MAKERERE UNIVERSITY

SCHOOL OF PUBLIC HEALTH

UPTAKE OF A SINGLE DOSE HUMAN PAPILLOMAVIRUS VACCINE AMONG ADOLESCENT GIRLS AGED 13-19 YEARS IN WAKISO DISTRICT, UGANDA

BY

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A DISSERTATION SUBMITTED TO THE DIRECTORATE OF RESEARCH AND GRADUATE TRAINING IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE AWARD OF THE DEGREE OF MASTER OF HEALTH SERVICES RESEARCH OF MAKERERE UNIVERSITY, KAMPALA

DECLARATION

I NABAASA JANEPHER, a student of Master of Health Services Research (MHSR) Program, hereby declare that this Dissertation titled Uptake Of A Single Dose Human Papillomavirus Vaccine among Adolescent Girls Aged 13-19 years in Wakiso District, Uganda is my original work and has never been presented at any other University, for any award of a degree or any similar purposes.

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APPROVAL

We declare that **Nabaasa Janepher** has developed this dissertation under our supervision and guidance.

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DEDICATION

This dissertation is dedicated to all those who believe in the power of research to transform lives.

To my supervisors and family for their endless guidance and encouragement, and to the adolescent girls whose voices and experiences gave meaning to this study.

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ABBREVIATIONS AND ACRONYMS

AMBSO	Africa Medical and Behavioral Sciences Organization
APHS	AMBSO Population Health Surveillance
CXCA	Cervical Cancer
DHO	District Health Officer
FGD	Focus Group Discussion
HPV	Human Papillomavirus
KII	Key Informant Interview
LMIC	Low- and middle- income countries
MoH	Ministry of Health
PAHO	Pan American Health Organization
PHS	Population Health Surveillance
PR	Prevalence Ratio
SSA	Sub-Saharan Africa
UNEPI	Uganda National Expanded Programme on Immunization
VHT	Village Health Teams
WHO	World Health Organization

OPERATIONAL DEFINITIONS

Adolescent girls	Girls within the age range of 13-19years
Barriers to Uptake:	Any reported reason that prevents or discourages an adolescent girl from receiving the HPV vaccine
Cervical cancer	A condition characterized by the abnormal and uncontrolled growth of cells within the cervix, which is the lower part of the uterus that connects to the vagina
Facilitators of Uptake	Identified factors that promote or enable an adolescent girl to receive the HPV vaccine
HPV Vaccine	A preventive vaccine given to protect against high-risk types of human papillomavirus (HPV) that cause cervical cancer and other HPV-related diseases.
Parental Consent	Permission given by a parent, guardian or caretaker, under ethical guidelines, for the adolescent girl to receive the HPV vaccine
Single-Dose	Receipt of the **first dose** of the Human Papillomavirus (HPV) vaccine by an adolescent girl, regardless of whether any other subsequent dose(s) was(ere) received.
Unvaccinated	The status of having not received any dose of the HPV vaccine, based on self-reports as documented in the AMBSO Population Health Surveillance (APHS) dataset.
Uptake of HPV vaccination	Whether an adolescent girl received at least one dose of the HPV vaccine, as recorded in the APHS dataset. All respondents who reported having received one or more doses were considered to have taken up the HPV vaccine. .
Vaccinated	The status of having received one or more doses of the HPV vaccine as documented in the APHS dataset, noting that, according to the updated WHO recommendation, a single dose is now considered sufficient for complete vaccination.

ABSTRACT

Introduction: Cervical cancer remains a major public health challenge in Uganda, and Human Papillomavirus (HPV) vaccination is a key preventive measure. Despite national vaccination programs, coverage among adolescents remains suboptimal. This study assessed the uptake and factors associated with uptake of single-dose HPV vaccination among adolescent girls aged 13-19 years in Wakiso District.

Methods: A mixed-methods cross-sectional study was conducted with 597 adolescent records extracted from African Medical and Behavioral Sciences Organization (AMBSO) Population Health Surveillance (APHS) and 58 participants through focus group discussions and key informant interviews, including adolescents, parents, health workers, Head teachers, and Village Health Teams (VHTs). Quantitative analysis included descriptive statistics and regression model using STATA 14.0 and qualitative data were thematically analyzed using **NVivo** version 15; QSR International, 2021.

Results: The overall uptake of at least one dose of the HPV vaccine was 33.3%. Uptake was higher among Protestants (44.8%) than Catholics (33.3%), and among rural residents (47.3%) compared to urban residents (27.2%). Younger adolescents aged 13–15 years (42.9%) were more likely to have been vaccinated than those aged 16–19 years (27.8%). In multivariable modified Poisson regression, significant predictors of HPV vaccine uptake were Protestant religion (Adjusted PR = 1.36, 95% CI: 1.04–1.77, p=0.022), rural residence (Adjusted PR = 1.81, 95% CI: 1.46–2.24, p=0.001), and younger age (Adjusted PR = 0.63, 95% CI: 0.50–0.81, p=0.001). Facilitators included community outreach programs, peer encouragement, school-based vaccination program, and trust in health workers. Key barriers, were limited awareness (90.5%) and misinformation.

Conclusion: Single-dose HPV vaccine uptake among adolescent girls aged 13-19years in Wakiso District remains low, largely due to inadequate awareness and sociocultural misconceptions. Strengthening community education, parental engagement, school-health facility programs, and continuous outreach is critical for improving coverage and advancing Uganda's cervical cancer prevention goals.

Keywords: HPV vaccine, adolescent girls, uptake, cervical cancer prevention.

CHAPTER ONE: INTRODUCTION AND BACKGROUND

1.1 Introduction

Human papillomavirus (HPV) is the most common sexually transmitted viral infection worldwide, and most sexually active individuals will acquire at least one genital HPV infection during their lifetime (Chesson et al., 2014) Several HPV types are oncogenic (Bouvard et al., 2009), and persistent infection with high-risk types particularly HPV 16 and 18 is responsible for approximately 99% of cervical cancers globally ("National Cervical Cancer Prevention and Control Strategic Plan (2024–2028)," 2024)

The World Health Organization (WHO) has set a global target to eliminate cervical cancer as a public health problem by 2030, with a key pillar being the achievement of 90% HPV vaccination coverage among girls by age 15 (WHO, 2020).

Despite this ambition, global HPV vaccine uptake remains low and uneven. By 2018, only an estimated 12.2% of girls worldwide had received at least one dose of the HPV vaccine, with marked disparities between high-income countries where school-based programmes have achieved coverage exceeding 70% and low- and middle-income countries (LMICs), where coverage often remains below 30% ("Human Papillomavirus and Related Diseases Report: Uganda," 2023; Spayne & Hesketh, 2021)

To address logistical and financial barriers associated with multi-dose vaccination schedules, particularly in resource-limited settings, WHO revised its guidance in April 2022 to recommend a single-dose HPV vaccine schedule for girls aged 9–14 years as a safe and effective alternative offering comparable protection (World Health, 2022)

This policy shift is intended to simplify delivery, reduce programme costs, and accelerate vaccine coverage in regions with the highest cervical cancer burden.

Sub-Saharan Africa bears the largest share of the global cervical cancer burden ("Human Papillomavirus and Related Diseases Report: Uganda," 2023)

In Africa, cervical cancer remains a leading cause of female cancer mortality (World Health, 2023) , and in East Africa it accounts for approximately 40% of all cancers diagnosed among women (Kassa et al., 2023).

Uganda exemplifies this public health challenge, ranking among the five countries with the highest cervical cancer incidence rates globally, with an age-standardized mortality rate of 40.5 per 100,000 women (Black et al., 2019)

Consequently, millions of Ugandan women remain at risk of cervical cancer (ICO/IARC 2023) Information Centre on HPV and Cancer, 2023), despite the disease being largely preventable through effective HPV vaccination (World Health, 2023). Uganda introduced the HPV vaccine nationally in 2015, primarily through school-based delivery platforms under a multi-dose schedule. However, vaccine coverage remains suboptimal, with district-level estimates reported as low as 9% (Nanyunja, 2020).

Existing research in Uganda has largely focused on multi-dose schedules and has predominantly included in-school adolescent girls, leaving out-of-school adolescents who are often at greater risk of missed vaccination and systematically underrepresented. Furthermore, there is limited local evidence on HPV vaccine uptake, barriers, and facilitators in the context of the WHO-recommended single-dose schedule, which Uganda has not yet formally adopted.

This study therefore aims to determine the prevalence, factors associated with, and barriers and facilitators to uptake of the single-dose HPV vaccine among adolescent girls aged 13–19 years, including those who may have missed vaccination at the recommended age, in Wakiso District, Uganda.

1.2 Background

The worldwide burden of HPV infection suggests that it is of significant public health importance (Sung et al., 2021) and preventive strategies should be holistic (WHO, 2024a). The natural history of HPV infection provides opportunities for intervention at different stages. Primary prevention focuses on preventing new HPV infections. Secondary prevention involves detecting intraepithelial cancer precursors before they develop into invasive disease (Awolude, Morhason-Bello, Denny, & Adewole, 2013).

HPV causes different types of cancers, including cervical cancer, which is the leading cause of cancer deaths among women in SSA (Kutz, Rausche, Gheit, Puradiredja, & Fusco, 2023). Moreover, HPV prevalence is higher among women living with HIV in the Sub-Saharan region, reaching estimated levels of 80% in Zambia and above 90% in Uganda (Nakibuuka et al., 2024).

In Uganda, about 3.6% of women in the general population are estimated to harbor HPV-16/18 infection at a given time, and 57.0% of invasive cervical cancers are attributed to HPVs 16 or 18 (ICO/IARC Information Centre on HPV and Cancer, 2023). It's from this background that the World Health Organization (WHO) made HPV vaccination a priority, recognizing it as a key step in preventing cervical cancer, the fourth most common cancer affecting women globally (Brisson & Drolet, 2019). Evidence from clinical trials suggests that the quadrivalent and bivalent HPV vaccines are effective in reducing the risk of HPV infections and cervical abnormalities (Group, 2007). The latest HPV vaccine protects against nine virus types responsible for 90% of cervical cancer cases globally (Tobaiqy & MacLure, 2024). Primary prevention through the administration of efficacious HPV vaccines is key to the WHO's global strategy for accelerating the elimination of cervical cancer as a disease of public health concern. Primary prevention of cervical cancer through vaccination for HPV and secondary prevention through screening is critical for reducing the burden of cervical cancer in LMICs (Grant Murewanhema, Enos Moyo, Mathias Dzobo, Rachel S. Mandishora-Dube, & Tafadzwa Dzinamarira, 2024)**.** Vaccines against HPV have been available and recommended by World Health Organization (WHO) since 2009 (Laia Bruni et al., 2021) and WHO recommends vaccination against HPV for girls before sexual debut using a two-dose schedule. Later in 2022, the World Health Organization's Strategic Advisory Group of Experts on Immunization (SAGE) issued an updated recommendation supporting a single-dose schedule for HPV vaccination. This policy shift was based on growing evidence demonstrating that a single dose of the vaccine provides comparable protection to the traditional two-dose regimen, particularly among girls aged 9 to 20 years This reduces costs and simplifies delivery logistics (Slavkovsky, Mvundura, Debellut, & Naddumba, 2024). It could greatly expand access in LMICs, where cervical cancer has severe impacts (Fokom-Defo, Dille, & Fokom-Domgue, 2024), however Uganda has not yet rolled out the single dose since endorsement by WHO. Since the licensure of the HPV vaccine in 2006, the targeted HPV vaccination rates have remained suboptimal worldwide (Roy et al., 2025). Uganda introduced the quadrivalent HPV vaccine (4vHPV) into the national

immunization program (UNEPI) in November 2015, using a two-dose schedule with a six-month interval. This 4vHPV vaccine is provided free of charge, protects against precancerous lesions and genital warts caused by HPV infection (Patrick, Bakeera-Kitaka, Rujumba, & Malande, 2022). The vaccination strategy targets female adolescents aged 10 to 14 years for whom the first vaccination dose should be administered before a sexual encounter (G. K. Bitariho et al., 2023).

The Quadrivalent HPV vaccine targets HPV types 6, 11, 16, and 18 to be used in the nationwide scale-up of immunization against cancer of the cervix (LBRL Bruni et al., 2019). The MOH implements HPV vaccinations for girls at health facilities, particularly hospitals, through routine immunization sites and in community outreaches and organizes country-wide mass HPV-vaccination campaigns within schools especially during child days (Nakibuuka et al., 2024).

Despite HPV vaccination being free to all recipients' in Uganda, HPV vaccination uptake is still very low below the national target of 80% (Nabirye et al., 2020). Particularly, in Wakiso district the uptake of the HPV vaccine was 10.6% (10/94) among young girls between 13-19 according to a recent study (Laban M, 2024) which is also way below the MOH national target. This threatens the ambitious goal set by the WHO of reducing the incidence of cervical cancer to less than 4 per 100,000 women by year 2030 (World Health, 2020b). Despite Wakiso district being surrounded by Kampala city, which has numerous vaccination centers, HPV vaccination uptake remains very poor. The Ministry of Health Uganda attributes this low uptake to several factors. These include health system challenges, individual factors like limited awareness and knowledge about HPV, beliefs about the vaccine (e.g., perceived effectiveness, daughters' perceived risk of HPV, and perceived severity of infection), general attitudes toward immunization, as well as demographic, cultural, and religious influences affecting parents and adolescent girls (John Kamulegeya, 2020).

Several barriers have been documented, including limited awareness, cultural and religious resistance, misinformation about side effects, mistrust in vaccines, and operational issues like vaccine stockouts and poor follow-up for second doses. These challenges are compounded by the current two-dose requirement, which increases the likelihood of incomplete vaccination (Amodan et al., 2025). The low uptake threatens Uganda's progress toward the WHO's goal of

reducing cervical cancer incidence to fewer than 4 cases per 100,000 women by 2030 (de Fouw & Doe, 2025; Torode & Smith, 2021; WHO, 2020).

Given this background, it is imperative to generate local evidence on HPV vaccine uptake under the new global guidance. With Uganda yet to adopt the single-dose HPV vaccination policy, this study provides a timely opportunity to assess current coverage and identify gaps in single-dose HPV uptake among adolescent girls. Such evidence can inform national immunization strategies, support policy updates, and contribute to broader efforts aimed at cervical cancer elimination.

CHAPTER TWO: LITERATURE REVIEW

2.1 HPV Epidemiology and Burden

HPV is among the most common sexually transmitted infections worldwide, significantly contributing to the global burden of cervical cancer. It is estimated that approximately 50% of individuals will acquire HPV at some point in their lifetime (Kutz et al., 2023). The virus is a primary etiological agent of cervical cancer, particularly in low- and middle-income countries (LMICs), where screening and treatment infrastructure remains underdeveloped (Barnabas et al., 2023). Despite the introduction of HPV vaccines more than a decade ago, vaccination rates remain suboptimal compared to other adolescent immunizations (Bufalini et al., 2024).

2.2 HPV Vaccine types and efficacy

There are three main HPV vaccine formulations: bivalent, quadrivalent, and nonavalent, targeting different HPV genotypes (Murall et al., 2020). The bivalent vaccine targets HPV types 16 and 18, which are responsible for approximately 70% of cervical cancers(Okunade, 2020), while the quadrivalent and nonavalent vaccines offer broader protection by including types responsible for genital warts (HPV 6 and 11). WHO recommends vaccination for girls aged 9–14 years, ideally before sexual debut, to ensure optimal efficacy (Lakneh, Mersha, Asresie, & Belay, 2022) Countries such as Malaysia have demonstrated success through school-based delivery of free HPV vaccines (Muhamad et al., 2018).

2.3 Uptake of the Single-Dose HPV Vaccine: Evidence and gaps

Globally, HPV vaccination has become a cornerstone in the prevention of cervical cancer, particularly in low- and middle-income countries (LMICs) where the burden of the disease remains highest. In 2022, the WHO revised its recommendation to include a single-dose HPV vaccine schedule as an alternative to the traditional two-dose regimen, especially for girls aged 9–14 years, citing growing evidence of comparable effectiveness and potential for higher programmatic coverage (World Health, 2022b) Despite strong evidence on the immunological effectiveness of a single-dose HPV vaccine, most studies informing the WHO recommendation focus on biological outcomes rather than programmatic uptake. This limits understanding of how single-dose policies translate into real-world service delivery, access, and utilisation, particularly beyond school-based platforms. As a result, evidence on uptake under routine health service

conditions especially among out-of-school adolescent girls in low- and middle-income countries remains limited

2.4 Global and regional evidence on single-dose efficacy

Robust scientific evidence now supports the efficacy of a single-dose HPV vaccine. A randomized controlled trial in Kenya demonstrated 97.5% efficacy against persistent HPV-16/18 infection over 18 months following a single dose of either the bivalent or nonvalent vaccine (Barnabas et al., 2023). Additional observational and immunogenicity studies from India, Tanzania, and the Gambia have similarly affirmed strong immune responses from a single dose (Basu et al., 2021);(Baisley et al., 2022); (Consortium, 2023; Uganda National Expanded Programme on, 2024). The collective findings were instrumental in WHO's updated global policy on HPV vaccine schedules.

Despite this encouraging evidence, gaps remain in understanding the long-term durability of immune response, especially in immune-compromised populations such as adolescents living with HIV. Furthermore, while international studies provide compelling justification, there is limited country-specific evidence from Uganda on the real-world uptake, barriers, and facilitators to this simplified regimen. There is a paucity of empirical data on actual uptake and completion of the single-dose HPV vaccine among Ugandan adolescents, which limits the ability to inform national rollout strategies aligned with WHO recommendations. Although these studies demonstrate strong vaccine efficacy and immunogenicity, their primary focus on biological outcomes under controlled research conditions limits their applicability to routine health service delivery. They rarely assess structural, social, or health-system factors that influence vaccine uptake, constraining their value for informing service organization, equitable access, and outreach strategies. Additionally, out-of-school, peri-urban, and older adolescents were largely underrepresented, leaving critical gaps in understanding implementation under real-world conditions.

2.5 Prevalence of HPV Vaccination

By 2018, only 12.2% of girls worldwide had received at least one dose. In response, WHO revised its recommendation in 2022, endorsing single-dose schedules for immunocompetent girls aged 9–14 years (World Health, 2022b), a critical policy shift aimed at overcoming challenges associated with multi-dose regimens.

The global HPV immunization coverage for 2018 was estimated at 12.2% (Spayne & Hesketh, 2021) while for 2014 it was estimated at 8.2% of girls aged 10-14 years; and 7.1% of girls aged 15 to 19 worldwide (Laia Bruni, 2017). Laia Bruni et al. (2023) reported significant disparities in vaccination rates, with higher uptake in high-income countries compared to low- and middle-income countries (LMICs). In high-income settings, school-based vaccination programs have achieved coverage rates exceeding 70%, whereas LMICs often struggle to reach 30% coverage. This has been attributed to factors such as inconsistent vaccine supply, limited healthcare infrastructure, and fewer school-based vaccination programs (ICO/IARC Information Centre on HPV and Cancer, 2023).

A study conducted by Awolude et al. (2013) highlighted challenges in implementing national immunization programs, citing financial constraints and limited infrastructure while G. K. Bitariho et al. (2023) noted that community-based initiatives in Uganda have led to a slight improvements in HPV vaccine uptake among adolescent girls with coverage increasing from 45% in 2021 to 50% in 2023. Similarly, Fokom-Defo et al. (2024) documented successful interventions in Cameroon, where HPV vaccine coverage reached 35% among eligible girls aged 9–14 years. However, HPV vaccination uptake across the African continent remains low. For instance, in Nigeria, HPV vaccination uptake among adolescent schoolgirls was reported at just 3.8% (Asgedom, 2024) . This discrepancy highlights broader issues such as the slow integration of HPV vaccination into national immunization programs and various barriers influenced by cultural perceptions, such as parental attitudes toward vaccination (Sendekie et al., 2025). In Ethiopia, a study conducted in Ambo town, Oromia region, revealed that 44.4% of respondents had received at least one dose of the vaccine, while 55.6% remained unvaccinated. (Beyen et al., 2022).

In Uganda, HPV vaccination uptake rates vary significantly across different regions and age groups. For example in Wakiso district, the uptake among in-school adolescent girls aged 16-19 is notably low, with only 9.2% of girls receiving the vaccine (Nanyunja, 2020b). A more recent study by Laban M (2024) found that only 10.6% of young girls aged 13–19 years (10 out of 94) had completed the HPV vaccination schedule. , Another study conducted four years after rolling out the vaccine in the country reported HPV vaccination uptake among adolescent 10-17 years in Wakiso was recorded at 39.4% (A. Isabirye, Asiimwe, & Martin, 2020).

Most Ugandan studies on HPV vaccination rely on school- or facility-based samples, potentially overestimating uptake by excluding out-of-school adolescents. They also do not disaggregate coverage by vaccination schedule, limiting insight into single-dose implementation. Consequently, evidence on equitable reach and service effectiveness under routine conditions remains constrained.

Coverage and uptake of HPV vaccination among adolescent girls

Human papillomavirus (HPV) vaccination has emerged as a critical intervention in preventing cervical cancer, particularly among adolescent girls. However, across much of sub-Saharan Africa, the scale-up of this life-saving intervention remains limited. Some studies have reported first-dose coverage as low as 20% in certain settings (E. Asempah, Ikpebe, Wyndham-West, & Wiktorowicz, 2025; Chepkemoi & Jerotich, 2023; Karanja-Chege, 2022). In contrast, Rwanda, has achieved coverage levels exceeding 93%, (Binagwaho et al., 2012), and from 2011 to 2018, over 1.15 million girls were vaccinated corresponding to 98% of the eligible target population and cohort-specific analysis showed population-level coverage of 80–99% for girls born between 2001 and 2006 (Sayinzoga et al., 2020).

Human papillomavirus (HPV) vaccine coverage in Uganda remains modest. National-level analyses based on the 2016 Uganda Demographic and Health Survey indicated an overall first-dose coverage rate of only 22% among girls aged 10–14, with school attendance being a significant predictor of vaccination status(Rosen, 2020). In a community-based study in Gulu District in 2021, only 35% of girls aged 9–13 had received at least one dose of the vaccine(Odongo Ojok, 2023). Meanwhile, data collected in Kampala found that even among

clinic-attending adolescents, completion of the two-dose schedule stood at just 43%**,** further underscoring limitations in vaccine delivery and follow-up (Patrick et al., 2022).However Uganda's HPV program has relied heavily on school-based delivery, these low coverage figures do not accurately represent vaccine access among out-of-school adolescents or those living in peri-urban settings such as Wakiso District. This reliance on school-based systems implies that significant portions of the target population may remain unreached, limiting the effectiveness of the switch to single-dose regimens. Detection and evaluation of coverage gaps, especially in underserved communities, are therefore critical to inform more inclusive program strategies.

Concerning vaccine uptake, which refers to the proportion of individuals who accept and receive the vaccine when offered, Ugandan data suggest that uptake among those reached is relatively high, yet overall first-dose coverage remains low approximately 26–30% because many eligible girls are not reached (A. Isabirye, Mbonye, Asiimwe, & Kwagala, 2020)

A facility-based study at Mulago Hospital reported 73.8% uptake among girls attending the service, but timely completion of the second dose was only 17.3% (Patrick et al., 2022). Similarly, a mixed-methods school-based study in Kampala revealed that although over 80% of girls were willing to be vaccinated, only 8.6% completed both doses (Glet Kakuru Bitariho et al., 2023).

These data indicate that while acceptance is generally high among girls who are reached systemic and access-related failures such as reliance on school delivery and weak tracking of out-of-school groups, contribute to persistently low overall coverage.

Additionally, there is a lack of disaggregated, community-based evidence particularly among out-of-school adolescent girls, a group often missed by school-centric delivery models. To date, no peer-reviewed studies have estimated single-dose HPV vaccine coverage or explored its contextual barriers and facilitators in Wakiso District, despite its high cervical cancer burden and low documented uptake. This study will address that critical gap by providing locally relevant, mixed-methods evidence to guide implementation of the simplified single-dose strategy in Uganda.

2.6 Factors associated with uptake of HPV vaccination

Beyen et al. (2022) and Nakibuuka et al. (2024) found that higher levels of knowledge about HPV among adolescent girls and its link to cervical cancer were positively associated with vaccine uptake. In their studies, adolescent girls who demonstrated a better understanding of HPV and its risks were significantly more likely to receive the vaccine compared to those with limited knowledge Socioeconomic factors, such as income and education level, also influence vaccination decisions, as highlighted by (Holman et al., 2014) with higher income and educational attainment correlating with greater vaccine uptake.

Patrick et al. (2022) observed that in certain communities, misconceptions about the vaccine's safety and efficacy deter vaccination uptake. In addition, John Kamulegeya (2020) highlighted the influence of peer and community leaders in shaping perceptions and encouraging vaccination while Fokom-Defo et al. (2024) emphasized the role of healthcare accessibility, noting that rural populations often face significant barriers to vaccination due to long travel distances and limited clinic hours. According to Laban M (2024), integrating vaccination services with other healthcare initiatives enhances accessibility and convenience for families while Patrick et al. (2022) highlighted the role of school-based programs and community outreach in improving vaccination rates. On the other hand, Nakibuuka et al. (2024) noted that religious and cultural endorsements can positively influence vaccination uptake when key community leaders advocate for the vaccine. From the literature above, most studies on factors influencing HPV vaccine uptake focus on school-going or clinic-attending adolescents, overlooking out-of-school populations. These adolescents face distinct barriers such as mobility, limited caregiver supervision, and weaker access to health promotion and routine immunization. This gap constrains understanding of differential service utilisation from a health services research perspective

2.7 Barriers and facilitators of HPV vaccination

According to Grant Murewanhema et al. (2024), frequent vaccine stock-outs and logistical hurdles in LMICs, particularly in rural areas, negatively impact vaccine acceptability. The unavailability of vaccines at health facilities leads to frustration among caregivers and missed opportunities for vaccination, while challenges such as long travel distances and inadequate cold

chain storage further discourage uptake. Studies documented widespread myths regarding the HPV vaccine, including fears about infertility and adverse side effects. Such misconceptions are exacerbated by limited access to accurate information and distrust in healthcare systems and concluded with evidence that there is no single solution to increasing vaccination uptake and that different approaches may be better suited to certain populations.(Larson et al., 2015; Nakibuuka et al., 2024)

McKenzie et al. (2023) highlighted the role of parental consent and approval, with many parents expressing concerns about vaccinating their children against HPV for example, stigmatizing beliefs "my child is not having sex" if given vaccine, "they will think having sex is ok". Efforts to address these barriers have shown a promising result in HPV vaccination uptake. Laban M (2024) reported low uptake of HPV vaccines among young women attributed to limited awareness of the services evidenced by the fact that 1 in 3 young women reported not to have ever heard about HPV vaccines. Nevertheless, high levels of mobility which limits access to health services. Additionally, some young women fear the pain of the injection or are discouraged by caregivers and peers. These factors show the need for more education and awareness to address both misunderstandings and personal fears about the vaccine Kutz et al. (2023) advocates for integrating HPV vaccination into routine immunization programs to normalize its acceptance.

In addition, a qualitative component of the study by Beyen et al. (2022) on HPV vaccination uptake, several key themes related to barriers and facilitators were identified and these included; poor perception of HPV and its vaccine, fear of side effects, misunderstanding and misinformation, weak integration of vaccination programs stakeholder attitudes and cooperation. Persistent myths regarding HPV vaccination's impact on fertility, sexuality, and morality have undermined public trust. Mistrust in healthcare systems, misinformation on social media, and inadequate engagement of influential community leaders compound these challenges (Hoxha et al., 2022);(Ezat et al., 2013). Rabiu et al. (2020) found that in Hong Kong, parents played a critical gatekeeping role in vaccination decisions, particularly in conservative settings. Similarly, parental education level positively correlates with vaccine completion rates (Perkins et al., 2016).

In summary, studies show that HPV infection is very common and a major cause of cervical cancer. Vaccination is the most effective way to prevent it and a single-dose rather than a two or three dose HPV vaccine is sufficient and WHO recommended. The coverage of HPV vaccination in low and middle-income countries, including Uganda, is still low. This is due to systemic challenges, social and cultural beliefs and limited awareness. Most studies have focused on school-going adolescents or specific groups, particularly adolescents in school. This leaves gaps in understanding how adolescents generally access the vaccine, including both those in and out of school. out-of-school. There is also limited data on factors that influence uptake of the single-dose HPV vaccine among adolescents. The above studies identify common barriers and facilitators myths, parental consent, misinformation, and mobility but few explicitly examine how these factors affect adolescents who are not enrolled in school or who reside in peri-urban districts such as Wakiso. Most qualitative research has explored barriers in relation to multi-dose vaccination schedules, leaving uncertainty about whether and how the single-dose approach mitigates or reshapes these challenges under routine health service delivery. As such, this study seeks to examine the prevalence, associated factors, and contextual barriers and facilitators to single-dose HPV vaccination among adolescent girls aged 13–19 years in Wakiso District, thereby providing evidence to guide national policy and programs aligned with WHO recommendation

CHAPTER THREE: STATEMENT OF THE PROBLEM, JUSTIFICATION, CONCEPTUAL FRAMEWORK

3.1 Statement of the Problem

Human papillomavirus (HPV) vaccination is a proven and effective intervention for the primary prevention of cervical cancer; however, its uptake among eligible adolescent girls in Uganda, and specifically Wakiso district, has remained unacceptably low. Despite substantial government investment and inclusion of HPV vaccination in the national immunization schedule, coverage rates are far below national and World Health Organization (WHO) targets. In Wakiso district, uptake is even more concerning: only 9.2% of in-school adolescent girls had received the HPV vaccine in 2020 (Nanyunja, 2020c), and a more recent community-based study reported uptake of just 10.6% among girls ages 13–19 years (Laban M, 2024). This is way below the regional average of 39.4% (Alone Isabirye, Asiimwe, & Mbonye, 2020). Such low coverage rates leave a significant portion of the adolescent female population at risk for HPV infection and future cervical cancer. Barriers such as, myths about future fertility, vaccine safety concerns, limited awareness, and poor access to vaccination services contribute to the low uptake(Nanyunja, 2020c; Patrick et al., 2022; WHO, 2022).

Existing studies mainly focused on the previous two-dose schedule and on in-school populations, leaving a gap in understanding of community-based and one-dose uptake patterns (Glet Kakuru Bitariho et al., 2023; Kamulegeya, 2020; Nanyunja, 2020c). In 2022, the WHO endorsed a single-dose HPV vaccine as an effective alternative to the two-dose regimen for girls aged 9–14 years (WHO, 2022). Uganda has since considered integrating this approach into its national immunization program to simplify delivery and improve coverage (PATH, 2021). However, evidence on uptake, barriers, and facilitators of the single-dose HPV vaccine in Wakiso District remains scarce.

Persistently low HPV vaccine coverage is likely to sustain high rates of HPV infection and related cancers, particularly cervical cancer, which remains a leading cause of illness and death among Ugandan women (Ramatlho et al., 2022; Watson-Jones et al., 2013).

This study aims specifically to; estimate the prevalence of single-dose HPV vaccination, identify factors associated with uptake, and explore barriers and facilitators from the perspectives of adolescents, parents, health workers and key stakeholder in HPV vaccine campaigns. Findings will inform targeted policy and programming to rapidly scale up effective HPV vaccination in Wakiso district, contributing to reduced burden of cervical cancer and fulfillment of global elimination targets.

3.2 Justification

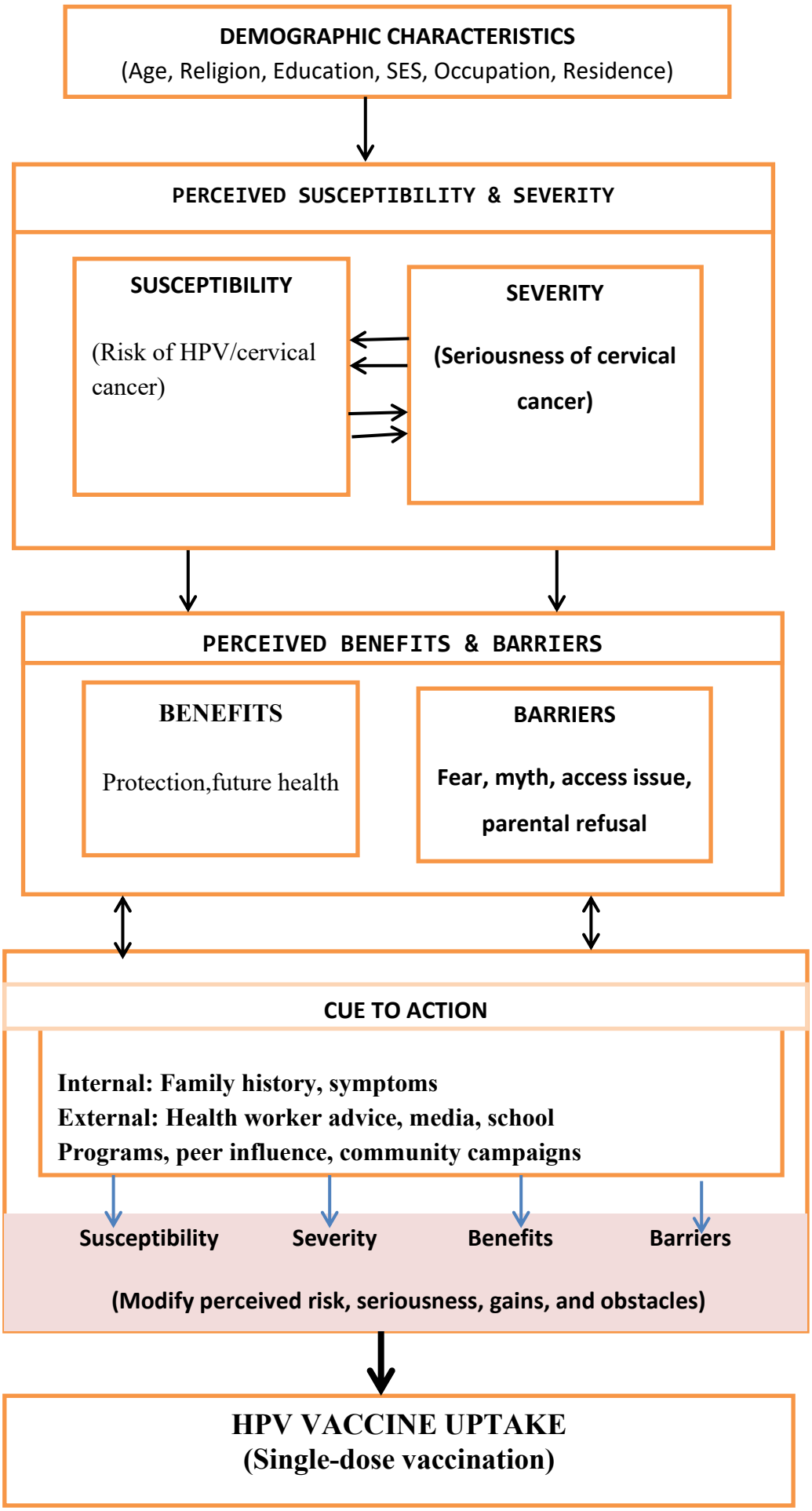
Evidence on the uptake of the single-dose HPV vaccine in Uganda remains limited. However, findings from a large randomized trial and subsequent evidence-to-action analyses demonstrate that a single dose of either the bivalent or nonavalent HPV vaccine provides protection comparable to the standard two-dose schedule, with efficacy of at least 97% against persistent HPV infection (Kreimer et al., 2025; Montroy et al., 2024)

This high level of protection has been observed among adolescent girls aged 13–19 years, including those eligible under the routine immunization program as well as those who missed or delayed vaccination.

This study addresses this gap by examining real-world single-dose HPV vaccine uptake at the individual, social, and structural factors that influence service utilization, with particular attention to out-of-school and peri-urban populations. Insights from this research will inform the design and implementation of more effective, equitable vaccination strategies, strengthen outreach mechanisms, and guide resource allocation within routine health services. The findings will support policymakers, the Ministry of Health, and immunization partners in optimizing the single-dose HPV vaccination program. By contributing to improved coverage and reduced cervical cancer risk, the study aligns with Sustainable Development Goal 3 (Good Health and Well-being) and SDG 5 (Gender Equality).

3.3 Conceptual framework and narrative.

The conceptual framework on Uptake of single dose HPV vaccine among adolescent girls aged 13-19 years in Wakiso district.


DEMOGRAPHIC CHARACTERISTICS
(Age, Religion, Education, SES, Occupation, Residence)
PERCEIVED SUSCEPTIBILITY & SEVERITY
SUSCEPTIBILITY
(Risk of HPV/cervical cancer)
SEVERITY
(Seriousness of cervical cancer)
PERCEIVED BENEFITS & BARRIERS
BENEFITS
Protection,future health
BARRIERS
Fear, myth, access issue, parental refusal
CUE TO ACTION
Internal: Family history, symptoms
External: Health worker advice, media, school
Programs, peer influence, community campaigns
Susceptibility
Severity
Benefits
Barriers
(Modify perceived risk, seriousness, gains, and obstacles)
HPV VACCINE UPTAKE
(Single-dose vaccination)

Source: Adapted from **Health Belief Model (Irwin M Rosenstock, 2000)**

Narrative

This study is guided by the Health Belief Model (HBM), which believe that health-related behavior is shaped by an individual's perceptions of a health condition and the actions recommended to prevent it. The model is particularly suited for examining single-dose HPV vaccine uptake among adolescent girls aged 13–19 years in Wakiso District, as it captures cognitive, psychosocial, and contextual factors influencing preventive health decisions. The conceptual framework integrates demographic characteristics, perceived susceptibility, perceived severity, perceived benefits and barriers, cues to action, and the outcome HPV vaccine uptake aligned with the study objectives of estimating prevalence, examining associated factors, and exploring barriers and facilitators.

Demographic Characteristics: Age, religion, education, literacy, occupation, and socio-economic status shape exposure to information, access to vaccination programs, and health-seeking behaviors. These factors provide the foundational context influencing perceptions within the HBM and can directly affect HPV vaccine uptake.

Perceived Susceptibility: Reflects an individual's belief about their likelihood of acquiring HPV infection and developing cervical cancer, shaped by knowledge, awareness, sexual health education, and personal or family health history.

Perceived Severity: Represents beliefs about the seriousness of HPV infection and cervical cancer, including potential health, social, and economic consequences. Higher perceived severity is theorized to increase motivation for preventive behavior.

Perceived Benefits and Barriers: Benefits include beliefs in the protective effects of the HPV vaccine and its long-term health advantages. Barriers encompass obstacles such as fear of side effects, parental refusal, misinformation, cultural/religious beliefs, and logistical challenges. The balance between benefits and barriers determines vaccination intention.

Cues to Action: Internal or external triggers prompt vaccination behavior and dynamically influence other HBM constructs. For example, a healthcare provider's recommendation can

increase perceived severity, reinforce perceived benefits, and reduce perceived barriers. Observing a family member affected by cervical cancer or participating in community health campaigns can heighten perceived susceptibility and motivate action. School-based vaccination programs and peer encouragement serve as powerful cues that strengthen perceived benefits while addressing common barriers like parental concerns. These cues serve as catalysts that translate awareness and intention into actual vaccine uptake.

HPV Vaccine Uptake: The primary outcome the receipt of a single-dose HPV vaccine is shaped by demographic characteristics and perceptions of susceptibility, severity, benefits, and barriers, which are further activated and modified by cues to action. This framework guides the investigation of uptake determinants (Objectives 1 & 2) and the exploration of barriers and facilitators (Objective 3), linking theory to practical health service delivery and policy considerations.

CHAPTER FOUR: RESEARCH QUESTIONS/ STUDY OBJECTIVES

4.1 Research Questions

i. What was the prevalence of single-dose HPV vaccine uptake among adolescent girls aged 13–19 years in Wakiso District?

ii. What were the factors associated with the uptake of a single-dose HPV vaccine among adolescent girls aged 13–19 years in Wakiso District?

iii. What were the barriers and facilitators to the uptake of a single-dose HPV vaccine among adolescent girls aged 13–19 years in Wakiso District?

4.2 General Objective

To assess the uptake of a single-dose HPV vaccine among adolescent girls aged 13–19 years in Wakiso District in order to generate evidence to inform strategies for improving vaccine uptake and reducing the future burden of cervical cancer.

4.3 Specific Objectives

i. To estimate the prevalence of single-dose HPV vaccine uptake among adolescent girls aged 13–19 years in Wakiso District.

ii. To examine the factors associated with uptake of a single-dose HPV vaccine among adolescent girls aged 13–19 years in Wakiso District.

iii. To explore the barriers and facilitators to uptake of a single-dose HPV vaccine among adolescent girls aged 13–19 years in Wakiso District.

CHAPTER FIVE: METHODS

5.1 Study area

The study area was in Wakiso district. The district is located in Uganda's Central Region and forms part of the greater Kampala metropolitan area. Wakiso was purposively selected for this study due to historically low uptake of HPV vaccination. Previous reports estimated coverage at only 9.2% among in-school girls (Nanyunja, 2020a) and 10.6% among girls aged 13–19 years in the broader community (M. Laban et al., 2024). However, these figures were based on the now-replaced two-dose regimen. Since the 2022 WHO recommendation of a simplified single-dose schedule, there has been no known population-based study assessing uptake under in this district (Nanyunja, 2020b). Wakiso District has an estimated population of approximately 3.4 million people (UBOS, 2024) and comprises diverse communities including urban, semi-urban, and rural settings. The district has a mix of in-school and out-of-school adolescents; while specific enrollment statistics for the 13–19 age group were not available in the secondary dataset, the study design intentionally included both categories through community-based sampling in the AMBSO PHS system and purposive selection in the qualitative component.

The study focused on the three parishes of Kazo (urban), Lukwanga (semi-urban), and Sentema (rural) in Wakiso district, these parishes are served by three health facilities; Nabweru HC III, Wakiso HC IV and Kakiri HC III respectively, which provide HPV vaccination services and primary healthcare to the local populations.

5.2 Study design

This study employed a convergent parallel mixed-methods design, where quantitative and qualitative data were collected simultaneously and integrated results to provide a comprehensive understanding of single-dose HPV vaccine uptake among adolescent girls in Wakiso District.

The quantitative component analyzed secondary data from the Africa Medical and Behavioral Sciences Organization (AMBSO) Population Health Surveillance (PHS) system (rounds R2–R5, 2020–2024) to estimate prevalence and identify factors associated with vaccine uptake. The **q**ualitative component was conducted concurrently, collecting primary data through Key Informant Interviews (KIIs) with health workers, Village Health Team members, and school

administrators, as well as Focus Group Discussions (FGDs) with vaccinated and un-vaccinated adolescent girls and their parents/caregivers. This component explored barriers and facilitators to vaccination and provided contextual explanations for the quantitative findings.

The AMBSO PHS employs a cross-sectional, community-based surveillance design capturing broad demographic, health, and service utilization indicators across multiple rounds and diseases (e.g., HPV, HIV, malaria, family planning) for different cohorts. Its primary objectives include monitoring health trends, providing a platform for research and healthcare delivery, and building local capacity in health research and practice. However, AMBSO does not specifically investigate single-dose HPV vaccination or the factors influencing its uptake.

In contrast, this study combines quantitative prevalence estimates with simultaneous qualitative insights to generate context-specific, actionable evidence for health service planning and policy, ensuring that the findings complement rather than duplicate AMBSO's surveillance objectives.

5.3 Study Population

The study focused on adolescent girls, aged 13-19 years, residing in selected communities in Wakiso District, who were enrolled in the AMBSO Population Health Surveillance (PHS) system. While Uganda's national HPV vaccination program primarily targets girls aged 10-14 years, this study purposefully focused on those in the age range of 13-19 years to assess vaccine uptake among adolescents who were expected to have had sufficient time and possibly multiple opportunities to receive the vaccine. This age range aligns with the WHO's 2022 recommendation that a single-dose HPV vaccine schedule is suitable for girls aged 9–20 years, including those who may have missed earlier vaccination opportunities (World Health, 2022).

The age of adolescent girls was categorized into 13–15 years and 16–19 years**,** corresponding broadly to primary school and secondary school students, respectively. This classification reflects (1**)** developmental differences in health decision-making autonomy**,** (2) eligibility under Uganda's HPV vaccination program**,** with younger adolescents (13–15 years) more likely to fall within the original target age group, and (3) differences in sexual debut and potential HPV exposure risk (WHO ,2022)**.** Categorizing age in this way enabled comparative analysis of how developmental stage and school level influence vaccine uptake. Including adolescents up to 19

years captured those who received vaccination as well as those who were eligible but missed it, providing insight into real-world implementation outcomes.

5.4 Inclusion and exclusion criteria

5.4.1 Inclusion Criteria

For the quantitative arm:

- Adolescent girls aged 13–19 years at the time, who were enrolled in the AMBSO PHS system.
- Girls with complete information on at least first-dose HPV vaccination and key sociodemographic variables.
- Those with health-related information available in the study records, needed to examine factors associated with vaccine uptake.

For the qualitative arm (FGDs and KIIs):

- Participants who gave informed consent >=18 years) or assent (<18years) to take part in the study.

5.4.2 Exclusion Criteria

For the quantitative arm:

- Records of adolescent girls aged 13-19years with no or inconsistent information regarding HPV vaccination status
- Records missing key variable necessary for reliable analysis (For example; Round 1 lacked the outcome variable).

For the qualitative arm (FGDs and KIIs):

- Individuals who did not provide consent (>=18 years) or assent (<18 years) to participate in the study.

5.5 Sample Size Estimation

5.5.1 Quantitative arm of the study

Since the study used secondary data from the AMBSO PHS system, all available records of adolescent girls aged 13-19 years with complete and verifiable data on HPV vaccination status and relevant covariates were included in the analysis to determine the prevalence, and factors associated with uptake of the single dose HPV vaccine among adolescents aged 13-19 years, in selected communities in Wakiso district. This approach maximized the statistical power and

representativeness of the study. Additionally, a post-hoc power was performed for a one-sample proportion test using Stata.14.0. The test compared the observed single-dose HPV vaccine uptake proportion in this study ($p_a = 0.333$) against a reference proportion from previous studies ($p_0 = 0.394$) which is estimated prevalence of HPV vaccination uptake study conducted by A. Isabirye, JohnBosco Asiimwe, et al. (2020) at a 5% significance level ($\alpha = 0.05$) and sample size N=597. The difference between the two proportions ($\Delta = -0.061$) and it yielded an estimated statistical power of 0.8708 (approx.87.1%).

5.5.2 Qualitative arm

The qualitative component of the study adopted an exploratory descriptive approach to provide deeper insights into the barriers and facilitators influencing HPV vaccine uptake. Data was collected through KIIs and FGDs.

A total of Six (6) FGDS and 10 KIIs were conducted. Data were collected through these FGDs and KIIs to capture diverse perspectives from multiple stakeholders. KIIs were conducted with stakeholders directly involved in HPV vaccination efforts. These included Assistant District Health Officer (ADHO), health facility in-charges, nurses/ vaccinators, Village Health Team (VHT) members, and school administrators such as head teachers. While FGDs were comprising of eight (8) participants in each group. These were conducted with two key groups: adolescent girls (vaccinated and unvaccinated) and parents or caregivers. The FGDs were organized to allow for comparative analysis. Four FGDs involved adolescent girls who had and had not received the HPV vaccine, disaggregated by age into younger adolescents (13–15 years) and older adolescents (16–19 years) from urban, semi-urban and rural communities. This disaggregation aimed to reduce age-related biases and to support age-sensitive exploration of experiences, beliefs, and perceptions to HPV vaccination. The other two FGDs were conducted with parents/caregivers from urban and rural communities of Wakiso district where AMBSO operates. These were to explore differences in attitudes, beliefs, and decision-making processes related to HPV vaccination.

The combination of vaccinated and un vaccinated participants across both adolescent and caregiver groups was designed to facilitate a comparative understanding of the barriers and facilitators of HPV vaccine uptake. The total number of KIIs and FGDs were ultimately guided

by the principle of data saturation, whereby data collection continued until no new themes or insights emerged.

5.6 Sampling Procedure

5.6.1 Quantitative Arm of the study

For the quantitative arm, the study utilized secondary data from the AMBSO PHS system, where a census sampling approach followed by community selection and mapping were employed. All available records of adolescent girls aged 13 to 19 years who met the study's inclusion criteria specifically, those with complete data on HPV vaccination status were extracted and analyzed.

5.6.2 Qualitative Arm of the study

For the qualitative arm, purposive sampling was used to select participants for six FGDs and ten KIIs, ensuring participants have relevant knowledge and experiences regarding HPV vaccination single-dose HPV vaccine uptake among adolescent girls in Wakiso District.

FGDs included vaccinated and un vaccinated adolescent girls, stratified by age (13–15 years vs 16–19 years), broadly corresponding to primary school students (where the HPV program is still active) and secondary school students (not currently targeted under the program) (World Health, 2022). Separate FGDs were conducted with parents and caregivers to capture household perspectives.

The age categorization reflects: (1) developmental differences in health decision-making autonomy, (2) eligibility under Uganda's HPV vaccination program, with younger adolescents more likely to fall within the original target age group, and (3) potential differences in sexual debut and HPV exposure risk. This stratification allowed for comparative exploration of experiences, beliefs, and perceptions across age groups.

A total of 32 adolescents participated in FGDs (16 aged 13–15 years; 16 aged 16–19 years) from urban, semi-urban, and rural communities, while 16 parents/caregivers participated in separate FGDs.

KIIs involved ten key stakeholders engaged in HPV vaccination delivery, including health facility staff, Village Health Team members, and school administrators, representing diverse

educational backgrounds, occupations, and religious affiliations relevant to vaccination decision-making.

Data collection continued until thematic saturation was reached, ensuring that no new insights emerged and providing a comprehensive understanding of individual, household, and systemic factors affecting vaccine uptake.

5.7 Study variables

5.7.1 Dependent variable/Outcome variable

The dependent variable for this study was the uptake of a single-dose HPV vaccine among adolescent girls aged 13 to 19 years. This variable was treated as a binary outcome, categorized as either Yes (1) or No (0). During the original data collection, a question was asked: "Have you ever had vaccination against HPV?" This binary classification allowed for a clear and practical assessment of single-dose HPV vaccine uptake.

5.7.2 Independent Variables/ Exposures

The study examined several independent variables for their associations with single-dose HPV vaccine uptake among adolescent girls. Age was categorized as young adolescents (13–15 years) or older adolescents (16–19 years) to reflect developmental differences that may

influence health-seeking behaviors and vaccine acceptance. Participants reported their religion, residence (urban or rural), occupation, and highest education level (primary or post-primary). Health-related and behavioral factors included; number of doses received, categorized as 1,2 or more, and awareness as aware or not aware/untold of the vaccine. Family history of cancer was recorded as Yes or No. The source of immunization was noted as either facility-based or outreach, and reasons for non-uptake as lack of awareness, other personal reasons or access challenges. All variables were included based on their theoretical and empirical relevance to vaccine uptake.

5.8 Data Source

This study used secondary data from the AMBSO PHS system (rounds R2–R5, 2020–2024), which covers urban, semi-urban, and rural communities in Wakiso and Hoima districts. Data for 597 adolescent girls aged 13–19 years from Wakiso were extracted, cleaned, and analyzed. The dataset included information on demographics, HPV vaccination status, reason for non-uptake awareness, family history on cancer and source of immunization.

5.9 Data Collection

5.9.1 Data Collection Tools

This study utilized both secondary and primary data sources and each was aligned with specific objectives. Quantitative data from AMBSO PHS was extracted using data extraction form.

Qualitative data was collected to address Objective 3 (to explore barriers and facilitators of single-dose HPV vaccination). This involved FGDs to explore barriers and facilitators of HPV vaccination. In addition, KIIs with district health officer, health facility in-charges, nurses/vaccination, village health teams (VHTs), and school heads/teachers, were conducted to gain expert insights into policy implementation, challenges, and recommendations.

Discussions were moderated using open-ended questions to encourage discussion. Audio recordings and field notes were used for documentation.

5.10 Quality assurance and control

5.10.1 Training of research assistants

Research assistants involved in qualitative data collection had a one-day training session focusing on data collection tools, interview techniques, and ethical considerations, such as how to probe, obtain an informed consent/ assent from participants and maintaining participant confidentiality.

5.10.2 Pre-testing of tools and dataset

An exploration of secondary dataset was conducted to assess data completeness and consistency after sharing my approved proposal and ethical clearance with data custodians -AMBSO.

Additionally, the interview guides for qualitative data collection were pre-tested with a small sample (friends) to ensure clarity and appropriateness of questions.

5.10.3 Field Editing of Data

Field editing for qualitative data involved daily reviews of interview notes and recordings to identify missing information and unclear responses while for the secondary dataset, quality checks included assessing variable consistency and addressing missing values before analysis.

5.10.4 Missing Data

For the secondary dataset (Quantitative), missing data was first explored to assess the pattern and extent of missingness. There were no missingness of data for the selected variables.

For qualitative data, interviewers were trained to probe comprehensive responses to minimize missing information.

5.11 Data Management and Analysis

5.11.1 Data Management

Secondary data obtained from AMBSO were stored securely on a computer in well-labeled folders. The data were then imported into Stata version 14.0 (StataCorp LP, College Station, Texas, USA) for cleaning and coding.

Qualitative data from FGDs and KIIs were collected using semi-structured interview guides. The guides were developed in English and translated into Luganda. Most adolescent FGDs were conducted in English as preferred language. While FGDs with parents were conducted in Luganda. Discussions were audio-recorded and later transcribed verbatim. Each transcript was assigned a unique identifier to ensure privacy and proper organization. All transcripts were securely stored on password-protected devices and backed up on Google Drive in line with data security protocols.

5.11.2 Data Analysis

Quantitative Arm of the study

Quantitative data was analyzed using STATA version 14.0. The analysis followed a structured approach comprising univariable, bivariable, and multivariable analyses, tailored to assess the prevalence and factors associated with single-dose HPV vaccine uptake among adolescent girls aged 13-19 years.

i. Uni-variate Analysis

Descriptive statistics were used to summarize the background characteristics of the study participants. All Variables were categorical in nature (e.g Age group, religion, occupation, education level, residence, HPV vaccine uptake/outcome, Source of immunization, Awareness, Cancer history in family and reason for non-uptake) were summarized using frequencies and percentages. The overall prevalence of single-dose HPV vaccine uptake was determined and presented in a pie chart.

ii. Bi-variate Analysis

Bi-variate cross-tabulations were used to summarize frequency distribution of single-dose HPV vaccine uptake and each independent variable. Crude prevalence ratios (PRs) with 95% confidence intervals were estimated using modified Poisson regression, which was appropriate over logic regression because the outcome prevalence exceeded 10%.

iii. Multivariable Analysis

Before conducting multivariable analysis, independent variables to be retained from the bivariable stage were assessed for multi-collinearity using a correlation matrix. In cases where variables exhibited a correlation coefficient ≥ 0.4, one of the correlated variables were excluded to avoid redundancy. Variables that showed a **p-value less than 0.25** at the bi-variate analysis, were considered for inclusion in the multi-variable analysis.

A modified Poisson regression model, was then fitted to identify independent predictors of single-dose HPV vaccine uptake. A stepwise logistic selection approach was employed to develop a parsimonious final model. Statistical significance was determined at $p < 0.05$, and results were reported as adjusted prevalence ratios (aPRs), along with their 95% confidence intervals.

Model fit was assessed using Pearson chi-square test.

Qualitative arm of the study

For the qualitative data, analysis was conducted using **NVivo** (version 15; QSR International, 2021). Audio-recorded FGDs and KIIs were transcribed verbatim. The transcripts were then imported into NVivo to facilitate data organization and analysis. The researcher read through

each transcript several times to gain a deep understanding of the content. Initial codes were generated inductively from the participants' narratives while also considering the study objectives. During analysis, codes were generated, then sub-themes and lastly themes. Related categories were further organized into broader themes that captured patterns across the data that I used to interpret results. This thematic analysis provided an in-depth understanding of the key barriers and facilitators influencing HPV vaccine uptake among adolescent girls in selected communities in Wakiso district

5.12 Ethical Considerations

This study adhered to strict ethical standards for both secondary and primary data. For the secondary quantitative data, permission was obtained from AMBSO internal review team. All terms of data usage agreements were perfectly followed. The data was coded to protect participant identities, and was securely stored on a password-protected device, which is my personal laptop.

For qualitative primary data, written informed consent/assent was obtained from all participants after a thorough explanation of the study's objectives, procedures, and their rights to withdraw at any time without consequences. Interviews were conducted in private settings to ensure confidentiality, and codes were used to anonymize responses.

Ethical clearance was sought from Makerere University School of Public Health, Research and Ethics Committee (MakSPH-REC) and the study complied with guidelines given. Data will be retained for duration of MHSR program and three years thereafter which it will be securely disposed of. The study did not pose any significant risks to participants, and their contributions will help advance understanding of single-dose HPV vaccination uptake in Wakiso district.

CHAPTER SIX: RESULTS

6.1 Quantitative Analysis

6.1.1 Background Characteristics of Respondents

A total of 597 adolescent girls aged 13–19 years participated in the study conducted in selected communities in Wakiso District. Of these, 398 (66.7%) had not received the single-dose HPV vaccine, the majority of respondents (378; 63.3%) were aged 16–19 years (older adolescents) (Table 1).

In terms of education, most participants (360; 60.3%) had attained post-primary education, whereas 237 (39.7%) had completed only primary education.

Regarding religion, 192 (32.2%) of the respondents identified as Catholic, followed by 156 (26.1%) who were Muslim, 134 (22.4%) Protestant, 105 (17.6%) Pentecostal, and 10 (1.7%) belonging to other denominations. Most participants 415 (69.5%) resided in urban areas, while 182 (30.5%) were from rural areas. In relation to occupation, 267 (44.7%) of the respondents were housewives, 228 (38.2%) were students, 46 (7.7%) engaged in business, and 58 (9.4%) reported other occupations.

Concerning health-related characteristics, a vast majority of the adolescents 576 (96.5%) reported no family history of any form of cancer, while 21 (3.5%) indicated that a member of their family had experienced cancer. With respect to immunization delivery channels, 171 (85.9%) of those vaccinated had received their single-dose HPV vaccine through outreach or non-facility-based services, while only 28 (14.1%) received theirs from health facilities. Knowledge and awareness about the HPV vaccine were generally low among the non-vaccinated adolescent girls: 360 (90.5%) of the adolescents reported being unaware or not informed about the HPV vaccine, while only 38 (9.6%) indicated they were aware.

Among those who had not received the single-dose HPV vaccine, the most common reason for non-uptake was lack of awareness 360 (90.5%), while 14 (3.5%) cited personal reasons and 24 (6.0 %) mentioned access barriers.

Table 1: Background Characteristics

Variables	Frequency	Percentage (%)
Outcome (single-dose HPV vaccine uptake)		
No	398	66.67
Yes	199	33.33
Total	**597**	**100**
Religion		
Catholic	192	32.16
Protestant	134	22.45
Pentecostal	105	17.59
Muslim	156	26.13
Others	10	1.68
Residence		
Urban	415	69.51
Rural	182	30.49
Occupation		
Business	46	7.71
Housewife	267	44.72
Student	228	38.19
Others	58	9.38
Age (years)		
13-15 (Young Adolescents)	219	36.68
16-19 (old adolescents)	378	63.32
Education level		
Primary	237	39.70
Post primary	360	60.30
Number of doses		
One	78	39.20
Two	102	51.26
Three	19	9.55

Cancer history in family		
No	576	96.48
Yes	21	3.52
Source of immunization		
Facility based	28	14.07
Outreach/non-facility	171	85.93
Awareness among the non-vaccinated		
Aware	38	9.55
Not aware/untold	360	90.45
Reason for non-uptake		
Lack of awareness	360	90.45
Other person reasons	14	3.52
Access challenges	24	6.03

6.1.2 Prevalence and distribution of Single-dose HPV vaccine uptake

The overall prevalence of single-dose HPV vaccine uptake among adolescent girls, aged 13–19 years, in Wakiso District was 33.3%. Among those who had received the vaccine, 78 (39.2%) had received only one dose, 102 (51.3%) had received two doses, and 19 (9.5%) reported receiving three doses. **(Figures 1 and 2)**

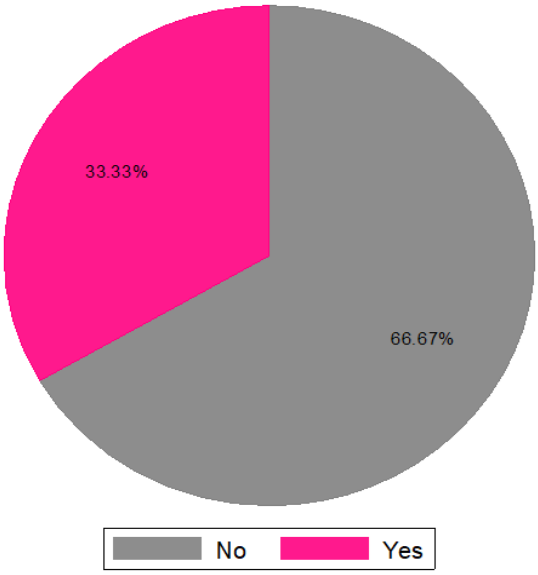


***Figure 1**: Distribution of at least a single-dose HPV vaccine uptake among adolescent girls aged 13–19 years in Wakiso district, Uganda*

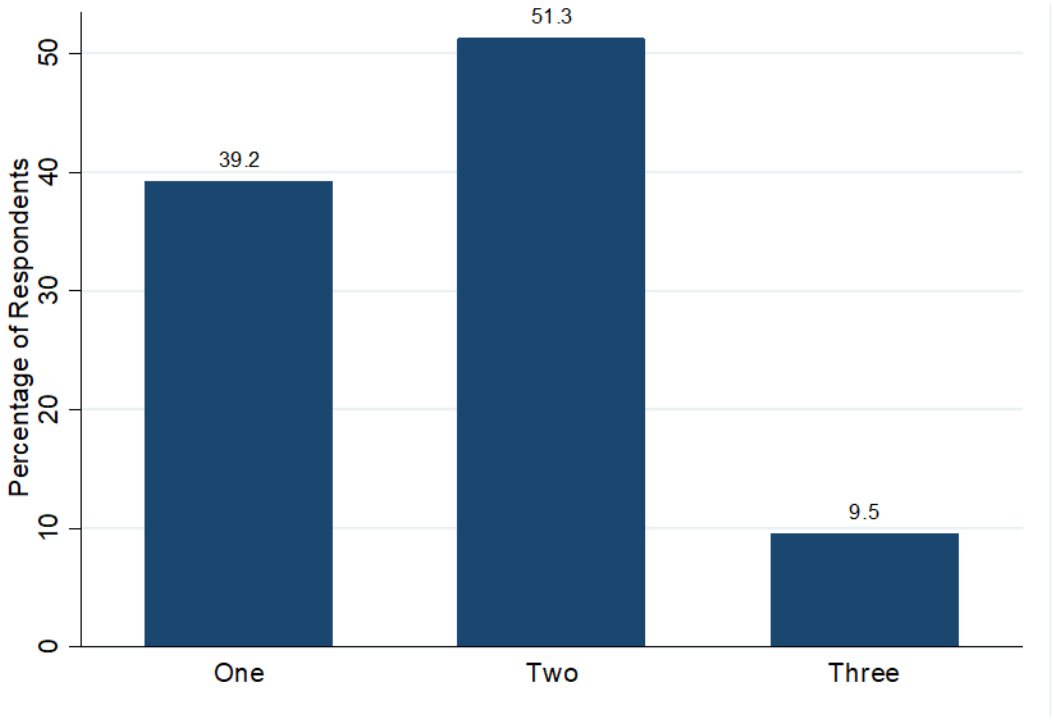


***Figure 2:** Number of HPV vaccine doses received among adolescent girls who had received vaccination in Wakiso district, Uganda*

6.1.3 Analysis of factors associated with single-dose HPV vaccine uptake among adolescent girls aged 13–19 years in Wakiso district

The bivariate analysis in **Table 2** shows that**;** religion, residence, and age were significant predictors of HPV vaccine uptake, while occupation, education level, and family history of cancer were not statistically significant.

Protestant adolescents were more likely to have received the single-dose HPV vaccine compared to Catholics (Crude PR = 1.34, 95% CI: 1.02–1.77, p = 0.035). In contrast, Pentecostal, Muslim, and other religious affiliations did not show significant differences compared to Catholics. Residence was a strong predictor of vaccine uptake, with adolescents from rural areas being 1.74 times more likely to have received at least one dose of the HPV vaccine compared to their urban counterparts (95% CI: 1.39–2.16, p =0.001).

Age was also significantly associated with uptake of the single-dose HPV vaccine; older adolescents (16-19 years) were less likely to have received at least one dose compared to younger adolescents (Crude PR = 0.65, 95% CI: 0.52–0.81, p =0.001).

Occupation and education level showed no significant association with single-dose vaccine uptake at the bi-variable level. Similarly, having a family history of cancer did not significantly influence uptake (Crude PR = 0.85, 95% CI: 0.43–1.69, p = 0.649).

6.1.4 Multivariable analysis of factors associated with single-dose HPV vaccine uptake among adolescent girls aged 13–19 years in Wakiso District.

From multivariable analysis as shown in Table 2, three factors; religion, residence, and age remained significantly associated with uptake of the single-dose HPV vaccine.

Adolescents who identified as Protestants were 36.0% more likely to have received the single-dose HPV vaccine compared to Catholics (Adjusted PR = 1.36, 95% CI: 1.04–1.77, p=0.022). Residence also remained a strong predictor, with those residing in rural areas being 1.81 times more likely to have received at least one dose compared to their urban counterparts (Adjusted PR 95% CI: 1.46–2.24, p =0.001).

Age was significantly associated with single-dose HPV vaccine uptake in that older adolescents were significantly less likely to have received at least one dose compared to younger adolescents (Adjusted PR = 0.63, 95% CI: 0.50–0.81, p = 0.001).

Other factors such as occupation, education level, and family cancer history did not show statistically significant associations with single-dose HPV vaccine uptake in the adjusted model. The Pearson goodness-of-fit test (χ^2 = 395.004, p = 1.000) indicated that the model provided an adequate fit to the data, suggesting that the identified predictors reliably explained the observed patterns of single-dose HPV vaccine uptake.

Table 2: Bivariable and Multivariable Poisson regression analysis of factors associated with single-dose HPV vaccine uptake among adolescent girls aged 13–19 years in Wakiso district

Variables	HPV Vaccine uptake		Crude PR (95% CI)	P values	APR (95%CI)	P values
	No (%)	Yes (%)				
Religion						
Catholic	128 (66.67)	64 (33.33)	1		1	
Protestant	74 (55.22)	60 (44.78)	1.34 (1.021-1.768)	0.035	1.36 (1.044-1.77)	0.022
Pentecostal	77 (73.33)	28 (26.67)	0.80 (0.550-1.164)	0.244	0.74 (0.513-1.058)	0.098
Muslim	110 (70.51)	46 (29.49)	0.88 (0.646-1.212)	0.445	0.85 (0.623-1.150)	0.287
Others	9 (90.00)	1 (10.0)	0.30 (0.046-1.950)	0.207	0.30 (0.046-1.985)	0.213
Residence						
Urban	302 (72.77)	113 (27.23)	1		1	
Rural	96 (52.75)	86 (47.25)	1.74 (1.393-2.162)	0.000	1.81 (1.456-2.243)	0.0000
Occupation						
Business	34 (73.91)	12 (26.09)	1		1	
Housewife	167 (62.55)	100 (37.45)	1.44 (0.861-2.393)	0.165	1.19 (0.726-1.952)	0.489
Student	155 (67.98)	73 (32.02)	1.23 (0.728-2.069)	0.442	0.91 (0.544-1.513)	0.708
Others	42 (75.00)	14 (25.00)	0.96 (0.493-1.865)	0.900	0.81 (0.433-1.525)	0.517
Age						
13-15 (Young adolescents)	125 (57.08)	94 (42.92)	1		1	
16-19 (Old adolescents)	273 (72.22)	105(27.78)	0.65 (0.518-0.809)	0.000	0.63 (0.497-0.809)	0.000
Education level						
Primary	150 (63.29)	87 (36.71)	1		1	
Post primary	248 (68.89)	112 (31.11)	0.85 (0.675-1.064)	0.154	1.00 (0.792-1.274)	0.971
Cancer history in family						
No	383 (66.49)	193 (33.51)	1			
Yes	15 (71.43)	6 (28.57)	0.85 (0.429-1.694)	0.649		
Goodness of fit test for the final model						
estat gof, pearson						
Goodness-of-fit chi2 = 395.004			Prob > chi2(586) = 1.0000			

QUALITATIVE ANALYSIS

Table 3: Socio-demographic Characteristics of Qualitative Study Participants

Characteristic	FGDs – Adolescents (n = 32)	FGDs – Parents/Caregivers (n = 16)	KIIs (n = 10)
Sex	Female: 32	Female: 14 Male: 2	Female: 6 Male: 4
Age group (years)	13–15 16–19	Not collected*	Not applicable
Participant role	Adolescent girls	Parents/Caregivers	Health workers and key stakeholders
Residence	Rural: 1 FGD Semi-urban: 2 FGD Urban: 1 FGD	Rural: 1 FGD Urban: 1 FGD	District-level and facility-based
Number of FGDs / KIIs	4 FGDs	2 FGDs	10 KIIs
Total participants	32	16	10

6.2. Thematic analysis of barriers and facilitators of single HPV vaccination Uptake

A total of 58 participants were enrolled for qualitative assessments. Thirty-two (32) adolescents participated in the FGDs, with 16 in the younger adolescent group (13-15 years) and 16 in the older adolescent group (16-19 years). These FGDs were conducted across both rural, semi-urban and urban communities within Wakiso District. Furthermore, sixteen (16) parents and caregivers participated in separate FGDs to explore HPV vaccine knowledge, perspectives and decision-making roles. For the KIIs, a total of 10 stakeholders were interviewed. This included District Health Officers, health workers, village Health Team (VHT) members and school administrators, all of whom are directly involved in the planning and implementation of the HPV vaccination program in the district.

The qualitative results presented depict the barriers and facilitators of the uptake of a single-dose HPV vaccine among adolescent girls aged 13–19 years in Wakiso district. The findings are framed by three major themes: awareness and knowledge of the HPV vaccine, barriers to HPV

vaccine uptake, and facilitators and recommendations for improved uptake. The table below indicates these themes with their respective sub-themes, codes, and illustrative quotations.

Table 3: Summary of Themes, Sub-themes, Codes, and Illustrative Quotations on barriers and facilitators to single-dose HPV vaccine uptake

Theme	Sub-Theme	Code	Illustrative Quotation
1. Awareness and Knowledge of HPV Vaccine	Sensitization and Sources of Information	Media Exposure	"Over the TVs and radio stations, they tell us that cancer of the cervix is real and its prevalent. They encourage us to go for screening..." (Parent FGD)
		Health Worker & School-Based Info	"So I was at school when I was still in primary. The doctors came. They gave us the forms to be filled by parents... They explained everything." (Adolescent FGD)
		Community Engagement	"We talk to them in community meetings, and sometimes I move house to house to explain and reassure them." (KII 03)
	Understanding of Vaccine Purpose	Cervical Cancer Prevention	"they said it helps us not to get cervical cancer." (Adolescent FGD)
		Fertility Protection	"First they told us... it will help us to produce children. Because anyone who is suffering from that disease of cervical cancer can't produce." (Adolescent FGD)
2. Barriers to HPV Vaccine Uptake	Fears and Misconceptions	Fear of Infertility	"women say that their girl children who are being injected... those injections make them infertile, it burns their ovum... it's a population control method..." (Parent FGD)
		Fear of pain	“Some might be afraid of the pain, the so-called needle, yes. Some may hear rumors from people saying that when they inject you, you can get side effects like skin rushes, what and what, yet those are just rumors. Yeah, that's my reason”. (Adolescent FGD)

		Fear of Side Effects & Death	"When they injected me, the friends of mine used to tell me that you are going to die. That injection kills." (Adolescent FGD)
		Myths and Misinformation	"For me, what I know, some, they refuse, because there is a saying that, the vaccine being given is expired and if it is expired and it can cause some other complications..." (Adolescent FGD)
	Parental and Familial Opposition	Restrictive Parental decisions	"During that time, my dad couldn't accept me to get the vaccine... dad complained very much and that was the main issue, why I was not going to get it." (Adolescent FGD)
		Conflicting Parental opinions	"My husband said that he doesn't want his daughter to be tested upon drugs or vaccines that are still being piloted... So he totally refused..." (Parent FGD)
	Health System and access Barriers	Financial & logistical constraints	"Facilitating health workers, the funds are not really enough to facilitate the health workers so that all these children are reached." (KII,02)
		Difficulty Reaching Private Schools	"So penetrating a private school is really hard... the head teacher will say I cannot accept you to do it because this is a business." (KII,01)
	Socio-Cultural, religious and Political Influences	Political Interference	"Politicians are influencing people negatively for their own selfish gains... Some of them tell people not take their children for such programs of vaccination." (Parent FGD)
		Cultural interference	“Some cultures also refuse people from getting vaccinated... some cultures also affect them negatively.” (KII,04)
		Religious influence	“Most of the religions affect vaccination programs negatively. Because they think that

			vaccination is from the devil... they refuse them to do that because they think it's going to be evil." (KII, 04)
		Depopulation Agenda	"And three, they think if the government of Uganda, in particular the NRM government, is trying to depopulate the opposition." (KII, 01)
3. Facilitators and recommendations	Parental and Social Support	Mother Support	"For me, who influenced me was my mother. Because she was the one who filled the form which they gave us..." (Adolescent FGD)
		Teacher and School Support	"the teachers influenced me to get vaccinated because I was scared. And they told me that don't be scared, you won't get any harm." (Adolescent FGD)
	Health System Strengthening	School-based Vaccination	"...that's why the government has chosen to use schools such that children can be reached in large numbers..." (Parent FGD)
		Single-Dose Schedule	"Personally, I think now that we have reduced the number of doses, it's going to be easier for us because we only need one dose per girl and we increase numbers." (KII, 01)
	Strategic Recommendations	Enhanced Sensitization	"All we need is to teach parents, create awareness on the dangers of this disease. I think that is feasible." (Parent FGD)
		Community and Home-Based Outreach	"I think it will be better at home, because your parents will be the ones who are taking you to the hospital... the parents will be explained to more about the injection..." (Adolescent FGD)

Linkages between Codes and Sub-themes

The thematic analysis revealed clear linkages between codes and sub-themes across the qualitative findings. Limited awareness and knowledge of HPV and the vaccine were closely

connected to the emergence of misconceptions and fears, as participants with inadequate information were more likely to believe rumors related to infertility, side effects, and vaccine safety. These fears, in turn, reinforced parental opposition and delayed decision-making, particularly in households where health information was obtained informally. Conversely, facilitators such as school-based sensitization and health worker engagement acted by directly addressing knowledge gaps, thereby reducing fear and improving acceptance. These linkages highlight how deficits in knowledge function as an upstream driver of multiple downstream barriers to HPV vaccine uptake.

6.2.1 Objective three: Barriers and facilitators to the uptake of a single-dose HPV vaccine

6.2.1.1 Theme one: Awareness and knowledge of the HPV vaccine

Sensitization and sources of information

Generally, adolescents and parents were aware of the HPV vaccine, with information primarily acquired through media, schools, and health workers. Radio and television played a key role in raising awareness about cervical cancer and the availability of the HPV vaccine. One parent noted:

"*Over the TVs and radio stations, they tell us that cancer of the cervix is real and its prevalent. They encourage us to go for screening...*" (Parent FGD)

The school-based vaccination program was a major source of information and access for adolescents. Health workers visited schools to provide explanations and administer the vaccine, as shared by an adolescent:

"*So I was at school when I was still in primary. The doctors came. They gave us the forms to be filled by parents. Then they filled them. They injected us. They explained everything.*" (Adolescent FGD)

At the community level, Village Health Teams (VHTs) played a crucial role in house-to-house mobilization and sensitization, bringing information closer to the people. A VHT member explained:

"*We talk to them in community meetings, and sometimes I move house to house to explain and reassure them*" (KII, 05). In this context, "them" referred to parents and adolescents in the community who were being sensitized about the HPV vaccine.

Understanding of vaccine purpose

Participants understood the primary purpose of the HPV vaccine as protection against cervical cancer. This awareness served as an important motivator for acceptance. An adolescent simply stated:

"*They said it helps us not to get cervical cancer.*" (Adolescent FGD)

A prominent, though potentially problematic, narrative framed the vaccine's benefit as the preservation of future fertility. This understanding was frequently emphasized in sensitization messages, as another adolescent recounted:

"*First, they told us. It was when we were at school, then we told us that it will help us to produce children. Because anyone who is suffering from that disease of cervical cancer can't produce. That's why they had to inject us.*" (Adolescent FGD)

This shows that some adolescents misunderstood the purpose of the HPV vaccine. They believed, it was meant to help them have children in the future. In reality, the vaccine prevents HPV infection and cervical cancer, so this misunderstanding highlights the need for clearer health education.

6.2.1.2 Theme two: Barriers to HPV vaccine uptake

Fears and misconceptions

The most significant barrier to vaccine uptake was a deep-seated fear of infertility. A widespread misconception held that the vaccine was a covert family planning method designed to sterilize young girls and control the population. One parent reported:

"*Women say that their girl children who are being injected or vaccinated, those injections make them infertile, it burns their ovum such that they will not be able to give birth, it's a population control method, that is why they resent from taking their children to be vaccinated*." (Parent FGD)

Other fears included severe side effects, pain and even death, often fueled by peer rumors. An adolescent shared her experience:

"*when they injected me, the friends of mine used to tell me that you are going to die. That injection kills.*" (Adolescent FGD)

Additional myths included beliefs that the vaccines were expired, part of clinical trials, or even a re-branded COVID-19 vaccine, creating widespread distrust. An adolescent explained:

"*For me, what I know, some, they refuse, because there is a saying that, the vaccine being given is expired and if it is expired and it can cause some other complications in them, so they refuse to be vaccinated*." (Adolescent FGD)

Parental and familial opposition

Parental refusal was a major direct barrier to vaccination. In many households, fathers were the primary decision-makers who withheld consent based on the prevailing myths. An adolescent described this situation:

"*During that time, my dad couldn't accept me to get the vaccine. But, according to my mom, I had to get it. So, dad complained very much and that was the main issue, why I was not going to get it*." (Adolescent FGD)

This highlights not only parental opposition but also intro-household conflict of opinion, where mothers and fathers held contrasting views, as illustrated by another parent:

"*My husband said that he doesn't want his daughter to be tested upon drugs or vaccines that are still being piloted. Though I urged him that the government cannot allow such a thing but he insisted... So he totally refused to vaccinate his daughter.*" (Parent FGD)

Health system and access barriers

Health system challenges significantly hampered the vaccination rollout. A key issue was the inadequate facilitation for health workers, which limited their reach. A health facility in-charge explained:

"*Facilitating health workers, the funds are not really enough to facilitate the health workers so that all these children are reached.*" (KII,02)

Reaching girls in private schools proved particularly difficult, as these institutions often prioritized business interests and required stringent parental consent, which was hard to obtain as put by a Key Informant:

"*So penetrating a private school is really hard. At times, you make two and four movements, and then later they tell you the parents have refused. The head teacher will say I cannot accept you to do it because this is a business.*" (KII, 01)

Socio-cultural, religious and political influences

Some political figures discourage public participation, eroding public trust and creating uncertainty in the government-led programs. A parent reported:

"*Politicians are influencing people negatively for their own selfish gains. They appear respectful but when listen to them speaking negative propaganda against government programs, you just*

wonder what is wrong with them. Some of them tell people not take their children for such programs of vaccination." (Parent FGD)

This political influence often dovetailed with the fear of a depopulation agenda, linking the vaccination program to political motives. A key informant confirmed:

"*They think if the government of Uganda, in particular the NRM government, is trying to depopulate the opposition.*" (KII,01)

6.2.1.3 Theme three: Facilitators and recommendations for improvement

Parental and social support

Despite the challenges, strong maternal support was a critical facilitator for vaccine uptake. Many adolescents received the vaccine because their mothers consented and advocated for them. One adolescent said:

"*For me, who influenced me was my mother. Because she was the one who filled the form which they gave us to determine whether the parent accepted or not."* (Adolescent FGD)

Support from teachers and schools also played a vital role in reassuring hesitant adolescents and facilitating the vaccination process. An adolescent shared:

"The teachers influenced me to get vaccinated because I was scared. And they told me that don't be scared, you won't get any harm." (Adolescent FGD)

Health system strengthening

The school-based delivery platform was widely recognized as a key strategy for achieving high coverage, as it efficiently reached a large concentration of the target population. A parent acknowledged this, stating:

"I would say some parents don't have time to sit down their children and counsel them, that's why the government has chosen to use schools such that children can be reached in large numbers..." (Parent FGD)

Health officials highlighted the recent transition to a single-dose schedule as a major programmatic advantage that would simplify logistics and improve completion rates. A Key Informant explained:

"Personally, I think now that we have reduced the number of doses, it's going to be easier for us because we only need one dose per girl and we increase numbers." (KII, 01)

Strategic recommendations

Participants universally called for enhanced, clear, and continuous sensitization to combat misinformation. A parent emphasized:

"All we need is to teach parents, create awareness on the dangers of this disease. I think that is feasible." (Parent FGD)

To build trust and improve access, some adolescents and community members recommended a more personalized, home-based approach or community dialogues where parents could be thoroughly educated. An adolescent suggested:

"I think it will be better at home, because your parents will be the ones who are taking you to the hospital, and if you get any problem, it will be owned by the parents, not the school... There is also a possibility that the parents will be explained to more about the injection and the vaccine, and how it works." (Adolescent FGD)

CHAPTER SEVEN: DISCUSSION

7.1 Prevalence of Single-Dose HPV Vaccine Uptake

The study found that 33.3% of adolescent girls aged 13–19 years had received at least one dose of the HPV vaccine well below the WHO global target of 90% by 2030 (World Health, 2022).This finding is consistent with earlier Ugandan studies showing similarly low coverage: Alone Isabirye et al. (2020) reported 39.4% uptake among 10–17-year-olds in Wakiso district. This relatively higher prevalence in this study may be due to inclusion of a wider age range, starting at age 10 years, whereas this study began at age 13 years. National estimates also remain below 35% (I. Odongo Ojok, Ogwal, Wwesige, Bongomin, & Akello, 2023), highlighting a persistent challenge in achieving sustained HPV vaccine uptake.

From Qualitative findings many girls reported *"not hearing about the vaccine until health workers came once to our school;"* while others said *"our parents never told us anything about it."* These statements reveal a widespread information gap that limits awareness and motivation for uptake of HPV vaccination.

In global comparison, similar trends of suboptimal uptake have been observed elsewhere in sub-Saharan Africa for example a systematic review found a pooled HPV vaccine uptake among adolescent schoolgirls of approximately 28.5%, with Kenya reporting about 62.5% but countries like Nigeria much lower (approximately 3.8%) (Y. S. Asgedom et al., 2024).

However, countries like Rwanda and Malaysia have achieved coverage above 90% through school-based vaccination, strong political commitment, and community mobilization (Binagwaho et al., 2012); (Muhamad et al., 2018). From a Health Belief Model perspective, these findings indicate that low perceived susceptibility to cervical cancer and limited understanding of the vaccine's benefits. In addition, weak cues to action such as community reminders or parental encouragement reduce vaccine uptake among adolescents in Wakiso.

7.2 Factors Associated with Uptake of the Single-Dose HPV Vaccine

7.2.1 Influence of religion

Religion significantly influenced HPV vaccine uptake. Protestant adolescents were 36% more likely to have received the vaccine compared to Catholics (APR = 1.36, 95% CI: 1.04–1.77). This suggests that this finding could have occurred by chance or due to contextual factors specific to protestant communities. This aligns with (Nakibuuka et al., 2024) who observed that religious norms and leadership may influence vaccination decisions through moral messaging and community mobilization. This variation could be due to the extent to which faith-based institutions engage with or support health programs within their communities and congregations.

Qualitative data further supported this relationship. Some participants mentioned that *"our church encourages us to take all vaccines, and the pastor even talked about it during Sunday service."* Others, particularly from conservative denominations, expressed skepticism, stating that *"some church elders said the HPV vaccine may cause infertility."*

These findings are consistent with Asgedom (2024) and G. Murewanhema, E. Moyo, M. Dzobo, R. S. Mandishora-Dube, and T. Dzinamarira (2024) who documented religious-based misinformation as a barrier to HPV vaccination. Under the HBM, religious beliefs influence perceived barriers (e.g., moral objections or fears) and cues to action (e.g., faith-based encouragement). Engaging religious institutions as partners in sensitization could therefore enhance credibility and uptake.

7.2.2 Residence

Residence emerged as the strongest predictor of uptake, with adolescents in rural areas being 1.81 times more likely to have received the vaccine than those in urban areas ($p < 0.001$). This finding would have been surprising given the challenges of accessing care in rural areas, however, participants' qualitative narratives provided context to this seemingly paradoxical finding. Rural participants frequently mentioned that *"health workers came to our school and vaccinated us all at once,"* whereas some urban respondents noted *"we were told to go to the health center ourselves, but many girls didn't go."* This suggests that outreach-based service delivery prevalent in rural areas offers better accessibility and convenience than urban facility-based models. This aligns with the observed difference between private and public schools. Most private schools are located in urban areas where vaccination is often left to individual decision.

Meanwhile, public schools, particularly in rural areas, are more likely to benefit from outreaches conducted by health workers' through government programs.

These results reflect similar trends from Patrick et al. (2022) in Kampala, who noted that uptake and especially completion of HPV vaccination remained much lower in peri-urban or slum settings due to poor access, hesitancy, and inadequate outreach, even where vaccines were available through schools. In addition, they align with Uganda's UNEPI strategy, which emphasizes community outreach to bridge access gaps. The findings highlight the power of proximity and active mobilization as key facilitators of vaccine uptake, confirming (World Health, 2022b) recommendation for hybrid models combining outreach and school-based approaches,similar to the study by (Gizaw et al., 2022) which found out that school based and outreach health services greatly improve uptake of health services .

7.2.3 Age

Age showed an inverse relationship with vaccine uptake adolescents in the age group of 13–15 years were more likely to be vaccinated than those age group 16–19 years (Adjusted PR = 0.63, 95%CI: 0.50-0.81; p = 0.001).

Qualitatively, this difference was explained through perceptions of stigma and age appropriateness. Older adolescents described the vaccine as *"meant for small girls"* or said *"people will think I'm sexually active if I go for it."* Some younger participants reported receiving the vaccine in primary school and viewed it as part of the normal immunization process.

This mirrors WHO's recommendation to vaccinate before sexual debut (Lakneh et al., 2022) and echoes findings from Agimas et al. (2024) for instance, in Ambo, Ethiopia, HPV uptake was higher among younger adolescents underscoring that older adolescents may face greater social stigma or perceived irrelevance of vaccination. Under the Health Belief Model, these patterns reflect lower perceived susceptibility and increased social or normative barriers as age increases.

7.2.4 Other factors examined

Education level, occupation, and family cancer history were not statistically significant predictors of uptake. Despite expectations that education might enhance awareness, the uniformly low vaccine knowledge (12%) across participants indicated that information deficits transcend socioeconomic status.

Qualitative insights reinforced this observation. Many girls stated, *"Even those in secondary school didn't know what HPV means,"* or *"we only heard about it when the nurses came."* This highlights systemic communication gaps rather than individual knowledge differences, echoing findings by Holman et al. (2014) and Agimas et al. (2024).

7.3 Barriers and facilitators to single-dose HPV Uptake

Barriers

7.3.1 Limited awareness and Misconceptions

Lack of awareness emerged as the most frequently reported barrier (90.5%) from survey data, while qualitative interviews further illustrated this gap. Some adolescents expressed that *"no one had ever told us about HPV"* or *"we didn't know the vaccine prevents cancer."*

Misinformation particularly myths linking the vaccine to infertility or immorality further discouraged uptake. One participant noted, *"Some parents say the vaccine stops girls from giving birth."* Such fears are similar to findings by Hoxha et al. (2022) and Larson et al. (2015) and highlight weak communication channels between health workers, schools, and parents.

Facilitators

7.3.2 Parental and Peer Influence

Parental involvement emerged as a critical facilitator. Adolescents who received the vaccine often credited their parents' encouragement: *"My mother told me to take it to prevent cancer."* Conversely, those who missed vaccination frequently cited parental hesitation or disapproval: *"My father said we should wait until we are older."*

Peer influence also mattered; some girls said, *"We went as a group because our friends encouraged us."* This underscores the importance of social support and modeling, key elements of the HBM's cues to action construct.

7.3.3 Accessibility and service delivery

Access-related factors shaped vaccine uptake substantially. Rural participants emphasized convenience of outreach programs: *"The nurses came to our community hall; we didn't need transport."* Urban respondents, however, mentioned *"long queues"* and *"unclear vaccination schedules."* These narratives illustrate that service proximity and predictable delivery enhance uptake of HPV vaccine, consistent with Kutz et al. (2023) and WHO (2022). They also explain why rural uptake was unexpectedly higher.

7.3.4 Trust in health workers

Health worker influence was another strong facilitator. Several adolescents stated, *"When the nurse explained it, I agreed immediately,"* showing that credible information from trusted health providers increases confidence. Lack of such engagement led to hesitation among others. Under the HBM, this represents a critical cue to action that transforms awareness into behavior.

7.4 Interpretation through the Health Belief Model

Applying the Health Belief Model (Irwin M. Rosenstock, 2000) allowed comprehensive understanding of HPV vaccine behavior in Wakiso. According to the HBM, health behavior is shaped by perceived susceptibility, perceived severity, perceived benefits, perceived barriers, and cues to action.

In this study, perceived susceptibility to HPV infection was generally low, with only 12% of adolescents aware of their risk. Qualitative findings reinforced this, with participants stating, "We didn't think HPV could affect us." Similar low risk perception has been documented in other LMICs, where adolescents often underestimate their vulnerability to HPV infection (Asempah, 2024)

Perceived severity was also limited. Many respondents viewed cervical cancer as a disease affecting older women, reflecting misconceptions noted in previous studies (Agimas et al., 2024). Such perceptions reduce the urgency to vaccinate and highlight the need for targeted education emphasizing the disease's impact on young women.

Regarding perceived benefits, understanding of the vaccine's preventive role was poor. Some adolescents believed the vaccine was only for those already sick: "I thought the vaccine is for

those already sick." This mirrors findings from Holman et al. (2014) and Patrick et al. (2022), who noted that limited knowledge about HPV and its vaccine reduces uptake.

Perceived barriers were substantial, including myths around infertility and other adverse effects. These barriers, reported by 88% of respondents, align with global evidence that misinformation and cultural beliefs impede vaccination (G. Murewanhema et al., 2024); (Hoxha et al., 2022). Parental hesitancy and religious influences further amplify these barriers, as noted in both local (Nakibuuka et al., 2024) and international contexts (Rabiu et al., 2020).

Finally, cues to action, such as school-based outreach, mobilization by Village Health Teams, and encouragement from health workers, were key facilitators. Participants reported and demonstrated that trusted sources and proactive engagement can translate awareness into vaccination action. These findings reinforce WHO's recommendation for hybrid delivery models combining school-based and community outreach approaches (World Health, 2022a).

In conclusion, integrating the study findings with the HBM highlights that low perceived risk, limited knowledge, and widespread myths remain the main barriers, while trust in health workers and active outreach serve as critical facilitators. Enhancing school-based education, parental and religious engagement, and community mobilization could strengthen these cues to action, ultimately improving uptake of the single-dose HPV vaccine among adolescents in Wakiso District.

7.5 Strengths and Limitations of the Study

7.5.1 Strengths

- The study combined quantitative and qualitative approaches, allowing for a comprehensive understanding of both the prevalence of single-dose HPV vaccine uptake, factors associated to uptake and the underlying barriers and facilitators. This provided richer insights than using a single method alone.
- With large sample of 597 records/ participants for the quantitative component and 58 participants for qualitative interviews (including FGDs and KIIs). This provided sufficient representation to make meaningful observations within Wakiso District and yielded a post hoc power of 0.8708 (87.1%), indicating adequate ability to detect statistically significant associations.

- By interviewing adolescents, parents, Assistant District Health officer, health workers, head teachers and VHTs, the study captured perspectives from key stakeholders around HPV vaccination. This strengthened the credibility and relevance of study findings.

7.5.2 Limitations

- Information on vaccination status and reasons for non-uptake was self-reported, which may have introduced recall bias or social desirability bias, particularly among adolescents. To limit the impact on this study's findings, the data were carefully cleaned, validated, and checked for consistency before analysis
- While the quantitative and qualitative components complemented each other, the integration was limited by the study design. Each arm addressed different aspects of the research questions, which constrained the ability to fully explain quantitative findings using qualitative data.
- Secondary data used for the quantitative analysis were drawn from the AMBSO PHS system, which contained missing or incomplete records beyond the researcher's control. Rigorous data cleaning and validation procedures were applied to improve accuracy and reliability.
- The study was conducted in Wakiso District, and while it provides important local evidence, the findings may not be fully generalizable to other regions with different social, cultural, or health system contexts. However, the inclusion of both urban and rural participants helped enhance representativeness within the district.
- The study employed a mixed-methods cross-sectional design, which limits the ability to establish causal relationships between identified factors and HPV vaccine uptake. The findings therefore reflect associations rather than causation. To address this, interpretations were made cautiously without making causal inferences.
- The multivariable regression model was limited to variables available in the AMBSO Population Health Surveillance dataset, excluding important factors such as parental beliefs, risk perceptions, and community misinformation. These unmeasured influences were explored through the qualitative component to contextualize and triangulate the quantitative findings.

CHAPTER EIGHT: CONCLUSION AND RECOMMENDATIONS

8.1 Conclusion

This study assessed uptake of the single-dose HPV vaccine among adolescent girls aged 13–19 years in Wakiso District and examined the factors influencing its utilization. The focus on single-dose vaccination is supported by global evidence and WHO guidance demonstrating comparable protection to multi-dose schedules, making it a practical strategy for improving coverage in resource-limited settings and for reaching both routinely eligible and catch-up populations.

Overall HPV vaccine uptake was low (33.3%), falling well below the national target of 80%. Uptake was significantly associated with age, religion, and place of residence, with higher coverage among younger adolescents and rural residents. Key facilitators included maternal support, school-based programs, and community outreach through Village Health Teams, while limited knowledge, misinformation, and sociocultural influences remained major barriers. These findings provide context-specific evidence to guide targeted interventions aimed at strengthening HPV vaccination delivery and cervical cancer prevention in Wakiso District and similar settings.

8.2 Recommendations

8.2.1 Policy and Program Recommendations

- Strengthen community sensitization: The Ministry of Health (MoH), through the Uganda National Expanded Programme on Immunization (UNEPI) and in collaboration with District Health Offices (DHOs), should intensify community awareness using schools, churches, radio programs, and community meetings.
- Enhance parental and community leader engagement: District Health Teams (DHTs) and Local Councils (LCs) should actively involve parents particularly fathers in sensitization activities through school meetings, church sessions, and community forums to improve trust and acceptance.

- Ensure comprehensive school coverage: The MoH, in coordination with the Ministry of Education and Sports (MoES) and District Education Offices, should strengthen coordination to reach both public and private schools. Nearby health facilities should support outreach to minimize missed vaccination opportunities.
- Improve logistical and follow-up support: District Local Governments, with support from MoH and implementing partners, should provide adequate facilitation, transport, and logistical resources for health workers and Village Health Teams (VHTs) to follow up with girls who miss vaccination sessions, particularly out-of-school.
- Promote the single-dose schedule: UNEPI and MoH Communications Units should widely disseminate information on the WHO-recommended single-dose HPV vaccination schedule through schools, health facilities, and local media, emphasizing its effectiveness, convenience, and suitability for catch-up vaccination among older adolescents.

8.2.2 Research Recommendations

- Future studies should explore the acceptability of the single-dose HPV vaccine among adolescents and caregivers, with particular attention to parental beliefs, risk perceptions, and trust in health services.
- Further research should assess the long-term effectiveness of the single-dose HPV vaccination strategy in reducing HPV infection and cervical cancer burden in Uganda.

8.3 Originality of Contribution

This study provides one of the first empirical assessments of uptake of the WHO-recommended single-dose HPV vaccine among adolescent girls aged 13–19 years in Wakiso District, Uganda.

Unlike earlier studies that focused on the two-dose schedule and predominantly school-based populations, it extends evidence to community and peri-urban settings, including both in-school and out-of-school adolescents.

The study further contributes methodologically by employing a mixed-methods approach that triangulates quantitative estimates of vaccine uptake with qualitative insights from adolescents,

parents, health workers, and key stakeholders. By applying the Health Belief Model within a low-resource context, the study links statistical associations with contextual explanations of barriers and facilitators, generating policy-relevant evidence to inform HPV vaccination programming and Uganda's cervical cancer elimination efforts.

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APPENDICES

Appendix I: Approval by MakSPH Research and Ethics Committee

MAKERERE UNIVERSITY
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SCHOOL OF PUBLIC HEALTH
Research and Ethics Committee

MAKERERE UNIVERSITY
SCHOOL OF PUBLIC HEALTH
APPROVED
VALID UNTIL
★ 12 SEP 2026 ★
RESEARCH & ETHICS COMMITTEE
P. O. BOX 7072, KAMPALA

12th September 2025

Ms. Nabaasa Janepher,
Master student, (2023/HD07/3065U)
School of Public Health, Makerere University

Re: Approval of a research proposal titled: "Uptake of a Single Dose Human Papillomavirus Vaccine Among Adolescent Girls Aged 13-19 Years in Wakiso District, Uganda."

This is to inform you that the Makerere School of Public Health Research and Ethics Committee (MakSPH-REC) has approved your study documents for the above-referenced research study.

Please note that your study protocol number with MakSPH-REC is **715**. Please be sure to reference this number in any correspondence with MakSPH-REC. Note that your study was first approved by the MakSPH-REC on **12/09/2025**, and therefore approval expires at every annual anniversary of this approval date. The current approval is therefore valid until **12/09/2026.**

Continued approval is conditional upon your compliance with the following requirements:

1) No other consent form(s), questionnaire and/or advertisement documents should be used. The consent form(s) must be signed by each subject prior to initiation of any protocol procedures. In addition, each subject must be given a copy of the signed consent form.

2) All protocol amendments and changes to other approved documents must be submitted to MakSPH-REC and not be implemented until approved by MakSPH-REC except where necessary to eliminate apparent immediate hazards to the study subjects.

3) Significant changes to the study site and significant deviations from the research protocol and all unanticipated problems that may involve risks or affect the safety or welfare of subjects or others, or that may affect the integrity of the research must be promptly reported to MakSPH-REC.

Please complete and submit reports to MakSPH-REC as follows:

a) Renewal of the study approval – complete and return the continuing Review Report – Renewal Request (Form 404A) at least 60 days prior to the expiration of the approval period. The study cannot continue until re-approved by MakSPH-REC.

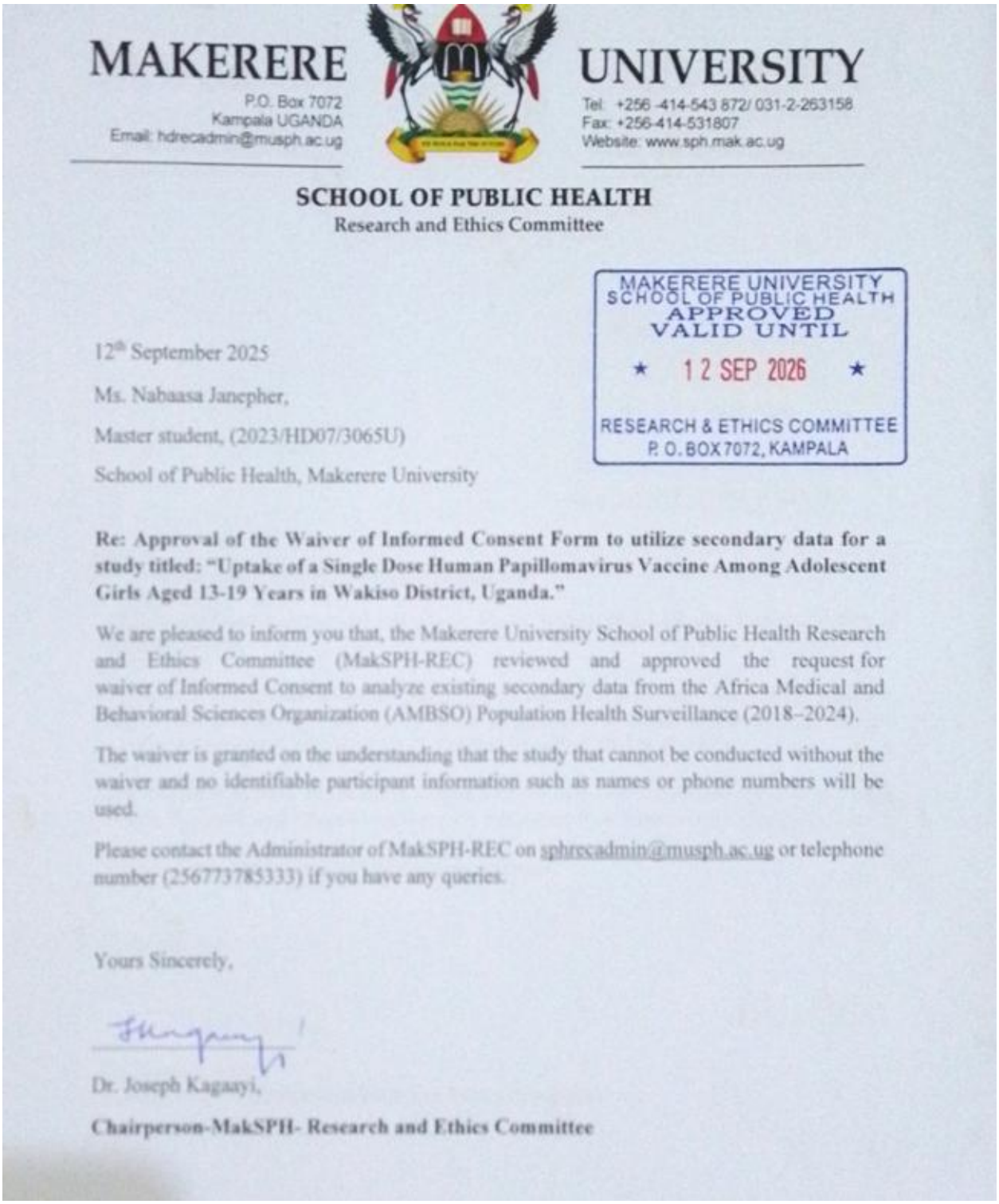
b) Completion, termination, or if not renewing the project – send a final report within 90 days upon completion of the study.

MAKERERE UNIVERSITY
SCHOOL OF PUBLIC HEALTH
APPROVED
VALID UNTIL
★ 12 SEP 2026 ★
RESEARCH & ETHICS COMMITTEE
P. O. BOX 7072, KAMPALA

Yours sincerely,

Dr. Joseph Kagaayi
Chairperson: MakSPH- Research and Ethics Committee

Appendix II: Approval of the Waver of Informed Consent Form



MAKERERE UNIVERSITY

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Tel: +256 -414-543 872/ 031-2-263158
Fax: +256-414-531807
Website: www.sph.mak.ac.ug

SCHOOL OF PUBLIC HEALTH
Research and Ethics Committee

MAKERERE UNIVERSITY
SCHOOL OF PUBLIC HEALTH
APPROVED
VALID UNTIL
★ 12 SEP 2026 ★
RESEARCH & ETHICS COMMITTEE
P. O. BOX 7072, KAMPALA

12th September 2025

Ms. Nabaasa Janepher,

Master student, (2023/HD07/3065U)

School of Public Health, Makerere University

Re: Approval of the Waiver of Informed Consent Form to utilize secondary data for a study titled: "Uptake of a Single Dose Human Papillomavirus Vaccine Among Adolescent Girls Aged 13-19 Years in Wakiso District, Uganda."

We are pleased to inform you that, the Makerere University School of Public Health Research and Ethics Committee (MakSPH-REC) reviewed and approved the request for waiver of Informed Consent to analyze existing secondary data from the Africa Medical and Behavioral Sciences Organization (AMBSO) Population Health Surveillance (2018–2024).

The waiver is granted on the understanding that the study that cannot be conducted without the waiver and no identifiable participant information such as names or phone numbers will be used.

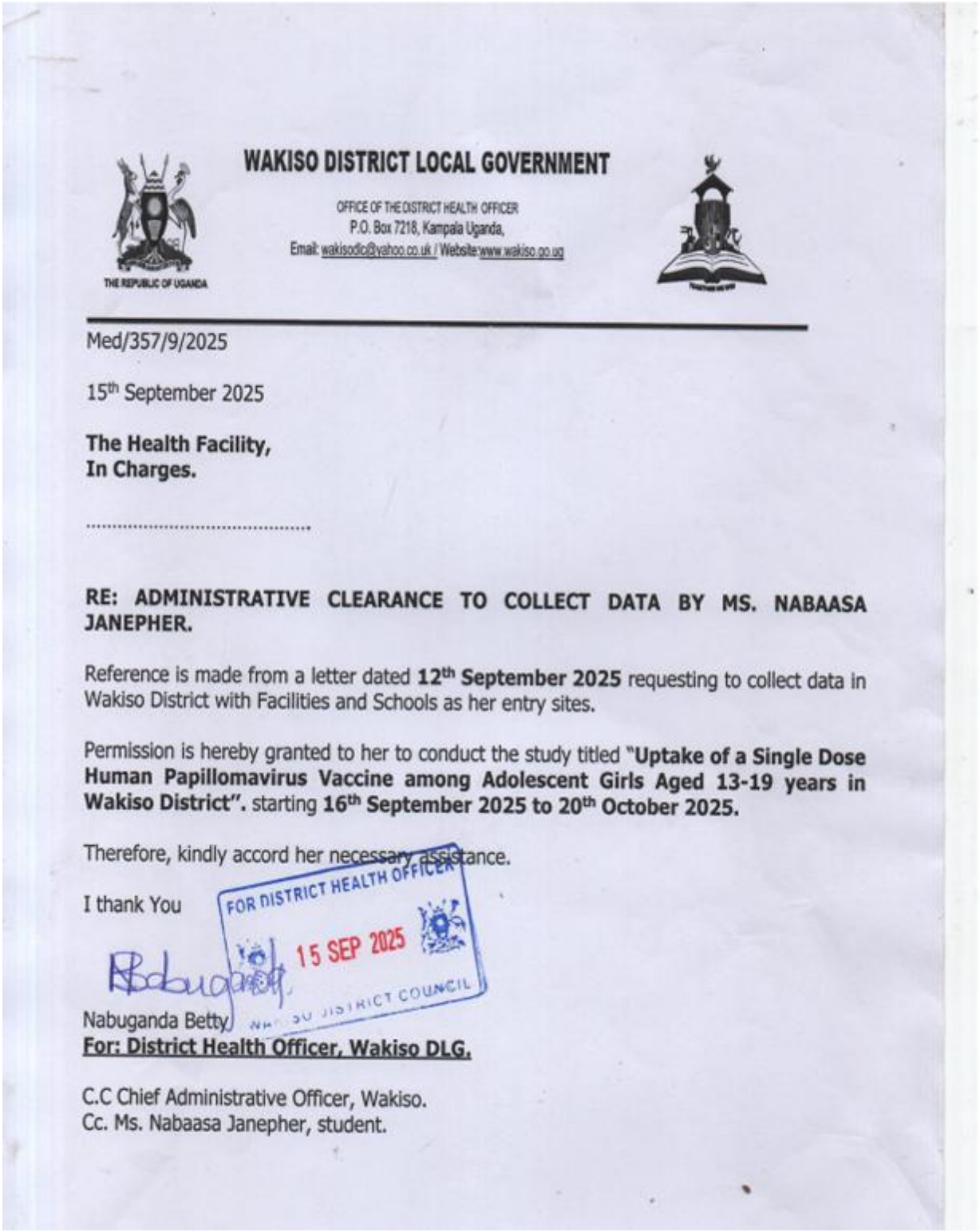
Please contact the Administrator of MakSPH-REC on sphrecadmin@musph.ac.ug or telephone number (256773785333) if you have any queries.

Yours Sincerely,

Dr. Joseph Kagaayi,

Chairperson-MakSPH- Research and Ethics Committee

Appendix III: Administrative Clearance from Wakiso District to collect Qualitative Data



WAKISO DISTRICT LOCAL GOVERNMENT

OFFICE OF THE DISTRICT HEALTH OFFICER
P.O. Box 7218, Kampala Uganda,
Email: wakisodlc@yahoo.co.uk / Website:www.wakiso.go.ug

THE REPUBLIC OF UGANDA

Med/357/9/2025

15th September 2025

The Health Facility,
In Charges.

.....

RE: ADMINISTRATIVE CLEARANCE TO COLLECT DATA BY MS. NABAASA JANEPHER.

Reference is made from a letter dated **12th September 2025** requesting to collect data in Wakiso District with Facilities and Schools as her entry sites.

Permission is hereby granted to her to conduct the study titled **"Uptake of a Single Dose Human Papillomavirus Vaccine among Adolescent Girls Aged 13-19 years in Wakiso District".** starting **16th September 2025 to 20th October 2025.**

Therefore, kindly accord her necessary assistance.

I thank You

FOR DISTRICT HEALTH OFFICER
15 SEP 2025
WAKISO DISTRICT COUNCIL

Nabuganda Betty
For: District Health Officer, Wakiso DLG.

C.C Chief Administrative Officer, Wakiso.
Cc. Ms. Nabaasa Janepher, student.

Appendix IV: Table of extracted Study variables

Variable Name	Description	Scale	Coding
Participant ID	Unique identifier for each respondent	Categorical	ID
Age	Age group	Categorical	13–15years and 16-19years
Religion	Religious affiliation of participant	Categorical	1Catholic, 2Protestant, 3Pentecostal, 4Muslim, 5Other
Occupation	Main activity of the participant	Categorical	Business, Housewife Student and Others
Education level	Education level attained	Categorical	Primary and post-primary
Residence	Participants area of residence	Categorical	1=Urban and 2=rural
HPV vaccine uptake	Whether participant received at least 1 dose/ single dose of HPV vaccine	Binary	1 = Yes (1 dose or more), 0 = No (0 doses)
Number of doses received	Total number of HPV vaccine doses received	Categorical / Ordinal	1,2 or more
Cancer history in the family	Whether participant has a family history of cancer or not	Categorical/ binary	1 = Yes, 0 = No
Source of Immunization	The place/ venue where vaccinated participants received their vaccines from	Categorical	Facility based Outreach/non-facility
Awareness	Whether participant has knowledge about or aware of HPV vaccine	Categorical	Aware Not aware/untold

Reasons for non-uptake	For participants who had not received any vaccine	Binary	1.Lack of awareness 2.Other person reasons 3.Access of barriers

Appendix V: Consent/ Assent Forms

1. **PARENTAL/GUARDIAN CONSENT FORM FROM PARENTS WITH ADOLESCENTS 13-17 YEARS (MINORS) TO PARTICIPATE IN PARENTS FGDs**

Study title:

Uptake of a single dose Human Papillomavirus vaccine among adolescent girls aged 13-19 years in Wakiso district, Uganda

Investigator:

Ms. Nabaasa Janepher; Tel: 0702771225 or 0781225066; Email: nabasaj2@gmail.com; Department of Epidemiology and Biostatistics, Makerere University School of Public Health.

Introduction: Hello, my name is **……** from Makerere University School of Public Health. I would like to interview your child about the barriers and facilitators to uptake of a single-dose HPV vaccine among adolescent girls aged 13–19 years in Wakiso District. Before we begin, I would like to provide you with information about the study, and you are welcome to ask any questions you may have. You can also talk to someone you trust about this research if you wish. If any part of the information is unclear, please feel free to ask for clarification.

Purpose: The purpose of this study is to understand the barriers and factors that make it easier or harder for adolescent girls to receive the single-dose HPV vaccine in Wakiso District. We want to learn about their knowledge, perceptions, experiences, and opinions regarding the HPV vaccine. The information they share will help us better understand how to improve access to the HPV vaccine for girls their age and to design programs that meet the needs of young people in the community.

Procedures and Voluntary Participation: If you agree, your child will be asked to participate in a group discussion lasting about 30–60 minutes. Participation is voluntary, and your child can withdraw at any time.

Potential benefits: Your child may not receive any direct personal benefit from participating, but the information your child will provide may help improve HPV vaccination programs and health services for adolescent girls in Wakiso District and similar communities in Uganda and beyond.

Risks and side effects: This study poses only minimal risk to participants. Some questions may cause slight discomfort or make you feel uneasy, especially when discussing sensitive issues.

You are free to skip any question you do not wish to answer or to withdraw from the study at any time without any penalty. No physical, social, or psychological harm is anticipated.

Confidentiality: The information that will be collected will be kept anonymous and confidential in accordance with the international and local ethical standards governing research involving humans as research participants. Your child's identity will be concealed. Her name will not appear anywhere on the coded forms with the information or in any publications coming from the research. The study team will be the only one with the authority to access the collected data. The recordings and transcripts will be kept under strict lock and key, and information on computers will be kept confidential secured with password protection.

Compensation for participation in the study:

Your child will be compensated with ten thousand shillings (10,000/=).

Questions about the study: Do you have any questions about the study that you would like me to answer? If you have any questions later, you may contact Ms. **Nabaasa Janepher,** the Principal Investigator on Tel: 0702771225 or 0781225066 or Email: nabasaj2@gmail.com

Questions about participants' rights: If you have questions regarding your welfare and rights as a research participant, you can address your questions to: **Dr. Joseph Kagaayi**, the Chairperson of Makerere School of Public Health Research Ethics Committee on +256773785333; E-mail: jkagaayi@musph.ac.ug

Dissemination of study feedback or study findings and progress of the study: A report and presentation as well as other possible publications of the aggregated research findings will be shared with the key stakeholders for the purpose of improving uptake of HPV vaccination.

Approval of the research study: Ethical approval for this study was granted by the Makerere University School of Public Health Research Ethics Committee (SPHREC), which is accredited by the Uganda National Council of Science and Technology (UNCST).

Consent Statement:

I have read and understood the study details.

☐ I consent for my child to participate in this study

☐ I don't consent for my child to participate in this study

Name of Parent/Guardian: ……

Signature: …… Thumb Print: ……

Date: ……

Name of researcher/person obtaining consent: ……

Signature: ……

Date: ……

2. ASSENT FORM FOR ADOLESCENT PARTICIPANTS (13–17YEARS) IN FGDs

Study title: Uptake of a single dose Human Papillomavirus vaccine among adolescent girls aged 13-19 years in Wakiso district, Uganda

Investigator:

Ms. Nabaasa Janepher; Tel: 0702771225 or 0781225066; Email: nabasaj2@gmail.com; Department of Epidemiology and Biostatistics, Makerere University School of Public Health.

Introduction:

Hello, my name is ……., from Makerere School of Public Health. I would like to interview you about the barriers and facilitators to uptake of a single-dose HPV vaccine among adolescent girls aged 13–19 years in Wakiso District. Before we begin, I would like to provide you with information about the study, and you are welcome to ask any questions you may have. You can also talk to someone you trust about this research if you wish. If any part of the information is unclear, please feel free to ask for clarification.

Purpose: The purpose of this study is to understand the barriers and factors that make it easier or harder for adolescent girls to receive the single-dose HPV vaccine in Wakiso District. We want to learn about your knowledge, perceptions, experiences, and opinions regarding the HPV vaccine. The information you share will help us better understand how to improve access to the HPV vaccine for girls your age and to design programs that meet the needs of young people in the community.

Procedures and voluntary participation: You will be asked to participate in a group discussion (FGD) lasting about 30–60 minutes. Participation is voluntary, and you can withdraw at any time.

Potential benefits: You may not receive any direct personal benefit from participating, but the information you will provide may help improve HPV vaccination programs and health services for adolescent girls in Wakiso District and similar communities in Uganda and beyond.

Risks and side effects: This study poses only minimal risk to participants. Some questions may cause slight discomfort or make you feel uneasy, especially when discussing sensitive issues. You are free to skip any question you do not wish to answer or to withdraw from the study at any time without any penalty. No physical, social, or psychological harm is anticipated.

Confidentiality: The information that will be collected will be kept anonymous and confidential in accordance with the international and local ethical standards governing research involving

humans as research participants. Your identity will be concealed; your name will not appear anywhere on the coded forms with the information or in any publications coming from the research. The study team will be the only one with the authority to access the collected data. The recordings and transcripts will be kept under strict lock and key, and information on computers will be kept confidential secured with password protection.

Compensation for participation in the study:

You will be compensated with one thousand shillings (10,000/=).

Questions about the study: Do you have any questions about the study that you would like me to answer? If you have any questions later, you may contact Ms. Nabaasa Janepher, the Principal Investigator on Tel: 0702771225 or 0781225066 or Email: nabasaj2@gmail.com

Questions about participants' rights: If you have questions regarding your welfare and rights as a research participant, you can address your questions to: Dr. Joseph Kagaayi, the Chairperson of Makerere School of Public Health Research Ethics Committee on +256773785333; E-mail: jkagaayi@musph.ac.ug

Dissemination of study feedback or study findings and progress of the study: A report and presentation as well as other possible publications of the aggregated research findings will be shared with the key stakeholders for the purpose of improving uptake of HPV vaccination.

Approval of the research study: Ethical approval for this study was granted by the Makerere University School of Public Health Research Ethics Committee (SPHREC), which is accredited by the Uganda National Council of Science and Technology (UNCST).

Assent Statement

Tick the box below to show your decision:

☐ I have read or been told about this study. I understand what it is about, and I agree to take part.

☐ I do not want to take part in the study.

Name of adolescent: ……

Signature: …… Date: ……

Name of researcher/person obtaining consent: ……Signature: ……Date: ……..

3. INFORMED CONSENT FORM FOR ADOLESCENTS (18+) / PARENTS TO PARTICIPATE IN FGDs

Study Title: Uptake of a single dose Human Papillomavirus vaccine among adolescent girls aged 13-19 years in Wakiso district, Uganda

Investigator:

Ms. Nabaasa Janepher; Tel: 0702771225 or 0781225066; Email: nabasaj2@gmail.com ;
Department of Epidemiology and Biostatistics, Makerere University School of Public Health.

Introduction:

Hello, my name is ……., from Makerere School of Public Health. I would like to interview your about the barriers and facilitators to uptake of a single-dose HPV vaccine among adolescent girls aged 13–19 years in Wakiso District. Before we begin, I would like to provide you with information about the study, and you are welcome to ask any questions you may have. You can also talk to someone you trust about this research if you wish. If any part of the information is unclear, please feel free to ask for clarification.

Purpose:

The purpose of this study is to understand the barriers and factors that make it easier or harder for adolescent girls to receive the single-dose HPV vaccine in Wakiso District. We want to learn about your knowledge, perceptions, experiences, and opinions regarding the HPV vaccine. The information you share will help us better understand how to improve access to the HPV vaccine for girls their age and to design programs that meet the needs of young people in the community.

Procedures and Voluntary Participation: If you agree, you will be asked to participate in a group discussion lasting about 30–60 minutes. Participation is voluntary, and you can withdraw at any time.

Potential benefits: You may not receive any direct personal benefit from participating, but the information you will provide may help improve HPV vaccination programs and health services for adolescents girls in Wakiso District and similar communities in Uganda and beyond.

Risks and side effects: This study poses only minimal risk to participants. Some questions may cause slight discomfort or make you feel uneasy, especially when discussing sensitive issues. You are free to skip any question you do not wish to answer or to withdraw from the study at any time without any penalty. No physical, social, or psychological harm is anticipated.

Confidentiality: The information that will be collected will be kept anonymous and confidential in accordance with the international and local ethical standards governing research involving humans as research participants. Your identity will be concealed. Your name will not appear anywhere on the coded forms with the information or in any publications coming from the research. The study team will be the only one with the authority to access the collected data. The recordings and transcripts will be kept under strict lock and key, and information on computers will be kept confidential secured with password protection.

Compensation for participation in the study: After the discussion, you will be compensated f with ten thousand shillings (10,000/=).

Questions about the study: Do you have any questions about the study that you would like me to attend to? If you have any questions later, you may contact Ms. Nabaasa Janepher, the Principal Investigator on Tel: 0702771225 or 0781225066. Or Email: nabasaj2@gmail.com

Questions about participants' rights: If you have questions regarding your welfare and rights as a research participant, you can address your questions to: Dr. Joseph Kagaayi, the Chairperson of Makerere School of Public Health Research Ethics Committee on +256773785333; E-mail: jkagaayi@musph.ac.ug

Dissemination of study feedback or study findings and progress of the study: A report and presentation as well as other possible publications of the aggregated research findings will be shared with the key stakeholders for the purpose of improving uptake of HPV vaccination.

Approval of the research study: Ethical approval for this study was granted by the Makerere University School of Public Health Research Ethics Committee (SPHREC), which is accredited by the Uganda National Council of Science and Technology (UNCST).

Consent Statement:

I have read and understood the study details.

☐ I consent to participate in this study

☐ I don't consent to participate in this study

Name: ……

Signature:…… Thumb Print:……Date: ……

Name of researcher/person obtaining consent: ……

Signature: …… Date: ……

4. INFORMED CONSENT FORM FOR KEY INFORMANT (KIs)

Study Title: Uptake of a single dose human papillomavirus vaccine among adolescent girls aged 13-19 years in Wakiso district, Uganda.

Introduction: Hello, my name is **……**from **Makerere University School of Public Health**. I am conducting a study titled "Uptake of single-dose Human Papillomavirus (HPV) vaccination among adolescent girls aged 13–19 years in Wakiso District."

You have been invited to participate in this study as a **Key Informant** because of your position or expertise in the healthcare, education, or community services sectors, which are important in understanding the factors influencing HPV vaccination uptake in your community.

Purpose of the Study: This study aims to gather information on HPV vaccination among adolescents aged 13–19 years in Wakiso District. As a Key Informant, your insights into the **challenges, barriers**, and **facilitators** of HPV vaccination in the community will be crucial for developing recommendations to improve vaccination rates and health services.

Procedures and Voluntary Participation: You will be asked to take part in a Key Informant Interview (KII**)** that will take approximately 30–60 minutes. During the interview, you will be asked open-ended questions about your professional knowledge, experiences, and views regarding HPV vaccination and its implementation.

Your participation in this interview is entirely voluntary, and you may choose to withdraw at any time without penalty. You can also choose not to answer any question that you are uncomfortable with.

Risks and Benefits of Participation: We do not anticipate any significant risks for participants in this study. However, if at any point you feel uncomfortable, you may choose to stop or skip questions. While there is no direct personal benefit for participating in the study, your input will contribute valuable information that can help improve HPV vaccination programs and adolescent health services in Wakiso District and similar areas.

Confidentiality: All information you provide will be kept strictly confidential. Your responses will be stored anonymously, and your identity will not be revealed in any reports or publications resulting from this research.

The study team is the only group with access to the data, which will be stored securely. Recordings and interview transcripts will be stored in locked cabinets, and any electronic files will be password-protected to ensure confidentiality.

Compensation for participant: There will be no monetary compensation for participating in this study. However, you will be reimbursed Ten Thousand Uganda Shillings **(UGX 10,000/=)**.

Questions about the study: Do you have any questions about the study that you would like me to attend to? If you have any questions later, you may contact Ms. Nabaasa Janepher**,** the Principal Investigator on Tel: 0702771225 or 0781225066. Or Email: nabasaj2@gmail.com

Questions about participants' rights: If you have questions regarding your welfare and rights as a research participant, you can address your questions to: **Dr. Joseph Kagaayi**, the Chairperson of Makerere School of Public Health Research Ethics Committee on +256773785333; E-mail: jkagaayi@musph.ac.ug

Dissemination of study feedback or study findings and progress of the study: A report and presentation as well as other possible publications of the aggregated research findings will be shared with the key stakeholders for the purpose of improving uptake of HPV vaccination.

Approval of the research study: Ethical approval for this study was granted by the Makerere University School of Public Health Research Ethics Committee (SPHREC), which is accredited by the Uganda National Council of Science and Technology (UNCST).

Consent Statement: I have read and understood the study details. I understand that my participation is voluntary and that I can withdraw at any time without penalty.

☐ **I consent to participate in this study**

☐ **I do not consent to participate in this study**

Name of Participant……

Signature /Thumb Print (if applicable): ……..

Date:…….

Name of Person obtaining consent:…….

Date:……...

Appendix VI: Study Tools

FOCUS GROUP DISCUSSION (FGD) GUIDE – ADOLESCENT GIRLS (13–19 YEARS)

Study Title: Uptake of a single dose Human Papillomavirus vaccine among adolescent girls aged 13-19 years in Wakiso district, Uganda

Investigator: Ms. Nabaasa Janepher; Tel: 0702771225 or 0781225066; Email: nabasaj2@gmail.com; Department of Epidemiology and Biostatistics, Makerere University School of Public Health.

Date	
Number of participants	
Moderator	
Note taker	
FGD Identifier	
Venue	
Time	**Started…….. Ended……..**

Introduction: Notes

- Welcome participants and explain the purpose of the discussion.
- Assure confidentiality and voluntary participation.
- Seek consent from participants.

Section A: General awareness and knowledge of HPV and vaccination

1. Have you heard about the HPV vaccine? If yes, where did you learn about it?
2. What do you know about HPV and its vaccine? *probe*
3. What do you think the HPV vaccine is meant for? *probe*

Section B: HPV Vaccination Uptake

1. Have you or your friends received the HPV vaccine? Why or why not?
2. What are some reasons girls your age might choose to get vaccinated? *probe*
3. What are some reasons girls of your age might not get vaccinated? *probe*

Section C: Barriers and facilitators

4. What makes it easy for adolescent girls to get the HPV vaccine in your community/school? *probe*
5. What challenges do girls face when trying to get the HPV vaccine? *probe*
6. Who influences your decision to get vaccinated (*probe- parents, teachers?, health workers? Peers? Who?)?*
7. What do you think should be done to encourage more girls to get vaccinated? *probe*

FOCUS GROUP DISCUSSION (FGD) GUIDE – PARENTS/CAREGIVERS OF ADOLESCENT GIRLS (13–19 YEARS)

Study title:

Uptake of a single dose Human Papillomavirus vaccine among adolescent girls aged 13-19 years in Wakiso district, Uganda

Investigator:

Ms. Nabaasa Janepher; Tel: 0702771225 or 0781225066; Email: nabasaj2@gmail.com;
Department of Epidemiology and Biostatistics, Makerere University School of Public Health.

Date	
Number of participants	
Moderator	
Note taker	
FGD Identifier	
Venue	
Time	**Started……. Ended…….**

Introduction: Notes

- Welcome participants and explain the purpose of the discussion.
- Assure confidentiality and voluntary participation.
- Seek consent from participants.

Section A: Awareness and Knowledge of HPV and Vaccination

1. Have you heard about the Human Papillomavirus (HPV) vaccine? If yes, where did you get the information?

2. What do you know about HPV and the vaccine given to prevent it? *Probe*

3. What is your understanding of the purpose of the HPV vaccine for girls? *Probe more*

Section B: Experience and Perceptions of HPV Vaccination

4. Has your daughter (or any girl you know) received the HPV vaccine? Why or why not?

5. What do you think motivates some parents to ensure their daughters get vaccinated? *probes*

6. What concerns or reasons make some parents or caregivers hesitant to allow their daughters to get vaccinated with HPV vaccine?

Section C: Barriers and Facilitators

7. What makes it easy for girls to receive the HPV vaccine in your community or school**?**

8. What difficulties or challenges do families or girls face when trying to access the vaccine?

9. Who influences your decision about whether or not to vaccinate your daughter (e.g., health workers, teachers, religious leaders, community leaders)? *probe*

10. What would you recommend to help more parents or caregivers support HPV vaccination for their daughters? *probe*

KEY INFORMANT INTERVIEW (KII) GUIDE

Target Group: DHO/ ADHO, Health facility in charges, nurses/vaccinators, teachers/ head teacher and VHTs in Wakiso District who are involved in HPV vaccination and campaigns

Objective: To understand their role, perspectives, challenges and recommendation for HPV vaccination.

Introduction: Notes

- Explain the purpose of the interview
- Assure confidentiality.
- Obtain consent from key informant

Date	
Participant code: KII……..	
Moderator/ Research Assistant	
Venue	
Time	**Started……. Ended…….**

Interview Questions

1. **Awareness and perception**
   - What is your understanding of HPV and the HPV vaccine? (*Probe more*)
   - What do you think about the level of uptake among adolescents aged 13-19 years
2. **Factors Influencing Uptake**
   - What are the main reasons why some girls receive the vaccine while others do not? *probe*
   - How do socioeconomic, cultural, and religious factors affect HPV vaccine uptake? *probe*
3. **Barriers to HPV Vaccination**
   - What challenges do you face in promoting HPV vaccination? *probe*
   - Do you think there are any misconceptions or fears about the vaccine in the community? *Probe for misconceptions*
4. **Facilitators and recommendations**
   - What strategies have been effective in increasing HPV vaccination rates? *Probe*
   - What more can be done to improve vaccine accessibility and acceptance? *probe*

Translated Luganda versions

FFOOMU Y'OKUKKIRIZA EVA MU BAZADDE/ABAKUUMI B'ABAANA ABAWAALA ABAALI MU MYAKA 13–17(MINORS) OKWETABIRA MU BIGGULIRE (FGDs)

Omutwe gw'okunoonyereza:

Okugema ddoozi emu eya Human Papillomavirus (HPV) mu bawala abato ab'emyaka 13-19 mu disitulikiti y'e Wakiso, Uganda

Omukugu akola okunoonyereza:

Ms. Nabaasa Janepher; Essimu: 0702771225 oba 0781225066; Email: nabasaj2@gmail.com; Department of Epidemiology and Biostatistics, Makerere University School of Public Health.

Okwanjula:

Nkulamusizza, erinnya lyange nze **……..**, okuva mu Makerere School of Public Health. Njagala okubuuza omwana wo ku biziyiza n'abalungamya okutwala eddagala lya HPV erya dose emu mu bawala abato ab'emyaka 13–19 mu disitulikiti y'e Wakiso. Nga tetunnatandika, njagala okukuwa amawulire agakwata ku kunoonyereza kuno, era oyanirizibwa okubuuza ebibuuzo byonna by'oyinza okuba nabyo. Osobola n'okwogera n'omuntu gwe weesiga ku kunoonyereza kuno bw'oba oyagala. Singa ekitundu kyonna ku mawulire tekitegeerekeka bulungi, nsaba obeere wa ddembe okusaba okunnyonnyolwa.

Omugaso:

Ekigendererwa ky'okunoonyereza kuno kwe kutegeera ebiziyiza n'ensonga ezifuula abawala abatiini okuba abangu oba okukaluba okufuna eddagala eriweweeza ku HPV erya dose emu mu Disitulikiti y'e Wakiso. Twagala okuyiga ku kumanya kwabwe, endowooza zaabwe, bye bayitamu, n'endowooza zaabwe ezikwata ku ddagala erigema HPV. Amawulire ge bagabana gajja kutuyamba okutegeera obulungi engeri y'okulongoosaamu okufuna eddagala lya HPV eri abawala ab'emyaka gyabwe n'okukola pulogulaamu ezituukiriza ebyetaago by'abavubuka mu kitundu.

Emitendera n'okwetaba okw'obwannakyewa:

Bw'oba okkiriziganya, omwana wo ajja kusabibwa okwetaba mu kukubaganya ebirowoozo mu kibiina okumala eddakiika nga 30–60. Okwetabamu kwa kyeyagalire, era omwana wo asobola okweggyako ekiseera kyonna.

Emigaso egisobola okubaawo:

Omwana wo ayinza obutafuna mugaso gwonna butereevu okuva mu kwetaba, naye amawulire omwana wo g'anaakuwa gayinza okuyamba okulongoosa enteekateeka z'okugema HPV n'obuweereza bw'ebyobulamu eri abawala abatiini mu disitulikiti y'e Wakiso n'ebitundu ebifaananako bwe bityo mu Uganda n'okusingawo.

Obulabe n"ebizibu ebivaamu:

Okunoonyereza kuno tekuleeta buzibu bungi ku bawandiikiddwa. Ebibuuzo ebimu biyinza okukuleetera obutakuganyiraamu oba okukukwasa ku mutima, nnyo nga tubuuza ku nsonga ez'amaanyi oba ez'ekyama. Olina obuyinza okusomoka ku kibuuza kyonna ky'otayagala kuddamu, oba okuva mu kunoonyereza wakati w'omu kiseera kyonna nga toyitiriddwa ku nsonga yonna. Tetusubira kusangako buzibu bw'omubiri, obw'abantu mu maka, oba obw'omutima.

Ebyama: Amawulire agagenda okukung'aanyizibwa gajja kukuumibwa nga tegamanyiddwa era nga ga kyama okusinziira ku mpisa z'ensi yonna n'ez'ekitundu ezifuga okunoonyereza okuzingiramu abantu ng'abeetabye mu kunoonyereza. Omwana wo ajja kukwekebwa. Erinnya lye terijja kulabika wonna ku foomu eziriko enkoodi n'amawulire oba mu bitabo byonna ebiva mu kunoonyereza. Ttiimu y'okunoonyereza y'egenda okuba yokka erimu obuyinza okuyingira mu biwandiiko ebikung'aanyiziddwa. Ebiwandiiko n'ebiwandiiko bijja kukuumibwa wansi w'ekizibiti ekikakali n'ekisumuluzo, era amawulire ku kompyuta gajja kukuumibwa nga gakuumibwa nga gakuumibwa n'okukuuma ebigambo by'okuyita.

Okuliyirira okwetaba mu kunoonyereza kuno: Oluvannyuma lw'okubuuza ebibuuzo, omwana wo ajja kuliyirirwa omutwalo gumu (10,000/=).

Ebibuuzo ebikwata ku kunoonyereza kuno: Olina ekibuuzo kyonna ku kunoonyereza kwe wandyagadde mbaddemu? Bw'oba olina ekibuuzo kyonna oluvannyuma, oyinza okutuukirira Ms. Nabaasa Janepher, omunoonyereza omukulu ku ssimu: 0702771225 oba 0781225066 oba email: nabasaj2@gmail.com

Ebibuuzo ebikwata ku ddembe ly'abeetabye:

Bw'oba olina ebibuuzo ebikwata ku bulamu bwo n'eddembe ng'omuntu eyeetaba mu kunoonyereza, osobola okukola ku bibuuzo byo eri: Dr. Joseph Kagaayi, Ssentebe w'akakiiko akakwasisa empisa mu kunoonyereza ku by'obulamu bw'abantu mu Makerere ku +256773785333; E-mail: jkagaayi@musph.ac.ug

Okubunyisa ebiteeso by'okunoonyereza oba ebizuuliddwa mu kunoonyereza n'enkulaakulana y'okunoonyereza: Alipoota n'ennyanjula awamu n'ebiwandiiko ebirala ebiyinza okubaawo eby'ebizuuliddwa mu kunoonyereza ebikuŋŋaanyiziddwa bijja kugabana n'abakulu abakwatibwako n'ekigendererwa eky'okulongoosa okutwala okugema HPV.

Okukkiriza okunoonyereza kuno: Okukkiriza empisa mu kunoonyereza kuno kwaweebwa akakiiko akakwasisa empisa mu kunoonyereza ku by'obulamu bw'abantu mu Makerere School of Public Health Research Ethics Committee (SPHREC), akakkirizibwa olukiiko lwa ssaayansi ne tekinologiya mu Uganda National Council of Science and Technology (UNCST).

Ekiwandiiko ekikkiriza: Nsomye era ntegedde ebikwata ku kunoonyereza.

☐ Nzikiriza omwana wange okwetaba mu kunoonyereza kuno .

☐ Sikkiriza mwana wange okwetaba mu kunoonyereza kuno .

Erinnya ly'omuzadde/omukuza: .....

Omukono:..... Ekipapula ky'engalo ensajja:.....

Olunaku olw'omweezi: ……

Erinnya ly'omunoonyereza/omuntu okufuna okukkiriza: .....

Okutekako omukono: ……

Olunaku olw'omweezi: ……

FFOOMU Y'OKUKAKASA ABAVUBUKA (EMYAKA 13–17) MU FGDs

Omutwe gw'okunoonyereza:

Okugema ddoozi emu eya Human Papillomavirus mu bawala abato ab'emyaka 13-19 mu disitulikiti y'e Wakiso, Uganda

Omukugu akola okunoonyereza: Ms. Nabaasa Janepher; Essimu: 0702771225 oba 0781225066; Email: nabasaj2@gmail.com; Department of Epidemiology and Biostatistics, Makerere University School of Public Health.

Enyanjula: Nkulamusizza, amannya gange nze ....., okuva mu Makerere School of Public Health. Njagala okukubuuza ebibuuzo ku biziyiza n'ebikwasaganya okugema eddagala lya HPV erya ddoozi emu mu bawala abato ab'emyaka 13–19 mu Disitulikiti y'e Wakiso. Nga tetunnatandika, njagala okukuwa ebikwata ku kusoma, era oyanirizibwa okubuuza ebibuuzo byonna by'oyinza okuba nabyo. Osobola n'okwogera n'omuntu gwe weesiga ku kunoonyereza kuno bw'oba oyagala. Singa ekitundu kyonna ku mawulire tekitegeerekeka bulungi, wulira nga oli waddembe okusaba okunnyonnyolwa.

Ekigendererwa: Ekigendererwa ky'okunoonyereza kuno kwe kutegeera ebiziyiza n'ensonga ezikwanguyiza oba okukaluubiriza abawala abato okufuna eddagala lya HPV erya ddoozi emu mu Disitulikiti y'e Wakiso. Twagala okuyiga ku kumanya kwo, endowooza yo, by'oyitamu, n'endowooza yo ku ddagala erigema HPV. Amawulire g'ogabana gajja kutuyamba okutegeera obulungi engeri y'okutumbula okufuna eddagala erigema HPV eri abawala ab'emyaka gyo n'okukola pulogulaamu ezituukiriza ebyetaago by'abavubuka mu kitundu.

Enkola n'okwetaba mu ngeri ey'obwannakyewa: Ojja kusabibwa okwetaba mu kukubaganya ebirowoozo mu kibiina (FGD) okumala eddakiika nga 30–60. Okwetabamu kwa kyeyagalire, era osobola okuvaamu essaawa yonna.

Emigaso egisobola okufunibwa: Oyinza obutafuna mugaso gwonna ngw'obuntu obutereevu okuva mu kwetabamu, naye amawulire g'ogenda okuwa gayinza okuyamba okutumbula enteekateeka z'okugema HPV n'obuweereza bw'ebyobulamu eri abawala abatiini mu Disitulikiti y'e Wakiso n'ebitundu ebifaananako bwe bityo mu Uganda n'okusingawo.

Obulabe n'ebizibu ebivaamu: Okunoonyereza kuno kuleeta obuzibu butono nnyo eri abajjibwamu. Ebibuuzo ebimu biyinza okukuleetera obutamala ganzi oba okukukwasa ku mutima, nnyo nga bwe tubuuza ku nsonga ez'ekyama. Olina eddembe okusomoka ku kibuuza kyonna ky'otayagala kuddamu, oba okuva mu kunoonyereza wakati w'omu kiseera kyonna nga

toyitiriddwa ku nsonga yonna. Tetusubira kusangako buzibu bw'omubiri, obw'abantu mu maka, oba obw'omutima.

Ebyama: Amawulire agagenda okukunganyizibwa gajja kukuumibwa nga tegamanyiddwa mannya era nga ga kyama okusinziira ku mutindo gw'empisa ogw'ensi yonna n'ogw'omu kitundu ogufuga okunoonyereza okuzingiramu abantu ng'abeetabye mu kunoonyereza. Endagamuntu yo ejja kukwekebwa, erinnya lyo terijja kulabika wonna ku foomu eziriko enkoodi n'amawulire ago oba mu bitabo byonna ebiva mu kunoonyereza. Ttiimu y'okunoonyereza y'egenda okuba yokka ng'erina obuyinza okufuna ebikwata ku bantu abakung'aanyiziddwa. Ebiwandiiko n'ebiwandiiko ebiwandiikiddwa bijja kukuumibwa wansi w'okusiba n'ekisumuluzo ekikakali, era amawulire agali ku kompyuta gajja kukuumibwa nga gakuumibwa nga gakuumibwa nga gakuumibwa ebigambo by'okuyingira.

Okuliyirira okwetaba mu kunoonyereza: Ojja kuliyirirwa omutwalo gumu (10,000/=).

Ebibuuzo ebikwata ku kusoma: Olina ekibuuzo kyonna ekikwata ku kusoma ky'oyagala nziramu? Bw'oba olina ekibuuzo kyonna oluvannyuma, oyinza okutuukirira Mukyala Nabaasa Janepher, Omunoonyereza omukulu ku ssimu: 0702771225 oba 0781225066 oba Email: nabasaj2@gmail.com

Ebibuuzo ebikwata ku ddembe ly'abeetabye mu kunoonyereza: Bw'oba olina ebibuuzo ebikwata ku bulamu bwo n'eddembe lyo ng'omuntu eyeetabye mu kunoonyereza, osobola okuweereza ebibuuzo byo eri: Dr. Joseph Kagaayi, Ssentebe w'akakiiko akakwasisa empisa mu kunoonyereza ku by'obulamu mu Makerere School of Public Health Research Ethics Committee ku +256773785333; E-mail: jkagaayi@musph.ac.ug

Okubunyisa ebivudde mu kunoonyereza oba ebizuuliddwa mu kunoonyereza n'enkulaakulana y'okunoonyereza: Alipoota n'okwanjula wamu n'ebiwandiiko ebirala ebisoboka eby'ebizuuliddwa mu kunoonyereza ebikuŋŋaanyiziddwa bijja kugabibwa n'abakulu abakwatibwako n'ekigendererwa eky'okulongoosa enkola y'okugema HPV.

Okukkiriza okunoonyereza kuno: Olukusa lw'empisa mu kunoonyereza kuno lwaweebwa akakiiko akakwasisa empisa mu kunoonyereza ku by'obulamu mu yunivasite y'e Makerere (SPHREC), akakkirizibwa ekitongole kya Uganda National Council of Science and Technology (UNCST).

Ekiwandiiko ky'okukkiriza Teeka akabonero ku kasanduuko wansi okulaga okusalawo kwo:

☐ Nsomye oba ntegeezeddwa ku kunoonyereza kuno. Ntegedde kye kikwatako era nzikirizza okwetabamu.

☐ Saagala kwetaba mu kusoma.

Erinnya ly'omuvubuka: ……

Omukono: ……

Olunaku: ……

Erinnya ly'omunoonya/omuntu atwala okweekiriza: ……

Omukono: …… Olunaku: ……

FFOMU Y'OKUKIRIZA OKW'AMATEEKA OKUVA KU'ABAKULU/ABAZADDE OKWETABULA MU FGDs

Omutwe gw'okunoonyereza: Okugema ddoozi emu eya Human Papillomavirus mu bawala abato ab'emyaka 13-19 mu disitulikiti y'e Wakiso, Uganda

Omukugu akola okunoonyereza: Ms. Nabaasa Janepher; Essimu: 0702771225 oba 0781225066; Email: nabasaj2@gmail.com; Department of Epidemiology and Biostatistics, Makerere University School of Public Health.

Enyanjula: Nkulamusizza, amannya gange nze ....., okuva mu Makerere School of Public Health. Njagala ku kwasaganya nawe ku' okugema eddagala lya HPV erya ddoozi emu mu bawala abato ab'emyaka 13–19 mu Disitulikiti y'e Wakiso. Nga tetunnatandika, njagala okukuwa ebikwata ku kusoma, era oyanirizibwa okubuuza ebibuuzo byonna by'oyinza okuba nabyo. Osobola n'okwogera n'omuntu gwe weesiga ku kunoonyereza kuno bw'oba oyagala. Singa ekitundu kyonna ku mawulire tekitegeerekeka bulungi, wulira nga oli waddembe okusaba okunnyonnyolwa.

Ekigendererwa: Ekigendererwa ky'okunoonyereza kuno kwe kutegeera ebiziyiza n'ensonga ezikwanguyiza oba okukaluubiriza abawala abato okufuna eddagala lya HPV erya ddoozi emu mu Disitulikiti y'e Wakiso. Twagala okuyiga ku kumanya kwo, endowooza yo, by'oyitamu, n'endowooza yo ku ddagala erigema HPV. Amawulire g'ogabana gajja kutuyamba okutegeera obulungi engeri y'okutumbula okufuna eddagala erigema HPV eri abawala ab'emyaka gyabwe n'okukola pulogulaamu ezituukiriza ebyetaago by'abavubuka mu kitundu.

Enkola n'okwetaba mu ngeri ey'obwannakyewa: Ojja kusabibwa okwetaba mu kukubaganya ebirowoozo mu kibiina okumala eddakiika nga 30–60. Okwetabamu kwa kyeyagalire, era osobola okuvaamu essaawa yonna.

Emigaso egisobola okufunibwa: Oyinza obutafuna mugaso gwonna ogw'obuntu obutereevu okuva mu kwetabamu, naye amawulire g'ogenda okuwa gayinza okuyamba okutumbula enteekateeka z'okugema HPV n'obuweereza bw'ebyobulamu eri abawala abatiini mu Disitulikiti y'e Wakiso n'ebitundu ebifaananako bwe bityo mu Uganda n'okusingawo.

Obulabe n"ebizibu ebivaamu: Okunoonyereza kuno kuleeta obuzibu butono nnyo eri abajjibwamu. Ebibuuzo ebimu biyinza okukuleetera obutamala ganzi oba okukukwasa ku mutima, nnyo nga bwe tubuuza ku nsonga ez'ekyama. Olina eddembe okusomoka ku kibuuza kyonna ky'otayagala kuddamu, oba okuva mu kunoonyereza wakati w'omu kiseera kyonna nga

toyitiriddwa ku nsonga yonna. Tetusubira kusangako buzibu bw'omubiri, obw'abantu mu maka, oba obw'omutima.

Ebyama: Amawulire agagenda okukunganyizibwa gajja kukuumibwa nga tegamanyiddwa mannya era nga ga kyama okusinziira ku mutindo gw'empisa ogw'ensi yonna n'ogw'omu kitundu ogufuga okunoonyereza okuzingiramu abantu ng'abeetabye mu kunoonyereza. Endagamuntu yo ejja kukwekebwa. Erinnya lyo terijja kulabika wonna ku foomu eziriko enkoodi eziriko amawulire ago oba mu bitabo byonna ebiva mu kunoonyereza. Ttiimu y'okunoonyereza y'egenda okuba yokka ng'erina obuyinza okufuna ebikwata ku bantu abakung'aanyiziddwa. Ebiwandiiko n'ebiwandiiko ebiwandiikiddwa bijja kukuumibwa wansi w'okusiba n'ekisumuluzo ekikakali, era amawulire agali ku kompyuta gajja kukuumibwa nga gakuumibwa nga gakuumibwa nga gakuumibwa ebigambo by'okuyingira.

Okuliyirira okwetaba mu kunoonyereza: Ojja kuliyirirwa omutwalo gummu (10,000/=).

Ebibuuzo ebikwata ku kusoma: Olina ekibuuzo kyonna ekikwata ku kusoma kw'oyagala nfune? Bw'oba olina ekibuuzo kyonna oluvannyuma, oyinza okutuukirira Ms. Nabaasa Janepher, Principal Investigator ku ssimu: 0702771225 oba 0781225066.Oba Email: nabasaj2@gmail.com

Ebibuuzo ebikwata ku ddembe ly'abeetabye mu kunoonyereza: Bw'oba olina ebibuuzo ebikwata ku bulamu bwo n'eddembe lyo ng'omuntu eyeetabye mu kunoonyereza, osobola okuweereza ebibuuzo byo eri: Dr. Joseph Kagaayi, Ssentebe w'akakiiko akakwasisa empisa mu kunoonyereza ku by'obulamu mu ssomero lya Makerere ku +256773785333; E-mail: jkagaayi@musph.ac.ug

Okubunyisa ebivudde mu kunoonyereza oba ebizuuliddwa mu kunoonyereza n'enkulaakulana y'okunoonyereza: Alipoota n'okwanjula wamu n'ebiwandiiko ebirala ebisoboka eby'ebizuuliddwa mu kunoonyereza ebikuŋŋaanyiziddwa bijja kugabibwa n'abakulu abakwatibwako n'ekigendererwa eky'okulongoosa enkola y'okugema HPV.

Okukkiriza okunoonyereza kuno: Olukusa lw'empisa mu kunoonyereza kuno lwaweebwa akakiiko akakwasisa empisa mu kunoonyereza ku by'obulamu mu yunivasite y'e Makerere (SPHREC), akakkirizibwa ekitongole kya Uganda National Council of Science and Technology (UNCST).

Ekiwandiiko ekikkiriza: Nsomye era ntegedde ebikwata ku kunoonyereza.

☐ Nzikiriziganya okwetaba mu kunoonyereza kuno

☐ Sikkiriza kwetaba mu kunoonyereza kuno

Erinnya: ……

Omukono: ……

Olunaku: ……

Erinnya ly'omunoonya/omuntu atwala okweekiriza: ……

Omukono: …… Olunaku: ……

EKITABO KYA FOCUS GROUP DISCUSSION (FGD) – ABAWALA ABAVUBUKA (EMYAKA 13–19)

Omutwe gw'okunoonyereza:

Okugema akawuka ka Human Papillomavirus ka ddoozi emu mu bawala abato ab'emyaka 13-19 mu disitulikiti y'e Wakiso, Uganda

Omunoonyereza: Mukyala Nabaasa Janepher; Essimu: 0702771225 oba 0781225066; Email: nabasaj2@gmail.com ku mukutu gwa yintaneeti; Ekitongole ky'eby'obulwadde n'ebibalo by'ebiramu, Makerere University School of Public Health.

Olunaku	
Omuwendo gw'abeetabye mu kunonyereza	
Omukubiriza	
Omuwandiisi	
Ekimanyisa FGD	
Ekifo	
Obudde	**Yatandise……. Yaggwa …….**

Enyanjula: Ebiwandiiko

- Yanirizza abeetabye mu kukubaganya ebirowoozo era onnyonnyole ekigendererwa ky"okukubaganya ebirowoozo.
- Okukakasa ebyama n'okwetabamu kyeyagalire.
- Noonya okukkiriza okuva mu beetabye mu kunonyereza kuno.

Ekitundu A: Okumanya n"okumanya okwa bulijjo ku HPV n"okugema.

1. Owulidde ku ddagala lya HPV? Bwe kiba nti yee, wakiyigirako?
2. Kiki ky'omanyi ku HPV n'eddagala lyayo?
3. Olowooza eddagala erigema HPV ligendereddwamu ki?

Ekitundu B: Okugema HPV

4. Ggwe oba mikwano gyo mufunye eddagala lya HPV? Lwaki oba lwaki nedda?
5. Nsonga ki ezimu abawala ab'emyaka gyo gye bayinza okusalawo okugema?
6. Nsonga ki ezimu eziviirako abawala ab'emyaka gyo obutagemebwa?

Ekitundu C: Ebiziyiza n‟abakwanaganya

7. Kiki ekyanguyiza abawala abatiini okufuna eddagala lya HPV mu kitundu kyo/essomero lyo? *Probe*

8. Kusoomoozebwa ki abawala kwe boolekagana nakwo nga bagezaako okugema eddagala lya HPV?

9. Ani akwata ku kusalawo kwo okugema (abazadde, abasomesa, abakozi b’ebyobulamu, banno)? 10. Olowooza kiki ekirina okukolebwa okukubiriza abawala bangi okugema?

FGD GUIDE – ABAZADDE/ABALABIRIRA ABAWALA ABAVUBUKA (EMYAKA 13–19) ***Luganda Version***

Omutwe gw'okunoonyereza:

Okugema akawuka ka Human Papillomavirus ka ddoozi emu mu bawala abato ab'emyaka 13-19 mu disitulikiti y'e Wakiso, Uganda

Omunoonyereza:

Mukyala Nabaasa Janepher; Essimu: 0702771225 oba 0781225066; Email: nabasaj2@gmail.com ku mukutu gwa yintaneeti; Ekitongole ky'eby'obulwadde n'ebibalo by'ebiramu, Makerere University School of Public Health.

Olunaku	
Omuwendo gw'abeetabye mu kunonyereza	
Omukubiriza	
Omuwandiisi	
Ekimanyisa FGD	
Ekifo	
Obudde	**Yatandise…… Yaggwa ……..**

Enyanjula: Ebiwandiiko

– Yanirizza abeetabye mu kukubaganya ebirowoozo era onnyonnyole ekigendererwa ky"okukubaganya ebirowoozo.

– Okukakasa ebyama n'okwetabamu kyeyagalire.

– Noonya okukkiriza okuva mu beetabye mu kunonyereza kuno.

Ekitundu A: Okumanyisa n'okumanya ku HPV n'okugema.

1. Owulidde ku ddagala erigema akawuka ka Human Papillomavirus (HPV)? Bwe kiba nti yee, amawulire ago wagaggya wa?

2. Kiki ky'omanyi ku HPV n'eddagala erigema okugiziyiza? Probe

3. Otegeera ki ku kigendererwa ky'okugema HPV eri abawala? Probe more

Ekitundu B: Obumanyirivu n'endowooza ku kugema HPV.

4. Muwala wo (oba omuwala yenna gw'omanyi) afunye eddagala lya HPV? Lwaki oba lwaki nedda?

5. Olowooza kiki ekikubiriza abazadde abamu okulaba nga bawala baabwe bagemebwa?

6. Biki ebibaluma oba ensonga ezireetera abazadde oba abalabirira abamu okulonzalonza okukkiriza bawala baabwe okugema eddagala lya HPV?

Ekitundu C: Ebiziyiza n'abakwanaganya.

7. Kiki ekyanguyiza abawala okufuna eddagala lya HPV mu kitundu kyo oba mu ssomero lyo?

8. Bizibu ki oba kusoomoozebwa ki amaka oba abawala kwe boolekagana nakwo nga bagezaako okufuna eddagala erigema?

9. Ani akwata ku kusalawo kwo oba okugema muwala wo oba nedda (okugeza, abakozi b'ebyobulamu, abasomesa, bannaddiini, abakulembeze b'ekitundu)?

10.Kiki ky'oyinza okuteesa okuyamba abazadde oba abalabirira abawera okuwagira okugema bawala baabwe okwa HPV?