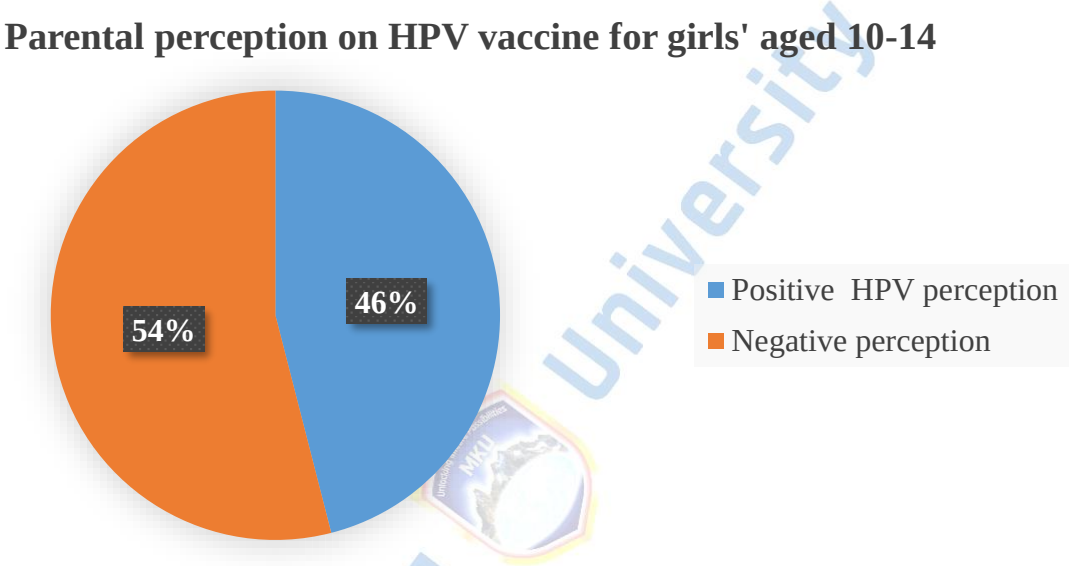

Figure 4: Parental perception on HPV vaccine

Moreover, to ascertain, at a 95% confidence level, whether the respondent's opinion of HPV was linked to their acceptance of the vaccinations. A statistically significant test resulted from the test ($\chi 2$=16.2.1, df=1, P=<0.005). Furthermore, individuals with a positive perception of HPV were 1.17 times more probable to accept HPV vaccines for their girls than those classified as having poor knowledge, according to the odds of accepting the vaccines for respondents with positive perception compared to those with negative perception. (95% CI [1.1–2.7]; AOR: 1.177). This implies that individual with positive HPV perception are more likely to accept HPV vaccines compared to those without.

Positive perception is a perquisite to utilization for the health behavior adoption. This is because that if and when a person can be able to associate the recommended behavior with

some benefits, then it becomes desirable. These findings align with other studies that have been carried out. For example, positive understanding was found to have a significant correlation with HPV acceptance in an investigation by Fu *et al*. (2015) in Northern India to assess the views of parents of their children's willingness to receive the HPV vaccine and their own understanding of cervix cancer, HPV, the HPV vaccine, and recognition of the injection.

In an additional investigation, Warner *et al*. (2017) evaluated the relationships between the practice and socioeconomic characteristics of medical professionals and their consciousness of HPV vaccination and HPV immunization recommendations. It was discovered that adoption of the HPV vaccine was correlated with medical providers' positive perceptions.

Furthermore, in an additional investigation conducted in Kampala, Uganda, by Bitariho *et al*. (2021), the knowledge, attitudes, and practices of teenage girls between the ages of 10 and 14 regarding the HPV immunization program were evaluated in order to produce data that would direct initiatives aimed at enhancing vaccine uptake. The investigation discovered a association between perceptions of the HPV immunization and intention to get the vaccine.

4.4 Individual parental factors affecting HPV vaccination for girls aged 10-14

Finding out which specific parental factors affected the HPV immunization of respondents' girls between the ages of 10 and 14 was the third goal of the investigation. The people who responded were given a set of eleven inquiries on a likert scale in this regard. The opinions' distribution is displayed in Table 5 below.

Table 5: Individual parental factors affecting HPV vaccination for girls aged 10-14

	Factor	No influence	Low influence	High influence	Total	STD
1.	inadequate knowledge of the HPV vaccine provided to the parent	32%	36%	32%	100%	1.2
2.	inadequate awareness of the HPV vaccine among girls	44%	32%	24%	100%	1.1
3.	Fear of HPV vaccine safety	44%	32%	24%	100%	2.6
4.	Fear of HPV side effect	32%	36%	32%	100%	2.3
5.	Fear of pain	32%	36%	32%	100%	2.1
6.	Parental consent prior to HPV vaccination	44%	32%	24%	100%	1.5
7.	Lack of vaccine at the health facility	32%	36%	32%	100%	1.3
8.	Rumours, myths and misconception	44%	32%	24%	100%	1.4
9.	Distance to the health facility	44%	32%	24%	100%	1.2
10.	Places/ site for HPV vaccination campaign	32%	36%	32%	100%	2.3
11.	Cost/ payment required to access HPV vaccine	44%	32%	24%	100%	2.1

Further to determine the influence on each of the factor, a hierarchical regression model with each of the model entered at each stage. Table 6 below shows the contribution individual, parental and health system factors contribution.

Table 6: Hierarchical regression model summary

Model Summary									
				Std.	Change Statistics				
Model	R	R Square	Adjusted R Square	Error of the Estimate	R Square Change	F Change	df1	df2	Sig. F Change
1	.617[a]	.380	.374	.35704	.380	57.054	3	279	.000
2	.751[b]	.563	.557	.30024	.183	116.539	1	278	.000
3	.917[c]	.842	.838	.18183	.278	160.985	3	275	.000
4	.949[d]	.901	.898	.14414	.059	163.625	1	274	.000
5	.976[e]	.952	.928	.10023	.052	147.335	2	272	.000
6	.976[f]	.953	.951	.09963	.001	4.284	1	271	.039

From the model Table 6 above demographic factors (age of the respondent, occupation, highest level of education) were entered in the first stage. At this stage the model explained 37.4% of the variation of HPV vaccine acceptability. Then parental factors (parent level of knowledge, awareness were entered in the second stage), at this stage the model explained 55.7% % of the variation of HPV vaccine acceptability. Fear factor (fear of pain, fear of side effects, fear of vaccination site) in the third stage, at this stage the model explained 83.8% % of the variation of HPV vaccine acceptability. Then parental consent was entered in the fourth stage the model explained 89.8%% of the variation of HPV vaccine acceptability. This was followed by health system factors, (Cost/ payment required to access HPV vaccine, Distance to the health facility) entered in the fifth stage, at this stage the model explained 92.8%. % of the variation of HPV vaccine acceptability Finally, cultural factors (rumors myths and misconceptions were entered in the in the sixth stage and the model explained 95.1% % of the variation of HPV vaccine acceptability. Overall cultural factors backed most to the model, of the variation of HPVimmunization acceptability.

These results indicate that the acceptability of HPV can be attributed to a number of variables, as shown in the above model. These results are consistent with research from other sources. In

HE *et al*.'s (2018) study, for instance, the researchers sought to determine women's acceptance of HPV immunization as well as their level of knowledge regarding HPV and its link to cancer of the cervical cavity in western China. It was discovered that the acceptance of vaccines against HPV is predisposed by factors such as consent, level of education, and knowledge. Tatar *et al*. (2018) conducted an investigation that employed mixed methods research synthesis to categorize pertinent factors associated with HPV primary screening for cancer of the cervical cavity and to describe their impact on women's acceptance of HPV testing. The study discovered that main factors in HPC vaccine acceptance were trainers such as high perceived benefits of HPV testing, schooling, financial status, and vaccine availability.

4.5 Barriers related to HPV vaccination

Determining the impediments to HPV vaccination for girls in Kiharu Sub County between the ages of 10 and 14 was the fourth goal of the research investigation. In this regard respondents were requested to identify any barriers that they have faced in regard to HPV vaccine. The following are the main barriers identified by the respondents.

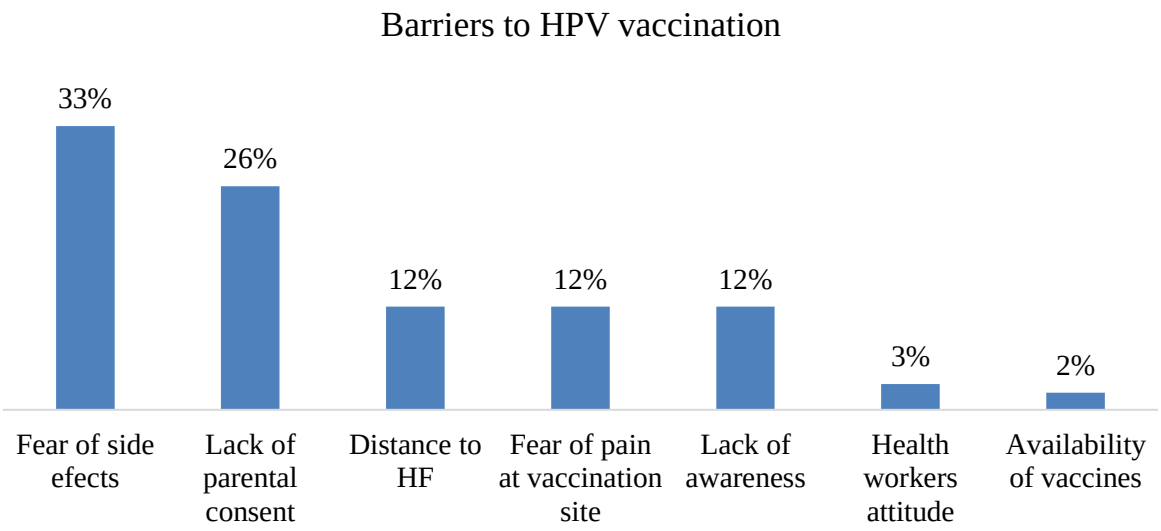

Figure 5: Barriers to HPV vaccination

From the figure 5 above fear of side effects was the highest (33%) reported barrier by the respondents followed by failure to obtain consent from the parent (26%). These results are consistent with research conducted elsewhere. For instance, an investigation conducted in the Ibanda district by Turiho *et al*. (2017) investigated community members' opinions regarding HPV immunization and the consequences of those opinions for the acceptability of HPV vaccination. One of the primary obstacles to respondents' acceptance of the HPV immunization, according to the investigation, is fear.

Expand on an investigation by HE *et al*. (2018), which sought to determine western Chinese women's knowledge of HPV and its link to cancer of the cervixs as well as their willingness to take of HPV vaccination. It was discovered that there were obstacles (such as unfavorable opinions about longer screening intervals), conflicting information (such as sexual history), and no effect (such as a high perceived severity of HPV infection).

Furthermore, Hoefer's (2018) study, which sought to determine the factors influencing high-risk Greeks' understanding of and desire to receive an HPV vaccination, discovered a 20% decline in legitimacy among Greek women thinking about getting immunized themselves and their children. Some have speculated that widely reported media reports regarding the vaccine's unfavorable side effects may have contributed to these women's concerns.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.0 Introduction

This chapter present the summary conclusion and recommendation of the study. The chapter starts by presenting the summary after which the conclusion will be done, then recommendation. The chapter will end by providing a suggestion on area of further research.

5.1 Summary

This study sought to determine factors influencing parental consent on Human Papilloma Virus vaccine acceptability among parents with girls aged 10-14 years in Kiharu Sub County, Muranga County. The target population for the study was parents with girl's s aged 10 to 14 years. Three hundred and ten questionnaires were issued to respondents completed and returned hence a response rate of 100.

Further, Chi square test was run to determine if there was any significant statistical relationship between the level of education and acceptability of HPV vaccines among the among the respondents at 95% confidence level, found that there was significant relationship between respondents' level of education and acceptability of the HPV vaccines. The odds ration suggested that those with higher levels of education were more likely to accept HPV vaccine compared to those who didn't.

In regard to age of the respondents' majority of the respondents were below the age of 45 years. Chi square test was run to determine if there was any significant statistical relationship between age of the respondents and acceptability of HPV vaccines among the among the respondents at 95% confidence level. Further, the odds of accepting the vaccines for respondents aged less than 45 years to respondents aged more than 45 years showed that were 1.92 times likely to accept HPV vaccines compared to their younger counterpart This implies

that a younger respondent is more likely to give consent for HPV vaccines uptake compared to their older counterpart.

In regard to religion of the respondents mmajority of the respondents in the study were Christian followed by protestants Muslims and Catholics. Further, Chi square test was run to determine if there was any significant statistical relationship between religion of the respondents and acceptability of HPV vaccines among the among the respondents at 95% confidence level, found that there was significant relationship between respondents' religion and acceptability of the vaccine Further, the odds of accepting the vaccines for Christian respondents to Muslim showed that were 2.26 times likely to accept HPV vaccines compared to their Muslim counterpart

The first objective of the study was to determine the level of knowledge on HPV vaccine for girls aged 10-14 years among the parents in Kiharu Sub County. In this regard, in a likert scale, a series of questions were asked that touched on HPV vaccines knowledge. In this regard majority of the respondents had low level of education. knowledge level was associated with acceptability of the vaccines by the respondent, at 95% confidence level. Moreover, the odds of accepting the vaccines for respondents categorized as having good knowledge to those categorized as having poor knowledge showed that individual with good knowledge were more likely to accept HPV vaccines compared for their girls compared to those categorized as having poor knowledge. This implies that individual with good HPV vaccine knowledge are more likely to accept HPV vaccines compared to those without.

The second objective of the study was to determine Parental perception on HPV vaccination for girls' aged 10-14 years among the respondents. To achieve this a multiple-response questionnaire adopted from Matranga, et al (2019) was used. positive perception were at 46% and negative perception 54

Further, to determine whether perception of the HPV was associated with acceptability of the vaccines by the respondent, at 95% confidence level. The test returned a statistically significant test. Moreover, the odds of accepting the vaccines for respondents categorized as having positive perception to those categorized as having negative perception, showed that individual with positive HPV perception 1.17 times likely to accept HPV vaccines compared for their girls compared to those categorized as having poor knowledge. This implies that individual with positive HPV perception are more likely to accept HPV vaccines compared to those without.

The third objective of the study was to determine individual parental factors affecting HPV vaccination for girls aged 10-14 among the respondents. In this regard a set of ten questions in a likert scale was given to the respondents

At this stage the model explained 38% of the variation of HPV vaccine acceptability. Then parental factors (parent level of knowledge, awareness were entered in the second stage), at this stage the model explained 55.7% % of the variation of HPV vaccine acceptability. Fear factor (fear of pain, fear of side effects, fear of vaccination site) in the third stage, at this stage the model explained 83.8% % of the variation of HPV vaccine acceptability. Then spousal consent was entered in the fourth stage the model explained 89.8%% of the variation of HPV vaccine acceptability. This was followed by health system factors, (Cost/ payment required to access HPV vaccine, Distance to the health facility) entered in the fifth stage, at this stage the model explained 89.8%. % of the variation of HPV vaccine acceptability Finally, cultural factors (rumors myths and misconceptions were entered in the in the sixth stage and the model explained 95.1% % of the variation of HPV vaccine acceptability. Overall fear factors (third stage) contributed most to the model, with it explaining 27.8% % of the variation of HPV

vaccine acceptability. Based on these findings HPV acceptability can be explained by several factors as identified in the model above.

The fourth objective of the study was to determine barriers to HPV vaccination for girls aged 10 to 14 in Kiharu Sub County. in this regard respondents were requested to identify any barriers that they have faced in regard to HPV vaccine. From the figure above fear of side effects was the highest (43%) reported barrier by the respondents followed by failure to obtain consent from the spouse (14%). The study identified fear as one of the main barriers of accepting HPV vaccine among the respondent

5.3 Conclusion

In regard to level of knowledge on HPV vaccine for girls aged 10-14 years among the parents in Kiharu Sub County, the study concluded that the respondents had a low level of knowledge

In regard to perception on HPV vaccination for girls' aged 10-14 years in Kiharu Sub County the study found that majority of the respondents had negative perception of the vaccine.

In regard to factors affecting HPV vaccination for girls aged 10-14 years in Kiharu Sub County, study found that a combination of individual, parental, cultural and health system factors influenced the uptake of the vaccines

Finally in regard to obstacles to HPV vaccination for girls aged 10 to 14 in Kiharu Sub County the study found a set of barrier associated to HPV vaccine adoption. Fear was the biggest barrier to HPV adoption

5.4 Recommendation.

In regard to level of knowledge on HPV vaccine for girls aged 10-14 years among the parents in Kiharu Sub County, the study concluded that the respondents had a low level of knowledge.

The study therefore recommends continuous health education on HPV, cervical cancer and various ways of preventing the virus including HPV vaccine

In regard to perception on HPV vaccination for girls' aged 10-14 years in Kiharu Sub County the study found that majority of the respondents had negative perception of the vaccine. The study recommends continuous provision of information to help address misconceptions related to the vaccine.

In regard to factors affecting HPV vaccination for girls aged 10-14 years in Kiharu Sub County, study found that a combination of individual, parental, cultural and health system factors influenced the uptake of the vaccines. The study recommends a multispectral approach to help in promoting the acceptability of the vaccines among the target group.

Finally, in regard to obstacles to HPV vaccination for girls aged 10 to 14 in Kiharu Sub County the study found a set of barrier associated to HPV vaccine adoption. Fear was the biggest barrier to HPV adoption. The study recommends the provision of material addressing various misconceptions associated with the vaccine.

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APPENDICES

Appendix I: Informed Consenting

Research Title: THE INFLUENCE OF PARENTAL CONSENT IN ACCESS TO HUMAN PAPILLOMA VIRUS VACCINE AMONG GIRLS AGED 10-14 YEARS IN KIHARU SUB COUNTY, MURANG'A COUNTY

Investigator: Catherine Wairimu Mwangi, Student Studying Masters of community Health and development in Mt. Kenya University

Introduction: Am Catherine Wairimu Mwangi conducting a study on influence of parental consent in access to HPV serum among girls aged 10-14 years in Kiharu sub county, Murang'a county

Discomfort and risk

There some questions that might make you feel a little bit embracing, should this occur, you are free to decide whether or not to respond to this inquiries, you can end the interview at any point as well, there aren't any hazard association with participating in this research or being exposed to any.

Title Benefits There are no specific advantages to take part in this research. By participating you will help to formulate interventions that will help in improving the health of women in Kiharu Sub-county in Murang'a county

Privacy and Confidentiality

Data collection won't be utilized for any purpose a side from those specified in this research. You and me, and any additional information that could be utilized to determine your identity will not be in the questionnaire

Participant withdrawal

Please note that this study is voluntary and declining involvement will have no impact. As a parent you have the right to stop participating in this research at any time. The Mt. Kenya University Institutional ethics committee has examined and approved this research project.

Whom to Contact

You are allowed to ask questions now or at a later time in an event that you would like to ask questions later, please reach out to the following:

Catherine Wairimu

P.O Box:497- Thika

Email: cathywm2012@gmail.com

Tell: 0720998544

Appendix II: Interview Schedule

Demographic Characteristics

1. What is your religion/ faith affiliation?
   i) Christian
   ii) Muslim
   iii) Others (specify) _____
2. What is you highest level of education
   i) None
   ii) Primary
   iii) Secondary
   iv) Tertiary
   v) University
   vi) Others (specify) _____
3. What is your occupation?
   i) Self employed
   ii) Salaried
   iii) Casual jobs
   iv) Others (Specify) ……
4. What is your average income per month?
   i) Less than 10,000/=
   ii) Between 10,001 – 20,000/=
   iii) Between 20,001 – 30,000/=
   iv) Between 30,001 – 40,000
   v) Between 40,001 – 50,000
   vi) 0ver 50,000
5. How old are you?
   i) 26 to 30 yrs
   ii) 31 to 35 yrs
   iii) 36 to 40 yrs
   iv) 41 to 45 yrs
   v) 46 to 50 yrs
   vi) 51 – 55 yrs
   vii) 56 – 60 yrs
   viii) 61 – 65 yrs
   ix) 66 – 70 yrs
   x) 71 – 75 yr
6. What is the age of your daughter? _____ yrs
7. What is the age of your daughter? _____ yrs

Knowledge on HPV

	Strongly agree	Agree	Neutral	Disagree	Strongly disagree	Total
I have heard about HPV						
an eligible girl that has ever had sex, can get the HPV vaccine						
HPV vaccine is only given to girls						
I know why is HPV vaccination done						
I am aware of HPV vaccination campaign drives conducted in my area						

Perception on HPV Vaccine

	SD	D	N	A	SA	Total	Mean	STD
Do you know what vaccines are								
Are you favourable on pediatrics vaccination								
Do you know where to get vaccination								
Do you think vaccines have side effects								
Can a vaccination prevent you from getting sick?								
Are you familiar with HPV?								
Do you believe that HPV poses a threat?								
Are you aware of any lesions linked to HPV infection?								
Are you aware of the HPV vaccination?								
Would you consider vaccinating your child against HPV?								

8. What is your opinion about such myth and misconception?

   i) They are true

   ii) They are hindering parents from consenting for HPV vaccination

   iii) They are stopping girls for being vaccinated

   iv) Others (specify) _____

9. Is the HPV vaccine safe in your opinion?

   i) Yes ii) No iii) I don't know

Individual Factor Influencing HPV Vaccine

10. Have the daughter received HPV vaccine?

    i) Yes ii) No iii) I don't know

11. If no, why?

    i) I declined to give consent

    ii) My daughter doesn't want to be vaccinated

    iii) My daughter feared the pain

    iv) My daughter feared the side effects

12. If yes, did you give consent for her vaccination? i) Yes ii) No

13. If no, why did you not give consent?

    i) It was not sought

    ii) It was given by my partner

    iii) I was not aware of the consent requirement

    iv) Others (specify)_____

14. If your daughter is vaccinated, how many doses has she received?

    i) One dose

    ii) Two doses

    iii) I don't know

15. Do you have any fears concerning HIP vaccine for your child?

i) Yes ii) No

16. If yes, which are your fears? ***multiple responses***

i) Fear of side effects

ii) Fear of vaccine safety

iii) Fear of lack of information on the vaccine

iv) Others (specify) _____

Barriers to HPV Access

17. Are you aware of any barrier to HPV vaccination of girls? i) Yes ii) No

18. If yes, which ones? ***multiple responses***

i) Lack of satisfactory info on HPV

ii) Lack of vaccines at the facility

iii) Parental consent prior to vaccination

iv) Others (specify) _____

19. Where are the HPV vaccination done? ***multiple responses***

i) At the health facilities

ii) At schools

iii) I don't know

iv) Others (specify) _____

20. Are there any payments/ costs associated with HPV vaccination?

i) Yes ii) No iii) I don't know

21. If yes, which are the costs associated with HPV vaccination do you know? ***multiple responses***

i) Cost of getting the vaccine

ii) Fare to the health facility

iii) Cost of the vaccination card

iv) Others (specify) _____

In your opinion, how have the following factors influenced access to HPV vaccine among girls? ***(tick the one that applies to you)***

Factor	**No influence**	**Low influence**	**High influence**
inadequate awareness of the HPV serum provided to the parent			
Girls were not given enough infor about the HPV vaccine			
Fear of HPV serum safety			
Fear of HPV side effect			
Fear of pain			
Parental consent prior to HPV vaccination			
Lack of vaccine at the health facility			
Rumours, myths and misconception			
Distance to the health facility			
Places/ site for HPV vaccination campaign			
Cost/ payment required to access HPV vaccine			

Appendix III: Key Informant Interview (KII) Guide

1. Name of the facility _____
2. Qualification of the respondent _____
3. Respondent's' position in the facility _____
4. No. of years worked in the facility _____
5. What is the HPV vaccine coverage in your facility in relation to your target population?
   i) Over 90%
   ii) 80 – 89%
   iii) 70 – 79%
   iv) 60 – 69%
   v) 50 – 59%
   vi) Less than 50%
6. What are the strategies of delivery of HPV vaccine do you employ in your facility?
   i) Only administered at the facility
   ii) Administered at outreaches in school
   iii) Administered at community outreaches
   iv) Others (specify) _____
7. Are the health workers involved in regular HPV vaccine sensitization?
8. If yes, would you say community are aware of the standing of HPV vaccine?
9. In your opinion what are the main barrier to HPV vaccine access in your facility?
   i) Ignorance
   ii) Lack of parent consent
   iii) Hesitancy by girls
   iv) Fear of side effect
   v) Others (specify) _____
10. Are there rumors and misconception on HPV vaccine in the community?
    i) Yes ii) No

11. If yes, which are the most common rumours, myths and misconception on HPV vaccine?

    i) Vaccine is a family planning method

    ii) The girls will be barren in future

    iii) The vaccine is not safe

    Others (specify) _____How are you addressing such rumour, myths and misconceptions?

    i) Community awareness and engagement session

    ii) Use of champions

    iii) School health education sessions

    iv) Others (specify) _____

12. In your opinion, how have the following factors influenced access to HPV vaccine among girls in your facility? ***(tick the one that applies to you)***

Factor	**No influence**	**Low influence**	**High influence**
Inadequate awareness of the HPV immunization provided to the parent			
Girls were not given enough infor about the HPV vaccine			
Fear of HPV serum safety			
Fear of HPV side effect			
Fear of pain			
Parental consent prior to HPV vaccination			
Lack of vaccine at the health facility			
Rumours, myths and misconception			
Distance to the health facility			
Places/ site for HPV vaccination campaign			
Cost/ payment required to access HPV vaccine			

13. In your opinion, what do you thing should be done to upscale know about HPV vaccine coverage for girls in this community?

    i) Avail adequate vaccines

    ii) Staff motivation (probe on incentives needed)

    iii) Intensified social mobilization

    iv) Others (specify) _____

14. Have you at any one time experienced HPV vaccine stock out in this facility?

    i) Yes ii) No

Appendix IV: ERC Certificate

Mount Kenya University

REF: **MKU/ISERC/3505** Date: 12 March 2024
TO: **CATHERINE WAIRIMU MWANGI**
REG: **MCHD/2022/49950**

Dear Sir/Madam,

RE: THE INFLUENCE OF PARENTAL CONSENT IN ACCESS TO HUMAN PAPILLOMA VIRUS VACCINE AMONG GIRLS AGED 10-14 YEARS IN KIHARU SUB COUNTY, MURANG'A COUNTY

This is to inform you that **Mount Kenya University** has reviewed and approved your above research proposal. Your application approval number is **2549.** The approval period is **12/03/2024 - 11/03/2025.**

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 **Mount Kenya University**
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 **Mount Kenya University** within 72 hours of notification
iv. Any changes, anticipated or otherwise that may increase the risks or affect the safety or welfare of study participants and others or affect the integrity of the research must be reported to **Mount Kenya University** 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 **Mount Kenya University**

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,

The Chairman
Mount Kenya University
Ethics Review Committee
P.O. Box 342 - 0100, Thika

Dr. Alfred Owino, PhD
Chairman, Mount Kenya University ISERC

Appendix V: Introductory Letter

Mount Kenya University

DIRECTORATE OF GRADUATE STUDIES

MCHD/2022/49950

12th March, 2024

National Commission for Science Technology & Innovation (NACOSTI)
Off Waiyaki, Upper Kabete
P.O Box 30623- 00100
NAIROBI, KENYA

Dear Sir/Madam,

RE: CATHERINE WAIRIMU MWANGI- REGISTRATION NO. MCHD/2022/49950

The purpose of this letter is to introduce the above named student who is pursuing **Master of Science in Community Health and Development** in the department of **Community Health, Epidemiology and Biostatistics** in the school of **Public Health.**

The title of the research is **"The Influence of Parental Consent in Access to Human Papilloma Virus Vaccine Among Girls Aged 10-14 Years in Kiharu Sub-County, Muranga County."** It has been cleared by the University's Ethics Review Committee (Certificate attached) and now has to proceed to the field to collect data between **March, 2024 and May, 2024.**

Any assistance accorded to the student will be highly appreciated.

Thank you.

Mount Kenya University
P. O. Box 342 - 01000, THIKA
Office of the Director,
Graduate Studies

Dr. Samuel M. Karenga, Ph.D
Director, Graduate Studies
Enc.

Main Campus, General Kago Road, P.O. Box 342-01000 Thika.
Cell: +254 709 153 000 / +254 709 153 200

Appendix VI: NACOSTI Permit

REPUBLIC OF KENYA

NATIONAL COMMISSION FOR SCIENCE,TECHNOLOGY & INNOVATION

Ref No: **468061**

Date of Issue: **16/July/2024**

RESEARCH LICENSE

This is to Certify that Ms.. CATHERINE Wairimu Mwangi of Mount Kenya University, has been licensed to conduct research as per the provision of the Science, Technology and Innovation Act, 2013 (Rev.2014) in Muranga on the topic: The influence of parental consent in access to Human Papilloma Virus vaccine among girls aged 10-14 years in Kiharu Sub County, Murang'a county for the period ending : 16/July/2025.

License No: **NACOSTI/P/24/37791**

468061

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.

See overleaf for conditions

Appendix VII: Turnitin Report

INFLUENCE OF PARENTAL CONSENT ON HUMAN PAPILLOMA VIRUS VACCINE UPTAKE AMONG GIRLS AGED 10-14 YEARS IN KIHARU SUB COUNTY, MURANG'A COUNTY

ORIGINALITY REPORT

14%	%	13%	6%
SIMILARITY INDEX	INTERNET SOURCES	PUBLICATIONS	STUDENT PAPERS

PRIMARY SOURCES

1	Submitted to Kenyatta University Student Paper	1%
2	Tabitha Chepkemoi, Phylis Jerotich. "Uptake of Two Doses of HPV Vaccines in Nakuru County, Kenya: A Case of Rongai and Nakuru West Sub-Counties", Journal of Biosciences and Medicines, 2023 Publication	<1%
3	Olagbegi, Benedicta. "Human Papillomavirus Vaccine Education to Improve Parental Knowledge, Awareness and Acceptance of HPV Vaccine", Grand Canyon University, 2020 Publication	<1%
4	Madan Khatiwada, Cissy Kartasasmita, Henny Suzana Mediani, Christine Delprat, Guido Van Hal, Carine Dochez. "Knowledge, Attitude and Acceptability of the Human Papilloma Virus Vaccine and Vaccination Among University	<1%

Publication

154	Itemo Francis Irungu, Rebecca Yegon, Faith Milkah Muniale. "Determinants for rainwater harvesting adoption: a case study of smallholder farmers in Murang'a County, Kenya", Sustainable Water Resources Management, 2024 Publication	<1 %
155	Kathryn Thirlaway, Dominic Upton. "The Psychology of Lifestyle - Promoting Healthy Behaviour", Routledge, 2019 Publication	<1 %
156	Terri Flood, Iseult M. Wilson, Gillian Prue, Marian McLaughlin, Ciara M. Hughes. "Impact of school-based educational interventions in middle adolescent populations (15-17yrs) on human papillomavirus (HPV) vaccination uptake and perceptions/knowledge of HPV and its associated cancers: A systematic review", Preventive Medicine, 2020 Publication	<1 %

Exclude quotes	Off	Exclude matches	Off
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Appendix VIII: Map of the study area