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Acceptability of HPV vaccine among adolescent girls and young women in Sub-Saharan Africa: A Systematic review

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FACULTY OF HEALTH SCIENCES

SCHOOL OF PUBLIC HEALTH

Acceptability of HPV vaccine among adolescent girls and young women in Sub-Saharan Africa: A Systematic review

By

Mokete Motlatsi

Student number: 560255

A research report submitted to the Faculty of Health Sciences in partial fulfilment of the requirement for a Master of Science degree in Epidemiology in the field of Implementation Science

Declaration

I, Mokete Motlatsi, declare that this research report is my own, unaided work. It is being submitted for the Degree of Epidemiology at the University of the Witwatersrand, Johannesburg. It has not been submitted before for any degree or examination at any other University.

Mokete Motlatsi_ 

Date: 2024-08-28

Dedication

This research work is dedicated to Morena Mohlomi.

To my laid husband, who have been a constant source of inspiration, encouragement, and unwavering support throughout this journey. Your belief in me and your encouragement have fuelled my perseverance during the challenges encountered in this academic endeavour.

Your love, patience, and understanding have been my anchor, guiding me through the highs and lows of this academic pursuit. This work stands as a testament to the profound impact you have had on my life and academic journey.

May this dedication serve as a token of my gratitude and appreciation for all that you have done. Thank you for being my rock and my guiding light in this lifetime and may soul find eternal peace.

Abstract

Background: Human papillomavirus (HPV) is a common sexually transmitted infection and a precursor of cervical cancer in women. It is a significant public health concern globally, particularly in Sub-Saharan Africa where cervical cancer incidence rates are among the highest in the world. HPV vaccination has emerged as a key preventive strategy to reduce the burden of HPV-related diseases, including cervical cancer. Therefore, understanding the acceptability of the HPV vaccine among adolescent girls and young women in Sub-Saharan Africa is crucial for a successful vaccination program.

Aim: The aim of this review was to synthesise existing qualitative research on factors associated with HPV vaccine acceptability among adolescent girls and young women (AGYW) to highlight programmatic gaps for successful scale-up and penetration of the vaccine in sub-Saharan Africa.

Methods: The review was conducted in line with the Joanna Briggs Institute (JBI) methodology for qualitative reviews and meta-aggregation. The key search terms used the operator "or" to combine the synonyms and the operator "and" to filter the results which contained the desired terms. The keywords used were HPV vaccine, acceptability, adolescent girls, young women, Sub-Saharan Africa. The databases searched included EBSCO-host, ProQuest, and MEDLINE/PubMed, Web of Science and Google Scholar.

Results: There were 19 findings derived from the included studies which were further analysed through meta-aggregation from four SSA countries. Data collection was mainly through focus group discussion of AGYW. Aggregated quotes were narrated through a synthesis of findings which identified a range of motivators, deterrents and agency problem influencing vaccine acceptability. Motivators included knowledge, awareness, and peer influence, while deterrents included safety concerns and agency problem included autonomy to decision making among adolescents and female caregivers.

Conclusion: There is a complex interplay of factors influencing HPV vaccine acceptance, which underscores the importance of targeted interventions to address misconceptions, improve access to vaccination services, and promote informed consent on HPV vaccination among adolescent girls and young women in Sub-Saharan Africa. Further research is needed to explore the effectiveness of interventions aimed at increasing HPV vaccine acceptability and coverage in Sub-Saharan Africa.

Protocol registration:

PROSPERO identifier: CRD42024500565

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Mokete, Motlatsi Mary

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Acronyms

HPV: Human Papilloma Virus

AGYW: Adolescent Girls and Young Women

SSA: Sub-Saharan Africa

WHO: World Health Organization

LMICs: Low- and Middle-Income Countries

MSM: Men who have Sex with Men

CDC: Centre for Disease Control

HIV: Human Immune Virus

SRH: Sexual Reproductive Health

GIVS: Global Immunization Vision and Strategy

JBI: Joanna Briggs Institute

SUMARI: Systems for Unified Management of Assessment and Review of Information

Chapter 1. Introduction

1.1.Background

The Human Papilloma Virus vaccine has been shown to have high efficacy in the eradication of Human Papilloma Virus (HPV) (1), a sexually transmitted infection which is the primary causative agent of cervical cancer. In 2020, the World Health Organization (WHO) estimated that there were 604,000 new cases of cervical cancer and 342,000 deaths from the disease worldwide, and 90% of these undesirable occurrences were reported in low-income countries including Sub-Saharan Africa (2). The outcomes, which include morbidity and mortality of this malignancy are usually dire. The study therefore explored the qualitative literature that documented acceptability of the HPV vaccine to provide valuable insights into factors promoting or hindering its acceptance among its end-users, adolescent girls and young women (AGYW) in Africa.

Cervical cancer ranks as the fourth most prevalent cancer among women arising from prolonged high-risk human papillomavirus (HR-HPV) infection worldwide (3). Approximately 75% to 80% of sexually active individuals are expected to come into contact with the (HPV) during their lifetime (4). Though the HPV strains are many, estimated to be over 100, the viruses are short-lived and are transient, they are typically eliminated by the body's immune system without requiring treatment. Nonetheless, persistent infection may occur, potentially resulting in the formation of cancerous cells (5).

In August 2020, the World Health Assembly approved a resolution to accelerate efforts towards the eradication of cervical cancer. This involved the adoption of comprehensive health system strategies targeting the prevention of cervical cancer. It would be achievable through three-step preventative coverage, which encompasses vaccination, cervical cancer screening and access to treatment services targets by 2030 (6). Among these interventions, prevention through vaccination was identified as a favourable and effective strategy (7).

As a result, the World Health Organization (WHO) supported a two-dose regimen for the HPV vaccine administered to girls aged 9–14 years with a 6–12-month interval between doses (prior to sexual debut). A triple dosage catch-up immunization is recommended for women over 15 years who have high-risk behaviours, with the main goal being to halt cervical cancer (8,9).

In many SSA countries, The HPV vaccine has been pioneered as an initiative supported by the Global Alliance for Vaccine Initiatives (GAVI). GAVI initially provided support to eight countries starting from 2013/2014. There has been an increase in sub-Saharan African (SSA) countries that have implemented the HPV vaccine since its introduction. However, there is limited data available regarding the factors influencing end-user acceptance.

1.2. Problem statement:

HPV is a leading factor in the development of cervical cancer, which is the second most common cancer in African women, following breast cancer (10). Each year, approximately 493,000 new cases of cervical cancer are diagnosed globally, with 80% reported in developing countries (11). Nearly 300,000 women succumb to cervical cancer annually, with disparities in healthcare access, socioeconomic status, and exposure to HPV and HIV infection disproportionately affecting black women (12). Vaccination of girls alongside screening and treatment services for HPV for older women reduce their risk of getting cervical cancer. However, there is inadequate uptake of HPV vaccines worldwide. To date, only about 64%, countries have integrated the HPV vaccine into their national immunization programs for girls (13). This low uptake has been mostly identified in LMICs (14). Vaccine coverage and dose completion rates have declined over the years since the introduction of the vaccine, delaying progress toward achieving global elimination target of 90% in African countries (14). In addition, there is fragmentary knowledge on what constitutes acceptance of the HPV vaccine in SSA.

1.3.Justification:

The high incidence of cervical cancer among young women, especially those living with HIV or facing heightened risk, underscores the urgent need to enhance HPV vaccination campaigns across Africa. Understanding the factors influencing vaccine acceptance is crucial for informing policymakers, governments, and the Expanded Programs on Immunization (EPI) guidelines, focusing specifically on factors associated with acceptability in SSA.

1.4. Aim:

To synthesise the qualitative literature on the factors associated with HPV vaccine acceptability in adolescent girls and young women in Sub Saharan African countries.

1.5.Research question:

What are factors associated with acceptability of HPV vaccine among adolescent girls and young women in Sub-Saharan Africa?

1.6. Objectives:

1. To describe HPV vaccine acceptability among adolescent girls and young women in Sub Saharan Africa (2010-2022)
2. To determine factors associated with HPV vaccine acceptability among adolescent girls and young women in Sub-Saharan Africa (2010-2022)

1.7.Literature review:

This chapter presents the epidemiology and development of cervical cancer through contracting HPV. It further establishes the relationship between HPV and cervical cancer, and primary prevention of cervical cancer specifically, HPV prevention through vaccination. It also provides information on people's perceptions, and acceptance reported by various groups of individuals and context concerning the HPV vaccine. Finally, the literature review highlights the gaps in the literature, which made the researcher see the importance of conducting this study on acceptance of HPV vaccine by adolescent girls and young women as the direct beneficiaries or end users for HPV vaccine.

<u>The Epidemiology of HPV and relationship with cervical cancer:</u>

The HP virus infects basal keratinocytes of the mucosal and cutaneous epithelia and is the cause of common dermatologic diseases as well as of other types of cancers (13). There are more than 100 types of HPV which are classified in various ways, including by their potential to induce cancer (16). There are 14 strains considered to be high-risk (oncogenic) that can cause cancers of the vulva, vagina, penis, anus, oropharynx and most commonly the cervix. Furthermore, persistent infection with certain "high risk" strains, such as HPV 16, 18, 31, 33, 34, 35, 45, 52, 56, and 58 is responsible for approximately 90% of all cervical cancer cases worldwide (15), with HPV type 16 being the most oncogenic in humans (9).

It is estimated that HPV contributes to approximately 36,000 cases of cancer annually in both men and women in the United States (15). Cancer of cervix is a substantial health concern on a global scale, particularly affecting women in low- and middle-income countries. According to the World Health Organization (WHO), cervical cancer ranks as the fourth most prevalent among women worldwide (14). Nartey and colleagues indicate that over eighty-five percent of newly diagnosed cases of the illness are occurring in low- and middle-income countries (LMICs) (16). Inadequacy of understandable commitment, policy direction and resources hinder the maximisation of some of the initiatives implemented to contain the cervical cancer cases in many LMICs.

Sub-Saharan Africa bears a disproportionate burden of cervical cancer, with some of the highest incidence rates and death toll worldwide (17). As per the International Agency for Research on Cancer (IARC), this accounts for approximately 22% of global instances of cervical cancer and 25% of fatalities due to cervical cancer, despite comprising only 13% of the world's female population (17) . Different factors contribute to the elevated occurrence of cervical cancer in Sub-Saharan Africa, including limited access to screening and preventive services, high prevalence of HPV infection, lack of HPV vaccination programs, and socio-economic disparities (18).

The background of the HPV Vaccine:

Despite the reported case fatality rate, cervical cancer can be avoided through immunization, early detection, and screening (7). The HPV vaccine was introduced in 2006 (7,22,23), and serves as an efficient primary protection against the high-risk types that are most likely to cause cancer, such as HPV types 16 and 18. It also covers other types that cause genital warts, such as HPV types 6 and 11, reducing the incidence of cervical cancer by more than 75 to 90% (20,21).

There are currently three licensed HPV vaccines classified as bivalent which protect against two HPV types: 16 and 18 these strains are linked to approximately 70% of cervical cancers and other HPV-related cancers. The quadrivalent vaccine protects against four HPV types: 6, 11, 16, and 18 which are additionally associated with approximately 90% of genital warts, and the nonavalent protects against nine HPV types: 6, 11, 16, 18, 31, 33, 45, 52, and 58. The expanded coverage includes five additional high-risk HPV types (31, 33, 45, 52, and 58) that are responsible for a significant portion of HPV-related cancers, and this is the most commonly

used vaccine. Since its approval, it was given in three dose schedules, while currently the 2-dose schedule has been approved by WHO. The three-dose schedule remains available for the immunocompromised individuals (9,27).

Moreover, since its recommendation, infections caused by the types responsible for many HPV-related cancers and genital warts have been prevented by more than 88% among teenage girls and 81% among young adult women (15)**.** This highlights the importance of vaccinating teenagers and young adults through the ages of 26 years who neither started nor finished the HPV vaccine series.

Barriers and facilitators to HPV vaccine:

Meanwhile the efforts made by the countries to introduce HPV vaccines into children's and adolescents' immunization programs proves to be suboptimal (4). For instance, Globally, HPV vaccine coverage remains only at 1.4% of all eligible girls who have received a full course of vaccination and in the US, vaccination rates for women persist at a modest level of approximately 63% (19). The same situation prevails in the SSA hemisphere (27) where the vaccination rates are estimated below 20%.

The low reported vaccination rates are strong indicators of increased rates of cervical cancer incidence across various populations (1,18). Across different settings, research has been undertaken to comprehend the factors affecting the willingness to accept the HPV vaccine. These factors include aspects such as knowledge about HPV and its associated diseases, attitudes towards vaccination, concerns about safety and side effects, cultural beliefs, religious beliefs, and socio-economic factors (12).

In many countries in SSA, cervical cancer screening programs are either unavailable or inaccessible to most women due to infrastructural challenges, limited healthcare resources, and cultural barriers. As a result, cervical cancer is oftentimes diagnosed in advanced stages, treatment options become restricted, leading to a grim prognosis. A study conducted by Brewer et al. (2007) examined the acceptability among parents in the United States and found that parents' acceptance of the vaccine was influenced by their knowledge about HPV and its link to cancer (24). Parents who were more aware of the risks associated with HPV were more likely to accept vaccination for their children. However, concerns about safety and side effects were identified as barriers to acceptance (5).

Furthermore, findings from studies conducted in England by Marlow and colleagues indicated that knowledge about HPV was generally low among participants, but once provided with information about the virus and its associated diseases, most participants expressed a positive attitude towards vaccination (25, 26). The study also highlighted the importance of healthcare providers in promoting vaccine acceptance through clear communication and addressing concerns.

Again, in a systematic review by Larson et al. (2014) which examined factors influencing HPV vaccine acceptance globally, several common barriers to acceptance were identified across different countries. They included concerns about safety and side effects, Insufficient awareness regarding HPV and its related implications to illness, cultural beliefs and norms, and vaccine cost (27). Other findings also highlighted significant contribution of healthcare providers, parents, and peer-influence in shaping vaccine acceptance (28). Once more, research conducted in the US, Canada, Europe, and Australia has indicated that the acceptability of the HPV vaccine is modelled in factors that revolve around the perception of cervical cancer as a familiar and serious health risk. Furthermore, the belief in the safety, effectiveness, and accessibility of the vaccine plays a significant role in influencing acceptability (29).

In addition to these studies, other research articles have explored the acceptability of the HPV vaccine in different populations and settings. For instance, the systematic review that reported on acceptability of HPV vaccine among European adolescents provided valuable insights into the factors influencing vaccine acceptance and the general findings indicated that understanding of HPV and acceptance of the vaccine remained moderate and exhibited significant variation across studies conducted in European Union (EU) countries (30). Collaborative endeavours should be undertaken to furnish the target population with pertinent information, enabling them to make informed decisions regarding HPV vaccination.

Studies conducted in Bolivia, Mexico, Kenya and South Africa reported that various factors can influence AGYW capacity and willingness to partake in programs intended to prevent cervical cancer (33). These factors were summarised into three broad categories: factors related to sociocultural norms, health care service delivery system and quality of care. The study conducted in Malawi on cervical cancer screening, found that Malawi had moderate

immunization and screening rates with coverage as minimal as 9% and 15%, distinctively in these preventive initiatives (34).

Globally, the variability of factors affecting the willingness to vaccinate has also been re-iterated by Susanto and colleagues. The factors identified in their study include healthcare infrastructure, cultural beliefs, education, and public health policies, knowledge and perception regarding HPV and HPV vaccination among adolescents (35). In addition, studies that focussed on the parents of the end-users, reported that women who tested positive for HPV were found to be more inclined than HPV-negative women to be aware of the vaccine. Additionally, they were more likely to express willingness to vaccinate both their daughters and sons against cervical cancer, even if they had to cover the costs themselves (30).

Furthermore, complete vaccine coverage among adolescent girls aged 10–20 years is more prevalent in high-income countries compared to low-income countries. In Africa, it stood at 1.2%, in Asia at 1.1%, in Europe at 31.1%, in Latin America and the Caribbean at 19%, in North America at 35.6%, and in Oceania at 35.9% in 2014. (36). Another contributing factor to low vaccine coverage is the insufficient rate of patient adherence to complete the HPV three-dose regimen. Numerous women commence the series but fail to complete it, and about 38% of eligible females get the complete dose vaccination. In a scoping review done on utilisation of the HPV vaccine in SSA the reported low initiation and completion rates of vaccination are said to be contributing factors to the high prevalence of HPV infection (37).

Additionally, focusing on teenagers' health care providers, most expressed a preference for a 2-dose HPV vaccination schedule over a 3-dose schedule (74% overall), with preferences varying from 45.2% in South Africa to 90.0% in South Korea. Reasons cited for this preference included lower cost, fewer clinic visits, and higher completion rates for the 2-dose schedule, as commonly reported by both providers and mothers. However, concerns regarding safety and efficacy were frequently cited as barriers to accepting the 2-dose schedule by both providers and mothers. (14,22 ,38,39).

Other studies similarly demonstrate migrants' women to be one vulnerable group to cervical cancer. And again, the group that demonstrate low willingness to get HPV vaccination, for instance in the US, Stalky and colleagues indicate that the vaccination rates for children of immigrant parents are considerably lower compared to those of children born to US-born

parents. (40,41). Some reported findings in high-income countries tell of higher incidence rates of cervical cancer among migrant women compared to native counterparts. This proves the need to identify and strengthen strategies to increase accessibility and use of preventive services among this population (42).

It cannot however be ignored that the introduction of the HPV vaccine has been gradually growing in the past years. It is further indicated that by June 2019, nine SSA countries have integrated HPV vaccination in their National Immunization Programs (NIPs): Rwanda (2011), it has been the pioneer in introduction of this vaccine, Lesotho (2012), Uganda (2012), Seychelles (2014), South Africa (2014), Botswana (2015), Sao Tome and Principe (2016), Senegal (2016), and Mauritius also (2016). While the other Twenty-two SSA countries have HPV vaccine demonstration projects running (43, 7).

At the point of scaling up, numerous national strategies have focused on vaccinating girls aged 12–13, operating under the assumption that boys would gain indirect protection from HPV through this approach i.e., "Herd immunity" (32). This further affirms the findings of various studies exploring the acceptance of HPV vaccine among male populations which reveal that refusal to vaccination is associated with the perception that vaccination holds no direct benefits for male children (31).

Several hindrances owe to health seeking behaviour of women and girls, which include lack of access to sexual and reproductive health (SRH). According to WHO it is estimated that 90% of deaths due to cervical cancer are attributed to difficulties associated with screening, prevention, early detection, and treatment services (44**).** Other shortcomings are related to competing health and economic needs which include human and material resources, diagnostic tests or equipment, and treatment facilities are among the factors that have been identified.

The barriers to HPV vaccination which have been identified within SSA, according to Kurosawa and colleagues include challenges which remains at implementing national programs at both initiation and sustainability levels while some of the identified barriers can be categorised into individual, structural, economic, community/social, and cultural issues (1) Additionally, limited awareness and perception of risk, coupled with high prevalence rates of

HIV within the population, Socio-structural inequities including gender-based violence are also included in the list of SRH challenges faced by young women (36).

At the same time, the list of problems facing the use of the HPV vaccine proves to be lengthy in adolescent girls. They include the family acceptance (45), and community perception related to the use of vaccines as prevention of HPV infection and cervical cancer. Furthermore, the level of education which demonstrated that individuals with a high education level showed low levels of willingness towards the HPV vaccine is also inclusive. Again, as much as some studies found acceptability high in certain African countries before the roll-out of the HPV vaccine, it has been considered counterintuitive as many individuals demonstrated low awareness of the vaccine (6).

On the other hand, the focus of the previous research conducted in this sphere has predominantly concentrated on obstacles within the health system and the supply side. These include issues such as health system capacity, limited access to medical care, low levels of cervical cancer screening, insufficient infrastructure, financial constraints, and inadequate training for healthcare workers. These systemic barriers have been identified as critical factors hindering the success of HPV vaccination initiatives (2,37). However, there is a need to understand the demand barriers which may affect the actual seeking behaviours of the vaccine by the relevant end-users which are the adolescents' girls and young women in SSA.

According to some of the published systematic reviews, which included several studies from the countries in Sub-Saharan Africa, the overall acceptability of the HPV vaccine among young girls and women in the region was found to be high. The reported willingness to vaccinate for most stakeholders was (69%), while fewer numbers showed hesitancy and some indecisive (46–48). However, one of these reviews also noted that there were significant differences in acceptability rates across different countries and setting (6).

1.8.The Social Ecological Framework:

The researcher deployed the CDC 2007 (49) social ecological model framework to organize and present the multiple factors affecting the acceptance of the HPV vaccine by AGYW. The framework emphasizes that acceptance of interventions is affected by the interaction between the individual, interpersonal, the group/community, and the physical, social, and political environments.

Individual factors:

These comprises an individual's attitudes, beliefs, and behaviours regarding vaccination. These are greatly influenced by knowledge and awareness, of which greater understanding and consciousness about HPV and cervical cancer prevention are associated with higher vaccine acceptance rates. Furthermore, perceived risk and severity to infection: individuals who consider themselves to be at elevated risk or HPV-related diseases to be severe are more likely to accept vaccination as well as the perceived benefits of vaccination.

Interpersonal factors:

The influence of peers, family members, and social networks can affect vaccine acceptance. Positive social norms surrounding vaccination and peer recommendations may promote acceptance, while stigma, misinformation, or peer pressure against vaccination may hinder acceptance.

Community factors:

These factors encompass various social, cultural, economic, and environmental aspects of the community context. The prevailing social norms and collective beliefs within a community shape attitudes towards vaccination. Encouraging societal attitudes that prioritize proactive healthcare behaviours as well as trust in vaccination can promote acceptance. Conversely, negative attitudes, stigma, or misinformation circulating within the community may hinder vaccine acceptance.

Societal/political factors:

These include policies and regulation against HPV vaccine. But also, public opinion and social influence within communities which shape vaccine acceptance. Peer recommendations, social circles and communal standards have a notable impact on individual attitudes and behaviours towards vaccination. Positive social norms that endorse vaccination as a social responsibility and promote collective immunity can foster acceptance. Conversely, stigma, fear, or misinformation circulated within social networks may contribute to vaccine hesitancy and decrease acceptance.

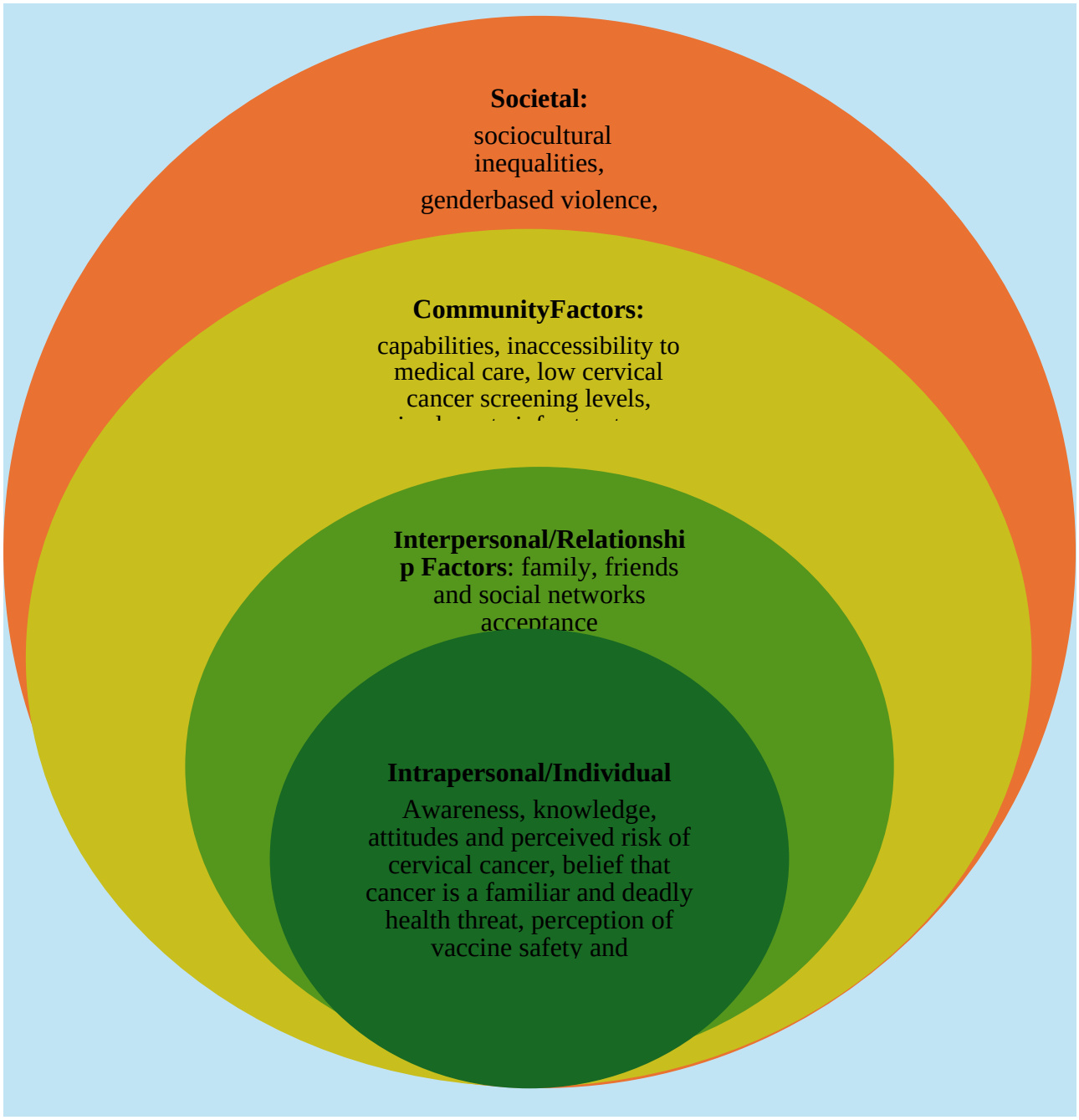


Figure 1. The Social Ecological Framework for HPV Vaccine acceptance (49)

2. Chapter 2: Methods

2.1. Study design:

This was a qualitative systematic review and meta-aggregation of existing qualitative studies reporting on acceptability of HPV vaccines among AGYW in Sub-Saharan Africa as broadly defined. It incorporated predictors, determinants or enablers of the vaccine acceptance, knowledge, attitudes, as well as perceptions. The review was conducted in line with the Joanna Briggs Institute (JBI) methodology for qualitative reviews and meta-aggregation (50).

2.1.1. Inclusion and exclusion criteria

The review consisted of primary qualitative and peer-appraised qualitative studies conducted in Sub-Saharan Africa. Qualitative data from mixed methods-studies, grounded theory, ethnography, action research and phenomenological studies reported in English language full text articles published from 2010 to 2022 were also screened and included. Excluded were non-human studies, non-empirical study materials such as books as well as studies written in any language other than English as there were no editors conversant in other languages, studies related to other HPV vaccine outcomes, articles that reported on quantitative research as well as systematic reviews.

2.1.2. Study Selection Framework

The JBI framework for qualitative studies which follows the Population Exposure/phenomena of interest and Context, (PICo) was used to align the study selection with the research question (50).

Table 1. PICo Framework

APPROACH	**INCLUSION**
P-Population	young girls and women
I-Phenomena of interest	HPV Vaccine acceptance
Co-Context	Sub-Saharan Africa

To ensure the applicability of this review the researcher included any primary qualitative studies that explored the willingness of AGYW in SSA to accept the vaccine. The key search

terms used, the operator “OR” to combine the synonyms and the operator “AND” to filter the required results, which contained the desired terms, see (appendix 2). In the context of this study, HPV vaccine acceptability means proclaimed or anticipated will and motive to undergo a vaccination, and not necessarily definite consumption and to what extent the vaccine might meet the needs of the target population(51).There are different age descriptions of AGYW, and according UNAIDS this is the age of 15-24, however, for the recommendation on HPV vaccine immunization and catch-up program, and the purpose of this study it is inclusive of girls aged above 9 years up to women aged 26 years (52). Sub-Saharan Africa (SSA) is according to United Nations the geographical area in the continent of Africa that lies south of the Sahara and consists of 46 African countries and territories that are fully or partially south of the Sahara as shown in figure 2 (53).

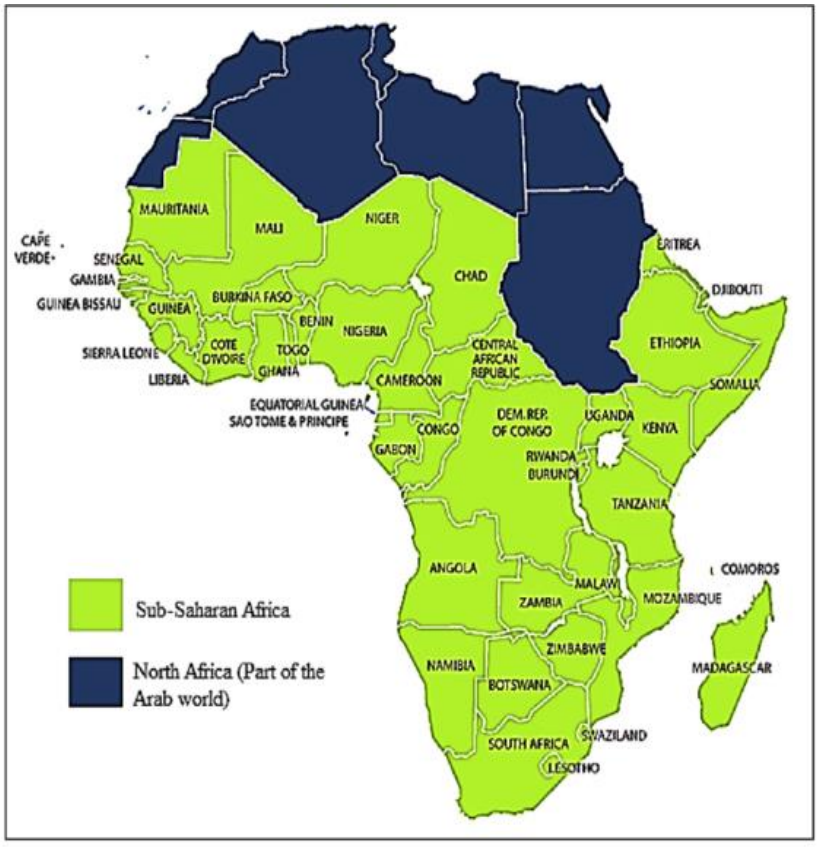


Figure 2. The Map of African Continent showing all the countries of SSA (54)

2.1.3. The Search Strategy:

The researcher employed a comprehensive and systematic online database search to identify eligible studies starting from June to July 2023. The databases used were EBSCO-host, ProQuest, MEDLINE/PubMed, Web of Science and Google Scholar. These were qualitative studies published from 2010 because this is when HPV vaccine was introduced in Africa and scale up in most SSA countries began after this date. To assist in mapping out the search terms and strategy the concept grid presented in table 2 was used.

Table 2. The Logic Grid:

Population	**Phenomena of Interest**	**Context**
Adolescent girls	HPV vaccine acceptance	Sub-Saharan Africa
Teen girls	Willingness to vaccinate	South of Sahara
Young women	Human Papillomavirus prevention	
Girls	Cervical cancer prevention	
Women	Cervical cancer vaccination	

2.1.4. Studies selection criteria

The hand and database search of titles and abstracts was done followed by screening of full text by two independent reviewers, the researcher, and the fellow student. The researcher deployed bibliographic data management software (Mendeley) for identification and removal of duplicates as well as storing all references selected for the review. The articles were transferred to Rayyan software for initial screening and further removal of duplicates and final list of selected studies for meta-aggregation was uploaded to the Joanna Briggs Institute Qualitative Assessment and Review Instrument (JBI SUMARI) software for further screening, quality assessment, appraisal, data extraction and synthesis. A total of 590 records were identified, 53 were removed due to duplication and 509 due to other reasons including the study setting outside of SSA, population as well as the phenomena of interest not aligned with the selection criteria. Twenty-nine records were screened of which 15 did not meet eligibility criteria again due to reasons including the study design and study population. Out of 12 studies which were retrieved, four were found to have ineligible study designs and two were duplicates. Another reviewer was invited to ensure quality against the set inclusion and exclusion criteria. All discarded references with reasons for rejection indicated are documented and reported in the review as indicated on the PRISMA chart flow (Figure 3).

2.1.5. Risk of Bias Assessment:

The extracted studies were critically appraised for methodological credibility using the standard Joanna Briggs Institute (JBI) critical appraisal checklist for qualitative studies before being included for analysis (50) The selected studies adhered to criteria pertaining to study design, sampling strategy, data collection methods, data analysis techniques, reflexivity, and the presentation of findings. The appraisal tool utilized comprises ten questions (appendix 4). Table 3 displays the scores of each study, with "Yes" or "No" allocated for each assessment question corresponding to the criteria. The studies scored well across all the questions except for question seven which required the influence of researcher on the included study; this statement was unclear in two studies and not found in one study. The overall score for all included studies is represented as a percentage based on the preset criteria question.

2.1.6. Critical Appraisal Results

Table 3. Critical Appraisal of Eligible Qualitative Research

Citation	**Q1**	**Q2**	**Q3**	**Q4**	**Q5**	**Q6**	**Q7**	**Q8**	**Q9**	**Q10**
Turiho AK, Okello ES, Muhwezi WW, Harvey S, Byakika-Kibwika P, Meya D, et al. 2014.	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Turiho AK, Okello ES, Muhwezi	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y

WW, Katahoire AR. 2017.										
Katahoire AR, Wani JA, Murokora D, Mugisha E, Lamontagne S, Lamontagne DS. 2013.	Y	Y	Y	Y	Y	Y	Y	Y	U	Y
Francis SA, Battle-Fisher M, Liverpool J, Hipple	Y	Y	Y	Y	Y	Y	U	N	Y	Y

L, Mosavel M, Soogun S, et al. 2011.										
Guillaume D, Rosen JG, Mlunde LB, Njiro BJ, Munishi C, Mlay D, et al. 2023.	Y	Y	Y	Y	Y	N	U	Y	Y	Y
Islam JY, Hoyt AM, Ramos S, Morgan K, Kim CJ, de	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y

Sanjose S, et al. 2018.										
Ports KA, Reddy DM, Rameshbabu A. 2013.	Y	Y	Y	Y	Y	Y	N	Y	Y	Y
Remes P, Selestine V, Changalucha J, Ross DA, Wight D, de Sanjosé S, et al. 2012.	Y	Y	Y	Y	Y	Y	Y	Y	U	Y
%	100.0	100.0	100.0	100.0	100.0	87.5	62.5	87.5	75.0	100.0

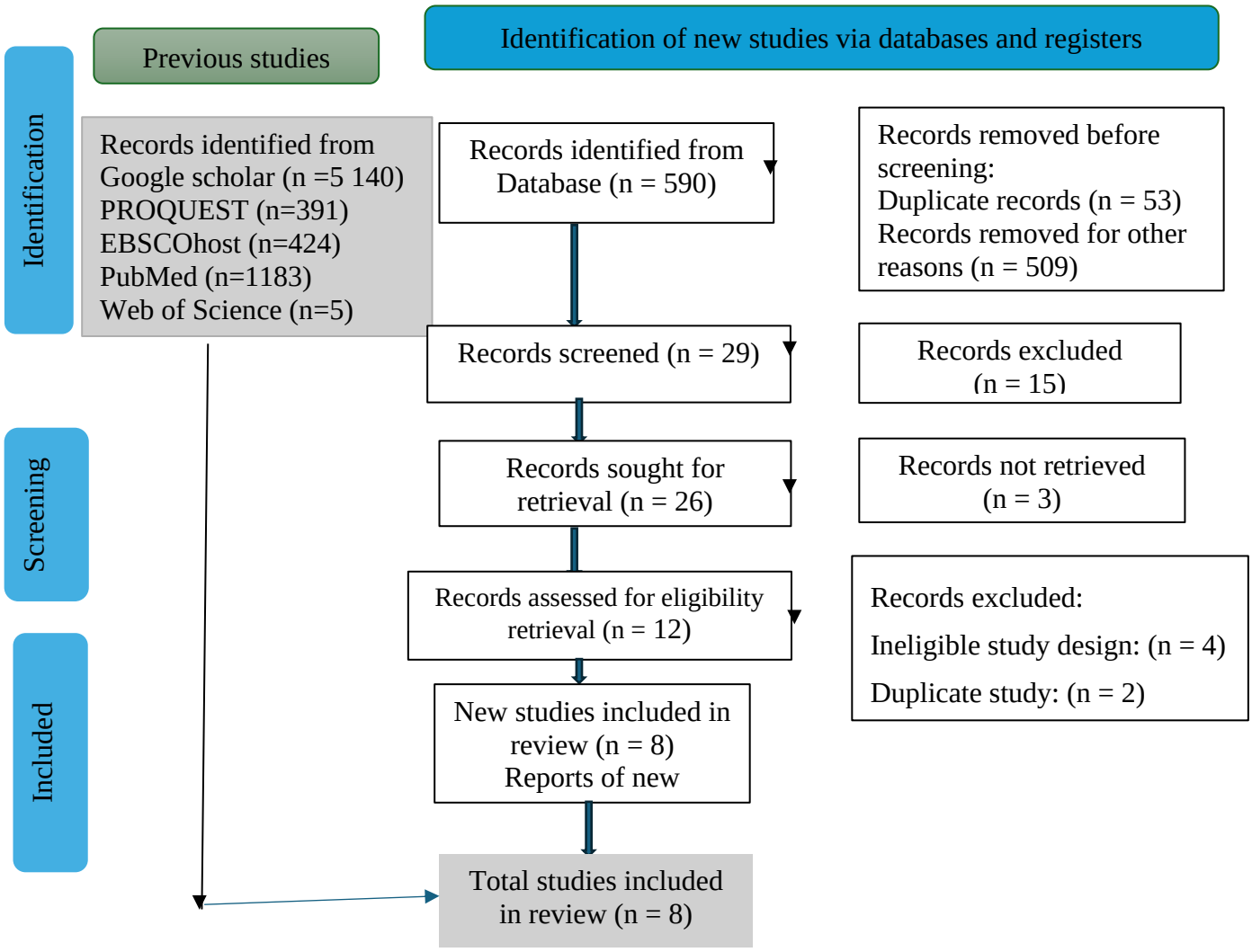


Figure 3. PRISMA chart flow of search strategy and results for studies reporting on acceptability of HPV vaccine among AGYW in SSA

2.1.7. Data extraction and Synthesis:

The selection of studies followed the Preferred Reporting Items for Systematic Reviews for qualitative studies (PRISMA 2020, Figure 3). Extracted data included the population of study, phenomena of interest and the context of each study. The reported findings followed the Joanna Briggs Institute meta-aggregative approach for synthesizing qualitative evidence, the findings were classified as either credible, unequivocal, and were categorized in relation to the

similarities of findings which were then subjected to meta-aggregation to get results, and narrative summary of the findings followed this synthesis.

2.1.8. Ethical Consideration:

The review did not utilise individualised data. The title was submitted for approval by the Public Health and Faculty of Health Sciences Graduate studies Committee (GSC) in March 2023. Study waiver clearance was obtained from University of Witwatersrand Human Research Ethics Committee on 2nd June 2023, with the reference number W-CBP-230602-01. The protocol for this study has also been registered with Joanna Briggs Institute as well and in PROSPERO registration CRD42024500565 accessible at PROSPERO. The results of this study will be shared with the University of Witwatersrand School of Public health and published as an article in a peer-reviewed journal.

3. Chapter 3: Results

Abstract and title screening followed by full text screening was done and eight articles were included in this review. After completing the appraisal process, each of the studies' findings was included and then grouped into categories based upon similarity and were then included and merged in meta-aggregation. There were 19 findings of which 15 were considered unequivocal that were clearly supported by the data and left little room for doubt or alternative interpretations. There were four credible findings which were supported by robust evidence and methodologically sound studies, ensuring reliability and validity. There were no unsupported findings. The findings were further categorised into motivators, five deterrents and two agency problems to HPV vaccine acceptance.

3.1. Study characteristics:

The included studies were conducted in countries in SSA (Malawi, Uganda, Tanzania, and South Africa). When other studies reported different stakeholders as participants, many participants and for the purposes of this review were primary school going girls and women. Data collection for the included studies was mainly at schools and health facilities. The primary technique of data collection was through the focus group discussions and data was analysed through thematic approach where the common ideas and patterns of the meaning were grouped together. Narrative was also done to interpret data based on personal experiences and motivations and content analysis were the main methods for qualitative data analysis across these studies (see appendix 3).

3.2. Findings:

This review has yielded a comprehensive understanding of the factors that impact vaccine acceptance within the region. It has particularly analysed eight qualitative studies, presented in Figure 4, to unveil patterns, themes, and insights surrounding HPV vaccine acceptability. Additionally, Figure 5 categorizes these themes into three broad categories, illustrating their prevalence across the studies. These themes serve as the foundation for describing HPV vaccine acceptance among these specific populations of interest.

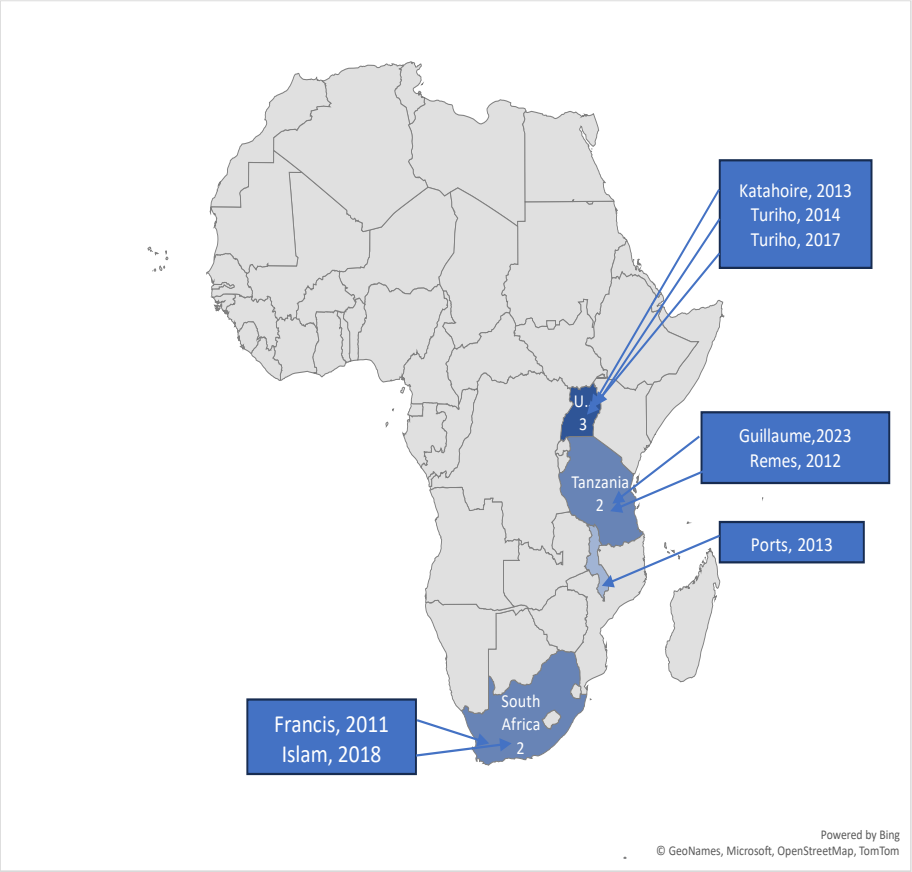
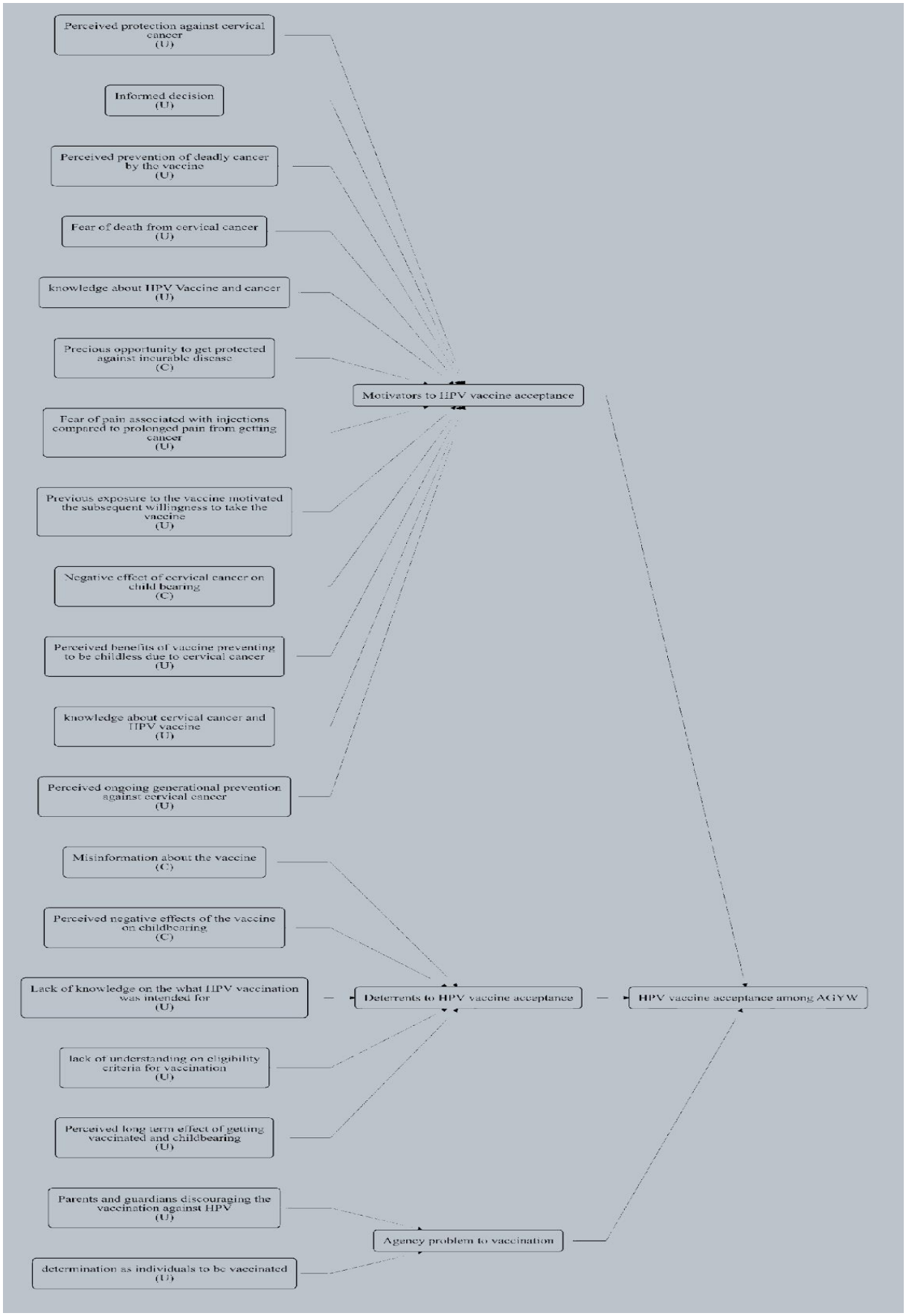


Figure 4. Included studies reporting on HPV vaccine acceptance mapped by country of origin.



*"U" = Unequivocal; C = "Credible"

Figure 5. The meta-aggregation of the themes and findings.

Synthesized finding 1:

Motivators to HPV vaccine acceptance:

Motivators encompass various factors that influence individuals' decisions or desire to receive the vaccine. Several findings were found to play part into the acceptance of the vaccine among the AGYW in these included articles. Among these findings, ten were found to be unequivocal while 2 of these were credible. Some of the positively influencing factors were found to be fear of cervical cancer which has been referred to as the incurable and painful malignancy seemed to be an appealing effect to the audience (55,56) this is further emphasised in the quote.

"*If you get the cancer you stay with it and keep crying till you die and I do not want that…my auntie suffered for a long time".*

Majority of the girls also seemed to be concerned about the impact of cervical cancer on their reproductive health, especially having children, for many the willingness to vaccinate seemed to stem from this concern which has been reported across all the articles (55,57,58), also quoted.

"I know that if I get cancer, I will not give birth and I do not want to be like that; that is why I decided to be vaccinated".

Moreover, for many there was no clear distinction between uterus and cervix, that is why cervical cancer was thought to affect the uterus at large. Another finding has been on the fear of pain associated with getting vaccinated, while one may think this could have been the hindrance to willingness to get the vaccine the end-users found it to be better as it will be only temporary as compared to the long-lasting pain from getting ill.

Furthermore, the readiness to vaccinate seemed dominant in those who demonstrated to have knowledge about the HPV, HPV vaccine and cervical cancer. The information about the vaccine is reported to have received from the health care providers and the schoolteachers,

"We were well taught by our teachers and health workers that the vaccine would be of benefit to us by preventing cervical cancer" (57).

Subsequently, this statement demonstrates that recommendation of healthcare providers also strongly influences the acceptance of the HPV vaccine. Trust in healthcare professionals and their endorsement of the vaccine also plays a major role. On the other hand, Participants who supported vaccination for their friends and prospective daughters did it with the aspiration of

ensuring continued intergenerational safeguarding of their uteri and cervixes against cancer, thus preserving the ability to bear children in the future. In a focus group discussion that involved the previously vaccinated adolescents the will to complete the remaining doses of the vaccine seemed to be also high.

Synthesized finding 2:

Deterrents to HPV vaccine acceptance:

Although there have been some remarkable findings on the influencers to HPV vaccine acceptance, there has been some numerous factors that have also been found to impede willingness to vaccinate among this age group. Some studies have identified concerns and barriers to HPV vaccine acceptance, including fear of side effects which most of the times it was thought to cause severe pain (55,57, 59).

"*I first feared taking the injection because I thought my arm would swell and I would not do any work or go to school".*

while on the other hand some thought it may affect their reproductive health, the lack of information and misinformation seemed to fuel the hindrance to willingness to vaccinate (59) for instance findings from one article indicated that the girls were told the vaccine will cause them to be barren as quoted.

"*I heard women in the village saying that girls that were vaccinated may not have babies in the future*" (55).

Lack of Awareness and Knowledge: Many girls and their parents including peers did not have sufficient information about HPV, cervical cancer, and the benefits as well as the eligibility criteria for the vaccine (60). This lack of awareness led to rumours, misinformation and hesitancy or refusal where some girls had to try different strategies to avoid being considered eligible for vaccination and where they also got discouraging comments considering vaccination from their male fellows.

"*The boys were laughing at us saying the injection would burn our eggs and we would not be able to give birth in the future"* (55)

Furthermore, Limited access to healthcare facilities serves as a significant deterrent to HPV vaccine acceptance. Particularly in remote or underserved areas, where healthcare infrastructure was reported to be inadequate or inaccessible, individuals faced challenges in

accessing vaccination services. The geographical distance to healthcare facilities, coupled with transportation limitations also posed a challenge to general health seeking behaviour for women (60, 56).

Synthesised finding 3:

Agency problem with vaccination.

An agency problem arises in HPV vaccine acceptance, particularly concerning limited access to healthcare facilities, especially in remote areas where girls must undertake long journeys to access the vaccine (60). This creates a scenario where the decision-making power is shifted, potentially leading to adverse consequences. The necessity for girls to travel long distances underscores a systemic issue of unequal access to healthcare, wherein their agency is compromised due to external factors beyond their control. Despite their strong desire to receive the vaccine, the inherent risks associated with navigating these challenges may deter some individuals from seeking vaccination.

This problem arises when parents or guardians have different beliefs or priorities than the adolescent girl or woman, leading to a lack of autonomy in decision-making. This includes issues or challenges that arise due to various actors or organizations involved in the process resulting in a conflict of interest in decision making regarding HPV vaccination(38) (61)Some of the findings showed that parents and caregivers are the ones who to advice adolescent girls on decisions "*Most of the time it is the mother, but you also get advice from grannies and older people in the community* and *the clinic"*. However, in some instances parents and guardians discouraged their daughters against HPV vaccination which shows that lack of parental involvement and consent was a significant obstacle (62).

"*My grandmother tried to stop me from going to school, I refused. I told her that those who miss school and the vaccinations will have to go to the health centre which was far away from home, and she agreed".*

"Some [students] said they were forbidden by their parents. . . They rejected some saying if they get vaccinated, they will not give birth, they will not be able to have children."

4. Chapter 4: Discussion

The discussion sheds light on the multifaceted nature of HPV vaccine acceptability among AGYW in Sub-Saharan Africa, considering a range of factors that influence decision-making processes. Considering the new sociology of childhood, which emphasizes children's agency and perspectives, this study recognizes the importance of considering adolescents and young women as active participants in their healthcare decisions, rather than passive recipients of interventions (55).

The findings of this review indicate that acceptance of the HPV vaccine among this demographic is influenced by various factors, presenting as both motivators and deterrents to vaccine acceptance. One important motivator identified is the perceived effectiveness of the vaccine in preventing cervical cancer, a perception widely shared among participants in the reviewed studies. Knowledge and awareness about HPV and its associated health risks emerged as key facilitators of vaccine acceptance. In a wider existing literature, it has been found that individuals who are knowledgeable about HPV and its link to cervical cancer are more likely to accept vaccination (63).

Additionally, positive experiences with previous doses of the vaccine and healthcare provider recommendations were cited as motivators for subsequent vaccine uptake (64). These may be due to various positive reasons including familiarity and comfort to the vaccine process. This familiarity reduces anxiety and increase comfort and eagerness to receive subsequent doses. Another reason may be due to the positive experience among those who had no significant side-effects which resulted in building the confidence in vaccines safety and efficacy.

Furthermore, social norms and peer influence can both act as facilitators for HPV vaccine acceptance. Studies have shown that when peers or family members have received the vaccine, it positively influences an individual's decision to get vaccinated (5). Community engagement programs that involve influential community members, such as religious leaders or community elders, can help promote positive social norms around vaccination.

In a study by Fadhilah et al., knowledge and attitudes were found to increase vaccination among secondary school students which is corroborated by the results of this review. They further illustrated that females achieved notably higher scores on knowledge items in comparison to their male counterparts (65). The readiness to receive vaccination was notably linked to the

depth of understanding regarding cervical cancer. This study however did not specifically focus on the willingness of AGYW to receive vaccines as the population of interest for this review.

Knowledge about HPV and HPV vaccine reinforces acceptance of the vaccine by the end-users. For instancet, studies report that when adolescents have accurate information related to HPV vaccine and cervical cancer, they are better equipped to make informed decisions about their health (68). This is further supported by findings in Nigeria by Ezenwa et al. (2014) that knowledge and awareness about the vaccine is likely to influence willingness to vaccination (66). Similarly, a study conducted by Emmanuel et al. (2020) in Ghana surveyed 1,000 female university students and reported that 3 in 4 students were willing to receive the HPV vaccine (67). The knowledge about the HPV vaccine and cervical cancer capacitates adolescents with informed choice about accepting the vaccine, which may ultimately contribute to higher acceptance rates (69).

Conversely, several deterrents to vaccine acceptance were identified, including vaccine hesitancy rooted in concerns about safety, efficacy, and religious or cultural beliefs. Lack of knowledge and misconceptions about the vaccine, as well as financial constraints and limited access to healthcare services, were also significant barriers to vaccine acceptance among AGYW in SSA (70, 71).

In a broader context, this review aligns with the findings of Altunkurek et al., offering a comprehensive examination of the factors influencing vaccine acceptance within a larger population. Their study provides valuable insights into the cultural, social, and contextual factors that shape attitudes towards vaccination. The findings on lack of knowledge also aligns with the one qualitative study conducted by Njuguna et al. (2021) in Kenya which explored the knowledge attitudes and primary stakeholders involved in HPV infection and vaccination revealed that misconceptions about the vaccine's safety and efficacy, as well as concerns about promiscuity, influenced vaccine acceptance (59).

In another qualitative study by Popelsky and colleagues in Ghana that explored the attitudes and beliefs toward HPV vaccination among parents of unvaccinated adolescents. The findings identified factors such as lack of knowledge, fear of side effects, and cultural beliefs as barriers to vaccine acceptance (72). Furthermore, in some broad literature, cost and affordability were found to pose significant barriers to HPV vaccine acceptance however the findings in this review indicate mixed opinions regarding the cost of the vaccine for instance study conducted in Tanzania by Remes et al. (2012) among female students aged 15-19 years from secondary

schools found that financial implication may affect the participants willingness to receive the HPV vaccine (73).

Nonetheless in some women it has not been much of the concern to women as compared to fear to the long-term effects of the vaccine (56), while it has been much of concern for some (38). The high cost of the vaccine and associated delivery services can be prohibitive for many individuals in SSA (74). Financial constraints at both individual and national levels limit the accessibility of the vaccine. Implementing cost-effective strategies such as subsidized or free vaccination programs can help overcome this barrier.

Another deterrent based on the findings of this review relates to the difficulty in accessing healthcare services. SSA countries mostly have a limited number of healthcare facilities and resources, making it challenging for individuals to access the HPV vaccine (60). This issue is particularly prevalent in rural areas where healthcare infrastructure is often inadequate. Improving access to healthcare services, especially in remote areas, is essential for increasing vaccine acceptance rates.

The concept of agency in vaccine decision-making was also explored. Challenges related to parental consent requirements and information asymmetry between healthcare providers and recipients were highlighted. Ensuring that vaccine recommendations align with individuals' preferences and autonomy is essential for promoting acceptance and one study has shown that parental consent requirements can act as a barrier to HPV vaccine acceptance among adolescents (75).

Furthermore, it relates to autonomy and decision-making regarding healthcare choices. When individuals feel that their autonomy is being undermined or that decisions are being made on their behalf without full consideration of their preferences, they may resist or reject recommended vaccines like the HPV vaccine (76). Resolving the agency problem requires promoting open communication between adolescents and their parents or guardians, ensuring that decisions align with the best interests of the adolescent girl or woman.

Additionally, this aspect can also be related to information asymmetry, where the healthcare provider possesses more information about the vaccine than the individual receiving it. This knowledge gap often led to mistrust or uncertainty on the part of the recipient, affecting their willingness to accept the vaccine. It further relates to the trust between the recipients of the vaccine and healthcare providers (77) as if it is perceived that healthcare providers are prioritizing external interests over their well-being or if there are concerns about conflicts of

interest, trust in vaccine recommendations may be compromised. Additionally, healthcare providers play a pivotal role in fostering trust and furnishing accurate information to promote acceptance and adherence to subsequent doses. Emphasizing the importance of completing the recommended series of doses for optimal protection against HPV and cervical cancer can incentivize girls to persist with the vaccine (77,78).

Furthermore, having started the vaccination series, AGYW may feel a sense of responsibility for her own health and well-being. Completing the vaccine series aligns with this sense of self-care and protection against cervical cancer. Moreover, AGYW who have received the initial dose may serve as champions and advocates for the vaccine among their peers (79). They can share their positive experiences, which can influence others to accept the vaccine. Some of the initial barriers, such as concerns about the injection process or fear of side effects, may have been addressed during the first vaccination (80).

Previous research shows that receiving the initial dose helps establish a routine for vaccination and reduce perceived barriers for subsequent doses (81,82). The routine can make it easier for AGYW to prioritize and remember subsequent doses. It is therefore important to note that maintaining communication and education about the vaccine, addressing any concerns, and providing ongoing support are essential for ensuring that girls continue and complete the vaccination series.

The new research findings continue to shed light on misinformation as the main hindrance for the acceptance of HPV vaccine among its end-users (62). Providing accurate information plays a crucial role in dispelling fears and misconceptions about the HPV vaccine. When adolescents are informed that the vaccine is safe and has been scientifically proven effective, their likelihood of accepting it increases significantly. Additionally, it's essential to address concerns about infertility sensitively and accurately. While the fear of infertility due to cervical cancer can motivate individuals to seek vaccination, it's imperative to communicate this information with sensitivity and precision. Clear, evidence-based information regarding the risks associated with cervical cancer and the benefits of HPV vaccination is paramount for enabling informed decision-making (77).

This is because the fear of infertility directly relates to an adolescent girl's personal future aspirations, including the desire to have children. This fear makes the potential consequences of cervical cancer very tangible and immediate and the prospect of not being able to have

children can evoke strong emotions and fears which serve as a powerful impetus for taking proactive steps to prevent cervical cancer through vaccination.

Again, understanding that cervical cancer can have life-altering consequences like infertility underscores the importance of vaccination as a long-term investment in one's reproductive health and future family planning create a sense of urgency to take preventive measures now, so that the individual does not have to face regret and sorrow in the future. This review has highlighted that for many adolescents, having children in the future is a cherished goal. Understanding that HPV vaccination notably reduces the chances of cervical cancer and its potential impact on fertility aligns with this important life goal. In addition to findings from this review three main categories emerged time and again in different studies.

4.1. Study Strength and Limitations:

The primary strength of this review lies in its pioneering nature as the first qualitative review and meta-aggregation with a strong emphasis on understanding the acceptance of the HPV vaccine among its primary beneficiaries AGYW in SSA. This review provides valuable insights into the factors influencing vaccine acceptance in the region, by focusing on qualitative data.

However, there are several limitations to consider. Firstly, acceptance of the HPV vaccine has been extensively reported quantitatively in many articles. This review specifically focused on qualitative studies, leading to a potential limitation of included studies as many did not meet the eligibility criteria potentially limiting the breadth of information available on acceptability across SSA countries.

Additionally, only peer-reviewed articles were included in the review, potentially excluding relevant information from policies and reports. Moreover, the review is limited to articles published in English, which may introduce a language bias and overlook studies published in other languages. These limitations point to the need for further research to provide a comprehensive understanding of HPV vaccine acceptability in SSA, and to explore the effectiveness of interventions aimed at increasing HPV vaccine acceptability and coverage in SSA.

5. Chapter 5: Conclusion and Recommendations

In conclusion, since 2010, numerous studies have been conducted to explore readiness and acceptability of the HPV vaccine AGYW in SSA in preparation for vaccination. These studies utilized both quantitative cross-sectional surveys and qualitative methodologies to collect data on vaccine acceptance. While quantitative surveys provide valuable insights into acceptance rates, qualitative studies offer deeper understanding of the factors influencing acceptance and potential barriers to uptake. Overall, there is a lack of qualitative literature discussing the acceptability of the HPV vaccine among adolescent girls and women in Sub-Saharan Africa, with conflicting findings predominantly from the cross-sectional surveys, where some studies report high acceptability rates while others report lower rates. Factors such as limited awareness, spread of misinformation, and cultural and religious beliefs have been identified as potential barriers to vaccination.

It is crucial to acknowledge the impact of peer influence, comprehensive knowledge dissemination, school-based vaccination initiatives, community engagement, and the support of healthcare workers and educators as facilitators. Conversely, addressing misconceptions, concerns about side effects, parental hesitancy, and socioeconomic disparities are crucial for overcoming vaccine hesitancy. On the other hand, improving education on HPV and its risks, engaging local leaders to address cultural concerns can enhance vaccine acceptance. A comprehensive multisectoral approach should be considered through conducting more contextualized research to understand different perspectives to the vaccine. Also, there will be a need to develop culturally sensitive educational materials and integration of educational campaigns, meaningful community participation and advocacy, and healthcare infrastructure enhancement to ensure widespread HPV vaccine acceptance among AGYW in SSA. Additionally, with the World Health Organization's revised dosing recommendations for the HPV vaccine, further research is imperative to understand the concerns of the direct end-users of this vaccine and to assess the efficacy of interventions aimed at enhancing HPV vaccine acceptability and coverage in SSA.

References

1. Kurosawa M, Sekine M, Yamaguchi M, Kudo R, Hanley SJB, Hara M, et al. Long-Term Effects of Human Papillomavirus Vaccination in Clinical Trials and Real-World Data: A Systematic Review. Vaccines. 2022.
2. Ladner J, Besson MH, Audureau E, Rodrigues M, Saba J. Experiences and lessons learned from 29 HPV vaccination programs implemented in 19 low and middle-income countries, 2009-2014. BMC Health Serv Res. 2016.
3. Ukumo EY, Weldehawariat FG, Dessalegn SA, Minamo DM, Weldehawaryat HN. Acceptance of Human Papillomavirus Vaccination and Associated Factors among Girls in Arba Minch Town, Southern Ethiopia, 2020. Infect Dis Obstet Gynecol. 2022.
4. López N, Salamanca de la Cueva I, Vergés E, Suárez Vicent E, Sánchez A, López AB, et al. Factors influencing HPV knowledge and vaccine acceptability in parents of adolescent children: results from a survey-based study (KAPPAS study). Hum Vaccin Immunother. 2022.
5. Brewer NT, Fazekas KI. Predictors of HPV vaccine acceptability: A theory-informed, systematic review. Preventive Medicine. 2007.
6. Kutz JM, Rausche P, Gheit T, Puradiredja DI, Fusco D. Barriers and facilitators of HPV vaccination in sub-saharan Africa: a systematic review. BMC Public Health. 2023.
7. Perlman S, Wamai RG, Bain PA, Welty T, Welty E, Ogembo JG. Knowledge and awareness of HPV vaccine and acceptability to vaccinate in sub-Saharan Africa: A systematic review. PLoS One. 2014 .
8. Amponsah-Dacosta E, Kagina BM, Olivier J. Health systems constraints and facilitators of human papillomavirus immunization programmes in sub-Saharan Africa: a systematic review. Health Policy Plan. 2020.
9. de Oliveira MSF, Sorpreso ICE, Zuchelo LTS, da Silva ATM, de Menezes Gomes J, Silva BKR, et al. Knowledge and acceptability of HPV vaccine among HPV-vaccinated and unvaccinated adolescents at Western Amazon. Rev Assoc Med Bras. 2020.
10. DiAngi YT, Panozzo CA, Ramogola-Masire D, Steenhoff AP, Brewer NT. A cross-sectional study of vaccine acceptability in Gaborone, Botswana. PLoS One. 2011.
11. Becker-Dreps S, Otieno WA, Brewer NT, Agot K, Smith JS. HPV vaccine acceptability among Kenyan women. Vaccine. 2010.

12. Hoque ME, Van Hal G. Acceptability of human papillomavirus vaccine: A survey among Master of Business Administration Students in KwaZulu-Natal, South Africa. Biomed Res Int. 2014.
13. Weekly epidemiological record Relevé épidémiologique hebdomadaire Sommaire [Internet]. Available from: https://www.hpvcenter.se/human_reference_clones/,
14. Bruni L, Saura-Lázaro A, Montoliu A, Brotons M, Alemany L, Diallo MS, et al. HPV vaccination introduction worldwide and WHO and UNICEF estimates of national HPV immunization coverage 2010–2019. Prev Med (Baltim). 2021.
15. Center for Disease Control. Reasons to get HPV vaccine.
16. Nartey Y, Hill P, Amo-Antwi K, Asmah R, Nyarko K, Yarney J, et al. Recommendations for cervical cancer prevention and control in Ghana: public education and human papillomavirus vaccination. Ghana Med J. 2018.
17. Singh D, Vignat J, Lorenzoni V, Eslahi M, Ginsburg O, Lauby-Secretan B, et al. Global estimates of incidence and mortality of cervical cancer in 2020: a baseline analysis of the WHO Global Cervical Cancer Elimination Initiative. Lancet Glob Health. 2023.
18. Enebe JT, Enebe NO, Agunwa CC, Nduagubam OC, Okafor II, Aniwada EC, et al. Awareness, acceptability and uptake of cervical cancer vaccination services among female secondary school teachers in enugu, nigeria: A cross-sectional study. Pan African Medical Journal. 2021.
19. Factors Associated with Human Papillomavirus Vaccination among Women in the United States. ARC J Public Health Community Med. 2018.
20. Addisu D, Gebeyehu NA, Belachew YY. Knowledge, attitude, and uptake of human papillomavirus vaccine among adolescent schoolgirls in Ethiopia: a systematic review and meta-analysis. BMC Womens Health. 2023.
21. UNICEF. Available at: https//www.unicef.org/supply/stories/closing-gap-unicef-bolsters-country-efforts-increase-hpv-vaccination. Closing the gap: UNICEF bolsters country efforts to increase HPV vaccination.
22. Hakimi S, Lami F, Allahqoli L, Alkatout I. Barriers to the HPV vaccination program in the Eastern Mediterranean region: a narrative review. Vol. 24, Journal of the Turkish German Gynecology Association. Galenos Publishing House; 2023.
23. Gallagher KE, Howard N, Kabakama S, Mounier-Jack S, Griffiths UK, Feletto M, et al. Lessons learnt from human papillomavirus (HPV) vaccination in 45 low- and middleincome countries. PLoS One. 2017.

24. Brewer NT, Fazekas KI. Predictors of HPV vaccine acceptability: A theory-informed, systematic review. Prev Med (Baltim) [Internet]. 2007. Available from: https://www.sciencedirect.com/science/article/pii/S009174350700237X
25. Marlow LAV. HPV vaccination among ethnic minorities in the UK: Knowledge, acceptability and attitudes. Br J Cancer. 2011.
26. Waller J, Waite F, Marlow L. Awareness and knowledge about HPV and primary HPV screening among women in Great Britain: An online population-based survey. J Med Screen [Internet]. 2023 Oct 24;09691413231205965. Available from: https://doi.org/10.1177/09691413231205965
27. Larson HJ, Jarrett C, Eckersberger E, Smith DMD, Paterson P. Understanding vaccine hesitancy around vaccines and vaccination from a global perspective: A systematic review of published literature, 2007-2012. Vol. 32, Vaccine. Elsevier BV; 2014.
28. Jalouli J, Ibrahim SO, Sapkota D, Jalouli MM, Vasstrand EN, Hirsch JM, et al. Presence of human papilloma virus, herpes simplex virus and Epstein-Barr virus DNA in oral biopsies from Sudanese patients with regard to toombak use. Journal of Oral Pathology & Medicine [Internet]. 2010;39(8):599–604. Available from: https://search.ebscohost.com/login.aspx?direct=true&db=lhh&AN=20103299433&site=ehost-live
29. Netfa F, Tashani M, Booy R, King C, Rashid H, Skinner SR. Knowledge, attitudes and perceptions of immigrant parents towards human papillomavirus (HPV) vaccination: A systematic review. Tropical Medicine and Infectious Disease. MDPI AG; 2020.
30. López N, Garcés-Sánchez M, Panizo MB, De La Cueva IS, Artés MT, Ramos B, et al. HPV knowledge and vaccine acceptance among European adolescents and their parents: A systematic literature review. Public Health Reviews. BioMed Central Ltd; 2020.
31. Liddon N, Hood J, Wynn BA, Markowitz LE. Acceptability of Human Papillomavirus Vaccine for Males: A Review of the Literature. Journal of Adolescent Health. 2010.
32. Díez-Domingo J, Sánchez-Alonso V, Villanueva RJ, Acedo L, Tuells J. Impact of a gender-neutral HPV vaccination program in men who have sex with men (MSM). Int J Environ Res Public Health. 2021.
33. Bingham A, Bishop A, Coffey P, Winkler J, Bradley J, Dzuba I, et al. Factors affecting utilization of cervical cancer prevention services in low-resource settings [Internet]. Available from: http://www.insp.mx/salud/index.html

34. Kamanga P, Zhang B, Stones W. Factors associated with low utilisation of cervical cancer screening among urban women in Lilongwe, Malawi: a cross-sectional study. BMC Womens Health. 2023.
35. Susanto T, Rif'ah EN, Susumaningrum LA, Rahmawati I, Yunanto RA, Luh N, et al. Human papillomavirus vaccine acceptability among healthcare workers, parents, and adolescent pupils: a pilot study in public health centers of Bali, Indonesia [Internet]. 2020. Available from: www.germs.ro
36. Russell VL, Ogilvie G, Beksinska M, Nyirenda M, Mitchell-Foster S, Lavoie J, et al. Human papillomavirus and cervical cancer risk perception and vaccine acceptability among adolescent girls and young women in Durban, South Africa. South African Medical Journal. 2020.
37. Lubeya MK, Mwanahamuntu M, Chibwesha C, Mukosha M, Wamunyima MM, Kawonga M. Implementation strategies to increase human papillomavirus vaccination uptake for adolescent girls in sub-Saharan Africa: A scoping review protocol. PLoS One [Internet]. 2022 Aug 25;17(8): e0267617-. Available from: https://doi.org/10.1371/journal.pone.0267617
38. Islam JY, Hoyt AM, Ramos S, Morgan K, Kim CJ, de Sanjose S, et al. Acceptability of two- versus three-dose human papillomavirus vaccination schedule among providers and mothers of adolescent girls: a mixed-methods study in five countries. Cancer Causes and Control. 2018.
39. Ncube B, Bey A, Knight J, Bessler P, Jolly PE. Factors associated with the uptake of cervical cancer screening among women in Portland, Jamaica. N Am J Med Sci. 2015.
40. Cör A. Human Papillomavirus Infection and Cervical Cancer in Immigrant and Refugee Women [Internet]. Available from: http://www.who.int/immunization/diseases/hpv/en/
41. Guo Y, Sims OT, Li Q, Yang F. Factors associated with first-generation immigrant parents' unwillingness to vaccinate their daughters for HPV. J Migr Health. 2023.
42. Ferlay J, Soerjomataram I, Dikshit R, Eser S, Mathers C, Rebelo M, et al. Cancer incidence and mortality worldwide: Sources, methods and major patterns in Globocan 2012. Int J Cancer. 2015.
43. Deignan C, Swartz A, Cooper S, Colvin CJ. Stakeholders' understandings of human papillomavirus (HPV) vaccination in sub-saharan africa: A rapid qualitative systematic review. Vaccines. MDPI AG; 2021.
44. World Health Organization. Cervical Cancer/Health-topics.
45. Susanto T, Rif'ah EN, Susumaningrum LA, Rahmawati I, Yunanto RA, Luh N, et al. Human papillomavirus vaccine acceptability among healthcare workers, parents, and adolescent

pupils: a pilot study in public health centers of Bali, Indonesia [Internet]. 2020. Available from: www.germs.ro

46. Perlman S, Wamai RG, Bain PA, Welty T, Welty E. Knowledge and Awareness of HPV Vaccine and Acceptability to Vaccinate in Sub-Saharan. 2014.
47. Mboumba Bouassa RS, Prazuck T, Lethu T, Jenabian MA, Meye JF, Bélec L. Cervical cancer in sub-Saharan Africa: a preventable noncommunicable disease. Expert Rev Anti Infect Ther. 2017.
48. Deignan C. Stakeholder understandings of the Human Papillomavirus (HPV) vaccine in Sub-Saharan Africa: a qualitative systematic review. 2019.
49. Jo McCloskey D, Anne McDonald M, Cook J, Heurtin-Roberts S, Updegrove S, Sampson D, et al. Community Engagement: Definitions and Organizing Concepts from the Literature.
50. JBI Manual for Evidence Synthesis. 2021.
51. Cunningham MS, Davison C, Aronson KJ. HPV vaccine acceptability in Africa: a systematic review. Prev Med (Baltim). 2014.
52. Meites E, Szilagyi PG, Harrell; Chesson W, Unger ER, Romero JR, et al. Morbidity and Mortality Weekly Report Human Papillomavirus Vaccination for Adults: Updated Recommendations of the Advisory Committee on Immunization Practices [Internet]. Available from: https://www.cdc.gov/
53. Ntekim A. Cervical Cancer in Sub Sahara Africa. In Tech; 2012.
54. Ngoran SD, Xue XZ, Wesseh PK. Signatures of water resources consumption on sustainable economic growth in Sub-Saharan African countries. International Journal of Sustainable Built Environment. 2016.
55. Katahoire AR, Wani JA, Murokora D, Mugisha E, Lamontagne S, Lamontagne DS. Acceptability of HPV vaccine among young adolescent girls in Uganda: Young people's perspectives count. Int J Child Adolesc Health. 2013.
56. Francis SA, Battle-Fisher M, Liverpool J, Hipple L, Mosavel M, Soogun S, et al. A qualitative analysis of South African women's knowledge, attitudes, and beliefs about HPV and cervical cancer prevention, vaccine awareness and acceptance, and maternal-child communication about sexual health. Vaccine. 2011.
57. Turiho AK, Okello ES, Muhwezi WW, Katahoire AR. Perceptions of human papillomavirus vaccination of adolescent schoolgirls in western Uganda and their implications for acceptability of HPV vaccination: a qualitative study. BMC Res Notes. 2017.

58. Kampikaho Turiho A, Okello ES, Muhwezi WW, Harvey S, Byakika-Kibwika P, Meya D, et al. Knowledge and Acceptability of Vaccine African Journal of Reproductive Health. Afr J Reprod Health. 2014.
59. Njuguna DW, Mahrouseh N, Isowamwen OV, Varga O. Knowledge, Attitude and Practice of Main Stakeholders towards Human Papilloma Virus Infection and Vaccination in Mombasa and Tana-River Counties in Kenya: A Qualitative Study. Vaccines (Basel). 2021.
60. Ports KA, Reddy DM, Rameshbabu A. Barriers and facilitators to HPV vaccination: perspectives from Malawian women. Women Health. 2013.
61. Sundaram N, Voo TC, Tam CC. Adolescent HPV vaccination: empowerment, equity and ethics. Hum Vaccin Immunother. 2020.
62. Guillaume D, Rosen JG, Mlunde LB, Njiro BJ, Munishi C, Mlay D, et al. Acceptability of an integrated school-based HPV vaccination program within two districts of Tanzania: A qualitative descriptive study. PLOS Global Public Health. 2023.
63. Tonguc E, Gungor T, Var T, Kavak E, Yucel M, Uzunlar O. Knowledge about HPV, relation between HPV and cervix cancer and acceptance of HPV vaccine in women in eastern region of Turkey. J Gynecol Oncol. 2012.
64. Patel DA, Zochowski M, Peterman S, Dempsey AF, Ernst S, Dalton VK. Human papillomavirus vaccine intent and uptake among female college students. Journal of American College Health. 2012.
65. Fadhilah F, Jalani M, Dzulkhairi M, Rani M, Isahak I, Shamsir M, et al. Knowledge, Attitude and Practice of Human Papillomavirus (HPV) Vaccination among Secondary School Students in Rural Areas of Negeri Sembilan, Malaysia. Vol. 8, International Journal of Collaborative Research on Internal Medicine & Public Health. 2016.
66. Ezenwa BN, Balogun MR, Okafor IP. Mothers' human papilloma virus knowledge and willingness to vaccinate their adolescent daughters in Lagos, Nigeria. Int J Womens Health. 2013.
67. Drokow EK, Zi L, Han Q, Effah CY, Agboyibor C, Sasu E, et al. Awareness of cervical cancer and attitude toward human papillomavirus and its vaccine among Ghanaians. Front Oncol. 2020.
68. Iliadou M, Sahini K, Sakellari E, Daglas M, Orovou E, Iatrakis G, et al. What do Young People Think About HPV and HPV Vaccination? The Role of Health Education Interventions and Health Professionals. Materia Socio Medica. 2021.
69. Shabani LW, Moodley M, Naidoo TD. Knowledge, awareness and attitude towards human papilloma virus vaccine in a resource-constrained setting: a comparison between an urban

and rural population in South Africa. Southern African Journal of Gynaecological Oncology. 2019.

70. Shen CS. Vinita D. Addressing vaccine hesitancy Clinical guidance for primary care physicians working with parents. 2019.
71. Regasa T, Sendo EG, Deressa JT. Human Papillomavirus Knowledge, Perception, and Willingness to Receive Vaccination Among Female University Students in Addis Ababa University, Ethiopia, 2022: A Cross-Sectional Study. Sage Open Nurs. 2023.
72. Popelsky BK, Asare M, Agyei-Baffour P, Koranteng A, Commeh ME. Assessing Attitudes and Beliefs Toward HPV Vaccination among Ghanaian Parents with Unvaccinated Adolescents: Application of Multi-Theory Model of Behavior Change. Asian Pacific Journal of Cancer Prevention. 2022.
73. Remes P, Selestine V, Changalucha J, Ross DA, Wight D, de Sanjosé S, et al. A qualitative study of HPV vaccine acceptability among health workers, teachers, parents, female pupils, and religious leaders in northwest Tanzania. Vaccine. 2012.
74. Zibako P, Hlongwa M, Tsikai N, Manyame S, Ginindza TG. Mapping evidence on management of cervical cancer in sub-Saharan Africa: scoping review. Int J Environ Res Public Health [Internet]. 2022;19(15). Available from: https://search.ebscohost.com/login.aspx?direct=true&db=lhh&AN=20220382491&site=ehost-live
75. Akinleye HW, Kanma-Okafor OJ, Okafor IP, Odeyemi KA. Parental willingness to vaccinate adolescent daughters against human papilloma virus for cervical cancer prevention in Western Nigeria. Pan African Medical Journal. 2020.
76. Adeyanju GC, Sprengholz P, Betsch C, Essoh TA. Caregivers' willingness to vaccinate their children against childhood diseases and human papillomavirus: a cross-sectional study on vaccine hesitancy in Malawi. Vaccines (Basel). 2021.
77. Gray A, Fisher CB. Factors associated with HPV vaccine acceptability and hesitancy among Black mothers with young daughters in the United States. Front Public Health. 2023.
78. Krokidi E, Rao AP, Ambrosino E, Thomas PPM. The impact of health education interventions on HPV vaccination uptake, awareness, and acceptance among people under 30 years old in India: a literature review with systematic search. Frontiers in Reproductive Health. Frontiers Media S.A.; 2023.
79. Altunkurek ŞZ, Şahin E, Mohamed SH. Knowledge, Attıtudes and Behavıors of Somalia Female University Students about Cervıcal Cancer, Hpv and Hpv Vaccine: Cross-Sectional Study. 2022.

80. World Health Organization. one-dose-human- papilloma virus (hpv)-offers-solid-protection-against-cervical -cancer. 2023.
81. Ngambi D. Knowledge and practices of women regarding cervical cancer prevention at Thulamela Municipality of Vhembe District in Limpopo Province. 2016.
82. Nji AN. Perceptions of Cameroonian Women Regarding Cervical Cancer Prevention. 2016.

Appendices

Appendix 1: Study ethics waiver

UNIVERSITY OF THE WITWATERSRAND, JOHANNESBURG

HUMAN RESEARCH ETHICS COMMITTEE (MEDICAL)

Office of the Deputy Vice-Chancellor (Research & Innovation)

02/06/2023

Ref: W-CBP-230602-01

TO WHOM IT MAY CONCERN

Waiver: This certifies that the following research does not require clearance from the Human Research Ethics Committee (Medical)

Investigator: Ms M Motlatsi
Student No. (if appropriate): 560255
Staff No. (if appropriate):

Supervisor: Dr O Ojifinni

School: Public Health
Department:
Epidemiology and Biostatistics
Medical School
University

Project title: *Acceptability of HPV vaccine amongst adolescent girls and young women in Sub-Saharan Africa: a systematic review*

Reason: Review of information in the public domain
No human participants will be involved in the study

CB Penny

Dr CB Penny
Chairperson: Human Research Ethics Committee (Medical)

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Appendix 2: Plagiarism declaration

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UNIVERSITY OF THE WITWATERSRAND, JOHANNESBURG

FACULTY OF HEALTH SCIENCES

PLAGIARISM DECLARATION TO BE SIGNED BY ALL HIGHER DEGREE STUDENTS

SENATE PLAGIARISM POLICY: APPENDIX ONE

I Mokete Mary Motlatsi (Student number: 560255) am a student registered for the degree of Master Of Science In Epidemiology in the academic year 2024.

I hereby declare the following:

- I am aware that plagiarism (the use of someone else's work without their permission and/or without acknowledging the original source) is wrong.
- I confirm that the work submitted for assessment for the above degree is my own unaided work except where I have explicitly indicated otherwise.
- I have followed the required conventions in referencing the thoughts and ideas of others.
- I understand that the University of the Witwatersrand may take disciplinary action against me if there is a belief that this is not my own unaided work or that I have failed to acknowledge the source of the ideas or words in my writing.
- I have included as an appendix a report from "Turnitin" (or other approved plagiarism detection) software indicating the level of plagiarism in my research document.

Signature: DocuSigned by: Mokete Motlatsi 64B65A83BCE6475... Date: 4/2/2024

Appendix 3 The search strategy:

	Clusters (subheadings)	Sources	Key words
Aim	HPV vaccine and women ● Acceptability of HPV vaccine defined. ● Other places preferably SSA ● Africa	Online peer reviewed journals through online database search: PubMed/MEDLINE) ProQuest (public health data base EBSCOhost (global health) Web of Science Google Scholar	"HPV infection", "HPV vaccine", "HPV Prevention", HPV vaccine acceptability, cervical cancer prevention HPV vaccine in SSA
Objectives 1. To describe HPV vaccine acceptability among adolescent girls and young women in Africa (2010-2022) 2. To determine factors associated with HPV vaccine acceptability among adolescent girls and young women in SSA (2010-2022)	HPV vaccine acceptability Girls and young women (10-26) Individual factors, e.g. level of education interpersonal factors e.g. family and religious believes, societal factors e.g. community perceptions about the vaccine.	online database search: PubMed/MEDLINE) ProQuest (public health data base EBSCOhost (global health) Web of Science Google scholar	Factors associated with vaccinating for HPV What determines acceptability of HPV vaccine. HPV vaccination acceptance HPV vaccine among adolescents and women HPV vaccine among young girls Boolean search: 'HPV vaccination' OR 'HPV prevention' AND 'girls' AND 'women' 'AND' SSA

Appendix 4: The JBI critical appraisal checklist:

JBI Critical Appraisal Checklist for Qualitative Research

Reviewer……Date……
Author……Year……..Record Number…….

	Yes	No	Unclear	N/A
1. Is there congruity between the stated philosophical perspective and the research methodology? ----------				
2. Is there congruity between the research methodology and the research question or objectives? ----------				
3. Is there congruity between the research methodology and methods used to collect data? ----------				
4. Is there congruity between the research methodology and the representation and analysis of data? ----------				
5. Is there congruity between the research methodology and the interpretation of results? ----------				
6. Is there a statement locating the researcher culturally or theoretically? ----------				
7. Is the influence of the researcher on the research, and vice versa, addressed? ----------				
8. Are participants, and their voices, adequately represented? ----------				
9. Is the research ethical according to current criteria or, for recent studies, is there evidence of ethical approval by an appropriate body? ----------				
10. Do the conclusions drawn in the research report flow from the analysis, or interpretation, of the data? ----------				

Appendix 5: Interpretive and Critical Research

Characteristics of Included Studies

Study	Methods for data collection and analysis	Country	Phenomena of interest	Setting/context/culture	Participant characteristics and sample size	Description of main results
Turiho AK, Okello ES, Muhwezi WW, Harvey S, Byakika-Kibwika P, Meya D, et al. 2014.	Selected girls were assembled in one or two rooms on the day of the survey. A pre-tested and translated self-administered questionnaire was used.The Principal Researcher or a trained RA moderated the FGDs using a FGD guide; a RA took notes of and tape-recorded the proceedings. FGDs mainly discussed the girls' observations during the vaccination, experiences of vaccination and attitudes about the vaccine. Quantitative data were entered and cleaned using EpiData, then analysed using SPSS v. 16.016. Data were summarized into frequencies, means and standard deviations (SD), while Qualitative data was transcribed, word processed and entered into Atlas.ti17 for coding and analysis. Codes were developed based on the broad themes identified from the data.	Uganda	knowledge of HPV and HPV vaccine and acceptance of HPV vaccine	2 districts in Uganda (Ibanda district intervention and Mbarara as the comparative district)	The sample consisted of 800 primary school girls in P5 and P6 for the survey but located 777 (444 in Ibanda and 333 in Mbarara) during data collection. The sample of vaccinated girls was drawn from the 2010 and 2011 cohorts	Knowledge about cervical cancer and the HPV vaccine was significantly more among vaccinated girls. Vaccinated and unvaccinated girls did not significantly differ on levels of perceived susceptibility to cervical cancer. More unvaccinated girls [308 (92.5%)] compared to vaccinated girls [397 (89.4%)] were likely to support HPV vaccination although the difference was not significant (Crude OR: 0.69, CI: 0.41-1.14; p = 0.14)

Katahoire AR, Wani JA, Murokora D, Mugisha E, Lamontagne S, Lamontagne DS. 2013.	a total of 44 focus group discussions were conducted over a period of two years involving 422 girls drawn from the two districts of Ibanda and Nakasongola that participated in the demonstration project. The discussions were recorded and later transcribed and translated into English. Key themes and sub themes were identified through textual data analysis and a coding scheme was constructed. Atlas.ti software was used to facilitate data management and analysis.	Uganda	Acceptability of HPV vaccine	The two districts of Ibanda and Nakasongola	Adolescent school girls aged 10-15 years. with a sample size of 442	Girls in the focus group discussions explained their reasons for acceptance which included fear of death from cervical cancer if not fully vaccinated and/or reluctance which was due to lack of understanding in relation to why they should get vaccinated and knowledge about the disease the vaccine is intended to prevent. They also voiced out their opinions on the actions that they took as individuals to ensure that they were fully vaccinated or not which includes determination to go to school on the day of vaccination even when their families discouraged them.
Turiho AK, Okello ES, Muhwezi WW, Katahoire AR. 2017.	The FGDs of schoolgirls and of parents/guardians were conducted separately using pre-tested and translated FGD guides. The number of participants in FGDs ranged from 8 to 12 per group. The data sets were coded and analyzed using the ATLAS.ti (v. 6). The codes were used to retrieve segments of the data.	Uganda	perceptions of the HPV vaccination and their perceived implications for acceptability of HPV vaccination	Ibanda district	The adolescent girls, aged 13–16 years had received at least one dose of the HPV vaccination, were in primary five (P 5) or primary six (P 6), and were registered in their	The findings show that community members perceived HPV vaccination favourably in terms of benefits and cues to action although there were some misconceptions and concerns about vaccination of young girls against HPV that could potentially discourage

	Memos were written describing the patterns and variations in the different segments of retrieved data. Verbatim quotations from the data were used to highlight key study findings.		of adolescent girls .		respective schools' vaccination register.	parents and adolescent girls from HPV vaccination
Francis SA, Battle-Fisher M, Liverpool J, Hipple L, Mosavel M, Soogun S, et al. 2011.	Focus group discussion and Digital records were transcribed by the study staff. Handwritten notes were used to supplement the digital record	South Africa	vaccine awareness and acceptance	Johannesburg South Africa	Women aged 18–44, recruited from an antenatal clinic	The need to develop primary prevention strategies and materials that will inform women about the basics of cervical cancer prevention, including information about HPV, cervical cancer, the HPV vaccine, screening, and how to talk to their children about these topics
Islam JY, Hoyt AM, Ramos S, Morgan K, Kim CJ, de Sanjose S, et al. 2018.	Focus group discussion	Five Countries (Argentina, Malaysia, South Africa, South Korea, and Spain)	Acceptability of two-versus three-dose human papilloma virus vaccination	Five countries (Argentina, Malaysia, South Africa, South Korea, and Spain)	Providers of HPV vaccine_ a cross-sectional survey Mothers of adolescents_ Four focus group discussions were conducted in each country	Adolescent vaccination providers and mothers preferred the 2-dose over 3-dose HPV vaccination schedule. Acceptability of a 2-dose HPV vaccination could be improved with additional information to providers and mothers on HPV vaccination safety and efficacy.
Ports KA, Reddy DM, Rameshbabu A. 2013.	In-depth, semi-structured interviews were used Using grounded theory, recurring themes were identified within and between each interview	Malawi	Women's knowledge and beliefs about HPV, cervical	Chiradzulu District Malawi	Qualitative interviews were conducted with 30 Malawian	Participants believed that as women, they were responsible for their children's health. Women unanimously reported that

	according to grand thematic areas		cancer, and vaccination, and their social-ecological contexts.		mothers aged 18–49	they would vaccinate their children against HPV, especially if a health professional recommended it.
Remes P, Selestine V, Changaluch a J, Ross DA, Wight D, de Sanjosé S, et al. 2012.	Semi-structured interviews and group discussions	Tanzania	HPV vaccine acceptability	The two districts of Mwanza city and a neighbouring rural district (Misungwi),	Semi-structured interviews (n = 31) and group discussions (n = 12) were conducted with a total of 169 respondents (parents, female pupils, teachers, health workers and religious leaders).The age range of teachers and health workers interviewed was between 19–51 years and 33–55 years respectively. The 54 student respondents had a median age of 12 years and were aged between 11	After participants were provided with information about cervical cancer and HPV vaccination, the majority stated that they would support HPV vaccination of their daughter to protect them against cervical cancer. Opt-out consent for vaccination was considered acceptable. Most preferred age-based vaccination, saying this would target more girls before sexual debut than class-based vaccination.

					and 17 years whilst parents were aged between 18 and 59 years.e religious leaders were aged between 35 and 50 years and came from the following denominations: Roman Catholic, Anglican, Lutheran, Tanzania Assemblies of God, African Inland Church, Seventh-Day Adventist, Glory City Church, and Muslim.	
Guillaume D, Rosen JG, Mlunde LB, Njiro BJ, Munishi C, Mlay D, et al. 2023.	Key informants comprising of adolescent girls, parents, program planners, and program implementers in Njombe and Dar es Salaam Tanzania were interviewed to assess the program acceptability. Transcripts were analyzed using a team-based iterative thematic	Tanzania	Acceptability of HPV-plus program	The Makambako District Council (Njombe Region) and Ubungo District Council (Dar esSalaam Region) (Ubungo)and rural (Makambako) settings	A total of 87 participants were enrolled in the study (n = 25 adolescent girls, n = 16 parents of adolescent girls, n = 22 planning stakeholders, and	the results of this study demonstrated that comprehensive education component within the HPV-Plus program was key in facilitating HPV vaccine acceptability amongst stakeholders.

	analysis approach, consisting of both inductive and deductive coding.				n = 24 implementing stakeholders). Over half (n = 50) of participants were located in Njombe, and 37 were located in Dar es Salaam	

Appendix 6: The similarity report



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