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Review Article

Prevalence and Predictors of Cervical Cancer Screening Uptake in Sub-Saharan Africa: A Systematic Review and Meta-Analysis

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Abstract:
Cervical cancer remains a leading cause of cancer-related mortality in Sub-Saharan Africa, where it disproportionately affects women due to late-stage diagnoses. Despite the availability of preventive measures such as screening and HPV vaccination, uptake remains critically low. This systematic review and meta-analysis aimed to estimate the pooled prevalence and identify key predictors of cervical cancer screening uptake across Sub-Saharan Africa. A comprehensive search of databases including PubMed, Google Scholar, African Journal Online (AJOL) and ScienceDirect identified 27 studies involving a total of 357,586 women. Our results revealed that the overall prevalence of cervical cancer screening uptake was 21.2% (95% CI: 16.2%, 27.2%). Key predictors of uptake included education, healthcare access, awareness of cervical cancer, age, and integration with other health services like HIV care. This study underscores the urgent need for tailored interventions to address barriers such as lack of awareness, financial constraints, and cultural stigma. The findings provide crucial evidence to guide policy and public health strategies aimed at increasing screening rates and reducing the cervical cancer burden in the region.

Keywords: Cervical Cancer; Cervical Cancer Screening; Sub-Saharan Africa; Screening Uptake; Public Health; Women's Health; HPV Prevention; Healthcare Access

Introduction

Cervical cancer remains a formidable public health challenge in Sub-Saharan Africa, where it is the leading cause of cancer-related mortality among women. The region accounts for approximately 85% of the global cervical cancer burden, with 18 out of the 20 countries with the highest rates located here [1]. In 2022 alone, Africa accounted for 23% of global cervical cancer mortality, translating to over 150,000 deaths [2]. This high mortality is primarily due to late-stage diagnosis, as most cases are detected at advanced stages when treatment options are limited and less effective [3].

The primary etiological factor for cervical cancer is persistent infection with high-risk strains of the Human Papillomavirus (HPV), particularly types 16 and 18. In Sub-Saharan Africa, the prevalence of HPV infection is notably high, and the progression from HPV infection to cervical cancer is expedited by factors such as early sexual debut, multiple sexual partners, and co-infection with HIV [4]. Despite the availability of preventive measures, including HPV vaccination and screening programs, the uptake remains alarmingly low in the region.

Cervical cancer screening is a crucial component of secondary prevention, aiming to detect precancerous lesions early when they are most treatable. However, the implementation of effective screening programs in Sub-Saharan Africa faces significant challenges. These include limited healthcare infrastructure, inadequate training of healthcare providers, and a lack of awareness among the population about the importance of regular screening. Additionally, cultural beliefs and stigma surrounding cervical cancer contribute to the reluctance of women to seek screening services [5].

The prevalence of cervical cancer screening uptake in Sub-Saharan Africa is dishearteningly low with estimates from various studies showing a pooled prevalence of approximately 12% to 14%[6]. This low uptake is attributed to various factors, including socioeconomic disparities, lack of access to healthcare facilities, and insufficient health education. Women in rural areas, those with lower educational levels, and individuals from lower socioeconomic backgrounds are disproportionately affected, highlighting the need for targeted interventions to address these inequities [7].

Understanding the predictors of cervical cancer screening uptake is essential for developing effective strategies to increase participation rates. Studies have identified several factors that influence screening behaviors, including age, education level, marital status, knowledge about cervical cancer, and access to healthcare services [8]. Moreover, integrating cervical cancer screening with other health services, such as HIV care and family planning, has been shown to improve screening rates by leveraging existing healthcare contacts [8].

By synthesizing data from various studies across the region, this research aims to provide a comprehensive understanding of the factors affecting screening behaviors. The findings are expected to inform public health policies and interventions aimed at increasing cervical cancer screening rates, ultimately contributing to the reduction of cervical cancer incidence and mortality in Sub-Saharan Africa.

Objectives and Research question

The objective of this systematic review and meta-analysis is to assess the prevalence of cervical cancer screening uptake in Sub-Saharan Africa and to identify the key predictors influencing this uptake.

The primary research question guiding this study is: "What is the prevalence of cervical cancer screening uptake in Sub-Saharan Africa, and what are the key predictors influencing this uptake?"

The framework for the research question follows the PIO (Population, Intervention, Outcome) format [7]. Where;

The PIO framework was adopted [9]:

- P (Population): Women in Sub-Saharan Africa
- I (Intervention): Cervical cancer screening
- (Outcome): Prevalence and predictors of screening uptake

Methodology

Study Design

This study followed the guidelines for meta-analysis outlined in the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) [10].

Search Strategy

The literature search was conducted in four databases: PubMed, African Journals OnLine (AJOL), Google Scholar and ScienceDirect. The compiled search for all the databases were as below: (Cervical cancer OR Cervical malignancy) AND (Screening OR Assessment OR Examination) AND (Cervical cancer screening OR Cervical malignancy screening) AND (Uptake OR Utilization OR Participation) AND (Sub-Saharan Africa) AND (Prevalence OR Incidence OR Occurrence) AND (Predictors OR Facilitators OR Barriers). The search results were refined with the application of Boolean operators “AND” and “OR” [11]. MeSH terms were not employed in the search as the use of MeSH

terms retrieved few literature. The search focused on research articles published from 1st January 2010 to the search date (July 24, 2025).

Eligibility Criteria

Studies were included if they were original research articles that are observational studies (cohort, cross-sectional, case-control) published in English between 2010 to search date and reported on the prevalence of cervical cancer screening uptake among women in Sub-Saharan Africa. Studies focusing on populations outside Sub-Saharan Africa, those not reporting on screening uptake, or lacking data on predictors were excluded.

Study Selection

After screening the titles and abstracts of the retrieved studies, the full-text articles were assessed for eligibility. Two independent reviewers performed the screening to ensure consistency and minimization of bias. Disagreements between reviewers were resolved through consensus. Studies that met the eligibility criteria were included for data extraction.

Data Extraction and Quality Assessment

A data collection form was developed to systematically extract relevant information from the selected studies. This was conducted independently by two researchers and discrepancies were resolved through discussion. Key data extracted from the studies included information relating to study characteristics, sample size, screening prevalence, and identified predictors. The Newcastle-Ottawa Scale (NOS) risk of bias tool for observational studies was employed to assess the methodological quality of included studies [12]. The quality assessment was conducted independently by two researchers and discrepancies were resolved through discussion.

Data Analysis and Statistical Methods

Data were analyzed using Comprehensive Meta-analysis (CMA) software version 4. A random-effects model was applied due to anticipated heterogeneity across studies. Heterogeneity was assessed using the I^2 statistic and Cochran's Q test. Sensitivity analyses were conducted to test the robustness of the results. Funnel plots were used to visually map publication bias.

Results

Search results and Study Selection

A total of 30451 records were initially retrieved from multiple databases, including PubMed, ScienceDirect, Google Scholar, and AJOL. Following the application of appropriate filters, including the removal of duplicates, 29163 records were excluded before screening. After screening titles and abstracts, 1289 reports were eligible for title and abstract screening, but 1,253 were excluded based on exclusion criteria, leaving 36 reports for full-text review. Of these, 9 reports were ultimately excluded: 5 were review articles and 4 did not focus on prevalence or predictors of cervical cancer screening uptake. As a result, 27 studies were included in the final analysis [13-39]. The literature selection process is illustrated in the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) flow diagram as shown in Figure 1.

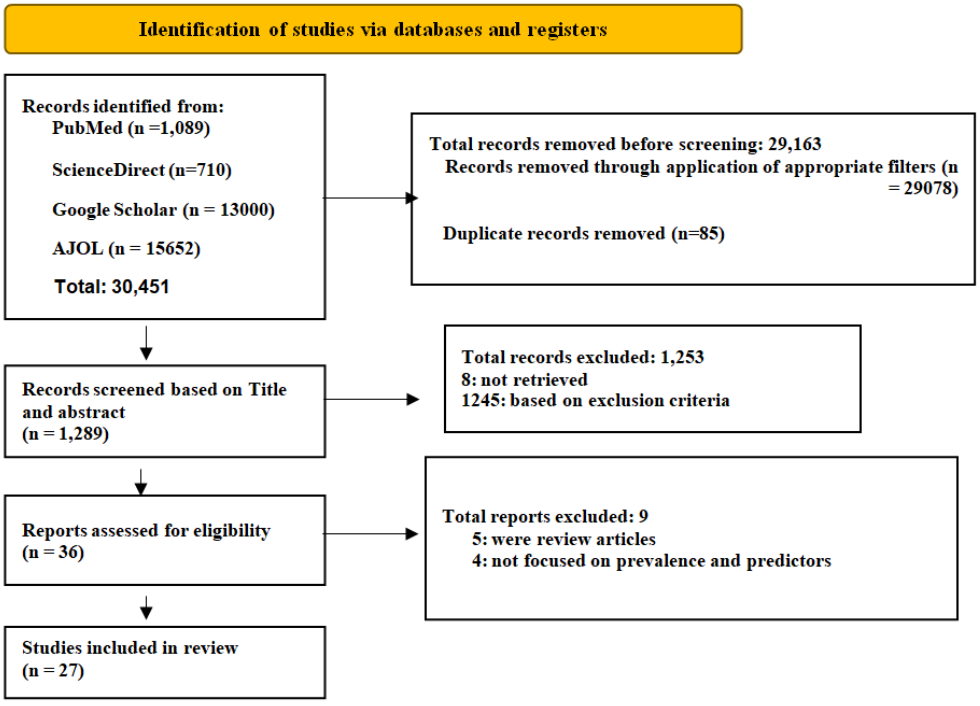

Figure 1: PRISMA Flow Diagram

Study Characteristics and Quality Assessment

The characteristics of the included studies in this review varied in their design, sample size, and participant characteristics as shown in Table 1, reflecting the diverse contexts of cervical cancer screening uptake across Sub-Saharan Africa. Study designs were predominantly cross-sectional, with a few retrospective cohorts and mixed-methods approaches. There are a total of 357586 women studied in all the included studies and sample sizes ranged from as few as 163 participants to over 124,000, with the majority involving women aged 25-49 years. The studies focused on various populations, including general female populations, HIV-positive women, and women attending healthcare facilities. The prevalence of cervical cancer screening uptake varied widely, with figures ranging from 4.3% to 89.9%, highlighting substantial disparities in screening coverage across the region. Key facilitators identified included education, income, healthcare access, and awareness campaigns, while barriers often included lack of awareness, financial constraints, and cultural beliefs.

Quality assessment using the Newcastle-Ottawa Scale as shown in Supplement File 1 revealed variability in study quality. Most studies were rated highly for selection criteria but were often limited by insufficient comparability or incomplete outcome assessments. Several studies had moderate to high ratings in terms of exposure ascertainment, but follow-up duration and completeness varied, with some studies lacking comprehensive follow-up, which may impact the robustness of their findings.

Table 1: The characteristics of the included studies

Study ID	Country	Study Design	Total number of participants	Age of Participants	Population Studied	Prevalence	Predictors (Facilitators — Barriers)	Source Journal
Ngwu et al. (2022) [13]	Nigeria	Cross-sectional Mixed-method study(quantitative & qualitative)	517 women	Majority aged between 25 and 34 years	Women in Enugu State, Nigeria	89.9% (465 out of 517)	Barriers: Education, income, residence; Facilitators: Social worker involvement	Asian Pacific Journal of Cancer Prevention
Pry et al. (2021) [14]	Zambia	Cohort	183 165women	median age of women was 34 years	Women in Zambia (Health Facilities)	36.65% (67132 out of 183,165)	Facilitators: Age, HIV status, income	The Lancet Global Health
Arage et al. (2025) [15]	Multiple SSA Countries	Retrospective Cross-Sectional study	75,360 women	Majority aged between 25–49	Women across 10 SSA countries	51.63% (38,907 out of 75,360)	Facilitators: Wealth, contraceptive use, media exposure; Barriers: Lack of access to healthcare	BMC Medical Informatics and Decision Making

Hailegebireal et al. (2024) [16]	Eleven (11) SSA Countries	Retrospective Cross-Sectional study	124,787 women	mean (± SD) age of 29.38 (± 8.61) years	Women across 11 SSA countries	10.29% (12,849 out of 124,787)	Facilitators: Age, education, wealth, health access; Barriers: Lack of awareness, financial constraints	BMC Cancer
Gemeda et al. (2020) [17]	Ethiopia	Cross-sectional	838 women	Participants were 25 years and above	Women aged 25 years and above in Sidama Zone, Southern Ethiopia	17.8% (149 out of 838)	Facilitators: Knowledge, HIV status, perceived self-efficacy; Barriers: Lack of awareness, financial constraints	Cancer control : journal of the Moffitt Cancer Center
Yasin et al. (2024) [18]	Ethiopia	Cross-sectional	396 HIV-positive women	Participants were 20 to 49 years, mean age was 32.8 (± 8.68) years	HIV-positive women in Asella Town, Ethiopia	30.3% (120 out of 396)	Facilitators: Knowledge, attitude, health worker sensitization; Barriers: Fear of positive test results	BMC Infectious Diseases
Baykemagn et al. (2025) [19]	Ghana, Kenya, Mozambique, and Tanzania	Retrospective Cross-Sectional	33,952 women	Not reported	Women aged 30-49 in SSA countries	13% (4,414 out of 33,952)	Facilitators: Wealth status, HIV test history, education; Barriers: Lack of access to healthcare	JMIR Public Health and Surveillance
Okyere, Ayebeng, & Dickson (2024) [20]	Côte d'Ivoire	Cross-sectional	9,078 women	Participants were 25 to 49	Women aged 25-49 in Côte d'Ivoire	7.52% (683 out of 9,078)	Facilitators: Age, education, wealth, health insurance; Barriers: Financial constraints, lack of awareness	BMC Health Services Research
Isabirye, Mbonye, & Kwagal	Uganda	Cross-sectional	845 women	Participants were 25 to 49, majorit	Women aged 25-49 in Central Uganda	20.6% (174 out of 845)	Facilitators: Knowledge, wealth, health worker sensitization; Barriers: Lack of awareness, financial constraints	PLOS ONE

a (2020) [21]				y were aged 25–39 years				
Mungo et al. (2024) [22]	Kenya	Retrospective Cross-Sectional	57,298 HIV-positive women	Mean age = 31.4 years	Women living with HIV in care programs, Western Kenya	29.4% (16,846 out of 57,298)	Facilitators: Age at first screening, ART use; Barriers: Lack of funding, healthcare infrastructure	JCO Global Oncology
Wambui et al. (2024) [23]	Kenya	Cross-sectional study	391 women	Participants aged 15-54 years, Mean age = 34.5 years	General public, Women in Kiambu Sub-County in kenya	25.8% (101 out of 391) screened	Facilitators: Education level, Religion (Muslim) Barriers: Low income, Misconceptions	East African Medical Journal
Ehwarieme & Emina (2022) [24]	Nigeria	Cross-sectional study	220women	Mean age = 30 years	Female teachers in Nigeria	10.45% (23 out of 220) screened	Facilitators: Educational level, knowledge; Barriers: Lack of access, cost concerns	The Nigerian Health Journal
Okyere (2025) [25]	Kenya	Cross-sectional	16,824 women	15-49 years	Women of reproductive age from Kenya Demographic and Health Survey	16.68% (2,837 out of 16,824) screened	Facilitators: Multiple sexual partnership (MSP); Barriers: Low education, urban vs rural differences, distance to healthcare, wealth disparities.	BMC Cancer
Bogale, Ali, & Sherif (2024) [26]	Ethiopia	Cross-sectional	578women	≥25 years	HIV-positive women in Addis Ababa, Ethiopia	31.5% (182 out of 578) screened	Facilitators: recommendation from health professionals; higher income; certain occupations; longer duration living with HIV. Barriers: consider themselves healthy; perceived screening as painful; feeling shy to be screened; inadequate knowledge	Cancer control : journal of the Moffitt Cancer Center,

Woldetsadik et al. (2020) [27]	Ethiopia	cross-sectional study	425 women	18–49 years	Women attending family health department (outpatient visitors)	12.2% (52 out of 425)	Facilitators: heard about screening benefits; knowledge of screening place; perceived risk. Barriers: rural residence; low monthly income; lack of knowledge; fear of test outcome; lack of information/ not knowing place of service; feeling healthy.	BMC Women's Health
Emru, Abebaw, & Abera (2021) [28]	Ethiopia	Cross-sectional	411 women	15-49 years	HIV-infected women	25.5%(105 out of 411) screened	Facilitators: Awareness of cervical cancer and screening. Barriers: Lack of awareness, fear of positive results, fear of painful procedures, long waiting times.	Women's Health
Adzigbli et al. (2025) [29]	Ghana	Cross-sectional	7,124 women	30-49 years	General female population	7.27% (517 out of 7,124)	Facilitators: Higher education, media exposure, health insurance, visits to health facilities. Barriers: Low wealth index, rural residence, lack of awareness.	BMC Infectious Diseases
Tsekpetse et al. (2025) [30]	Ghana	Cross-sectional	7,105 women	30-49 years	General female population	6.83% (485 out of 7105)	Facilitators: Higher education, health facility visits, media exposure, higher wealth index. Barriers: Rural residence, lack of health insurance.	BMC Women's Health
Fentie, Tadesse, & Gebretekle (2020) [31]	Ethiopia	Cross-sectional Mixed-method study(quantitative & qualitative)	844 women	Mean age: 35.74 (±7.6) years	Women attending cervical cancer screening services in Addis Ababa, Ethiopia	10.3% (87 out of 844)	Facilitators: Age, knowledge of cancer, access to services; Barriers: Lack of awareness, cultural/religious beliefs, stigma, inaccessibility.	BMC Women's Health
Njoroge et al. (2023)	Kenya	Mixed-method, cross-sectional	272 women	18-59 years	Women in Laikipia East Sub-County, Kenya	32.4% (88 out of 272)	Facilitators: Age, income level, awareness campaigns; Barriers: Fear, lack of time, stigma, lack of	African Journal of Health Sciences

[32]							knowledge on benefits of screening.	
Saasa-Modise et al. (2022) [33]	South Africa	Descriptive Cross-sectional study	550 women	23-68 (median: 34)	HIV-positive women on ART in primary health care clinics	32.9% (181 out of 550)	Facilitators: ART adherence; Barriers: Lack of staff training, delayed screening, poor policy adherence, low screening uptake in younger women.	Pan African Medical Journal
Isara & PC-Onyekwere (2024) [34]	Nigeria	Cross-sectional study	214 women	15-49 years	Antenatal clinic attendees	16.2% (31 out of 191)	Facilitators: Awareness (via health workers, mass media); Barriers: Fear of pain, lack of perceived susceptibility, lack of awareness of symptoms, financial constraints, and fear of positive results.	Journal of Medicine & Biomedical Research
Ngutiku, Mwenda, & Maranga (2021) [35]	Kenya	Descriptive Cross-sectional study	163 women	20-59 years	Nurses at Thika Level 5 Hospital	41% (67 out of 163)	Facilitators: Knowledge of cervical cancer; Barriers: Fear of test results, lack of perceived susceptibility, and the belief that cervical cancer screening is unnecessary for young nurses.	East African Medical Journal
Omowhara, Ameh, & Banjo (2022) [36]	Nigeria	Cross-sectional	234 women	30–65 years; mean 41.08 ± 8.45 years	Adult women resident in a rural community (Orhuwhorun) — community household	4.3% (10 out of 234)	Facilitators: Health education / increased awareness; availability of affordable & accessible screening. Barriers: Lack of awareness/knowledge, lack of spousal support, misperceptions/stigma/modesty, cultural beliefs/traditions, cost of screening, limited access	The Nigerian Health Journal.
Kangethe et al. (2022) [37]	Kenya	Cross-sectional Mixed-method study(q	305 women	Median age = 36 years	Women living with HIV (WLHIV) receiving HIV care	44.6% (136 out of 305)	Facilitators: Older age , higher education, knowledge of the HPV vaccine. Barriers: User fees/costs, fear of painful/invasive	Southern African Journal of HIV Medicine

		uantitative & qualitative)			at the KNH Comprehensive Care Center		procedure and perceived effect on fertility, provider characteristics, long waiting times, stock-outs	
Olatubi et al. (2024) [38]	Nigeria	Descriptive cross-sectional	313 women	Mean 22.39 years; majority 21–25 years	Female undergraduate students at a Nigerian university	9.3% (29 out of 313)	Facilitators: Willingness to be vaccinated; opportunistic screening by healthcare workers recommended by authors. Barriers: Lack of awareness, cost/expense, ignorance of need, not knowing where to get screened	Bayero Journal of Nursing & Health Care.
Ndateba, Kabatsinda, & Ndabarora (2021) [39]	Rwanda	Cross-sectional	178 women	Adults ≥25 years	Women aged ≥25 years attending outpatient department at Rwamagana Hospital	23.0% (41 out of 178)	Facilitators: Higher knowledge and higher monthly income Barriers: low knowledge, poverty, lower education, rural residence, limited access	Rwanda Journal of Medicine and Health Sciences V

Meta-analysis Findings

Forest Plot Analysis

The forest plot analysis of the included studies as shown in Figure 2 reveals considerable variability in the event rates (uptake of screening) of cervical cancer screening uptake across Sub-Saharan Africa. The event rates in the included studies ranged from 0.023 to 0.899, whereas the pooled event rate, as indicated by the random effects model, was 0.212 (95% CI: 0.162, 0.272). Therefore, the overall prevalence of cervical cancer screening uptake in Sub-Saharan Africa based on the included studies, as determined by the random effects model was 21.2% (95% CI: 16.2%, 27.2%). This pooled estimate of 21.2% indicates that cervical cancer screening uptake remains low across the region. Each study's point estimate is represented by a square, and the 95% confidence intervals are shown by the horizontal lines.

Meta-Analysis Statistics and Heterogeneity

According to the statistical indices, as shown in Figure 3, the fixed-effect model yields a point estimate of 0.313 (95% CI: 0.312, 0.314), which is slightly higher than the random-effect model's estimate of 0.212 (95% CI: 0.162, 0.272). This disparity indicates significant between-study heterogeneity. The high Tau-squared value of 0.862 and the I-squared value of 99.948% further highlight the substantial variability across the studies. Such heterogeneity may be attributed to differences in study design, population characteristics, and regional disparities in cervical cancer screening practices.

Distribution of True Effects

Figure 4 illustrates the distribution of the true effect size for cervical cancer screening uptake, with a pooled estimate of 0.212 (95% CI: 0.162, 0.272). This suggests that, for a typical population in Sub-Saharan Africa, the expected screening uptake falls within this range. The 95% prediction interval spans from 0.04 to 0.62, indicating that while most similar populations are expected to have screening uptake close to the mean, the true effect size for each study remains uncertain. This wide interval reflects the substantial variability across the studies included in the analysis.

Funnel Plot Interpretation

The funnel plot presented in Figure 5 provides a visual assessment of the standard error plotted against the logit event rate for studies included in this

meta-analysis. The plot suggests a symmetrical distribution of data points, indicating the absence of significant publication bias. The shape appears to follow an expected funnel pattern, with smaller studies (greater standard errors) scattered towards the bottom, while larger studies (smaller standard errors) concentrate near the top. This symmetry strengthens the reliability of the overall estimates and supports the robustness of the findings regarding cervical cancer screening uptake in Sub-Saharan Africa.

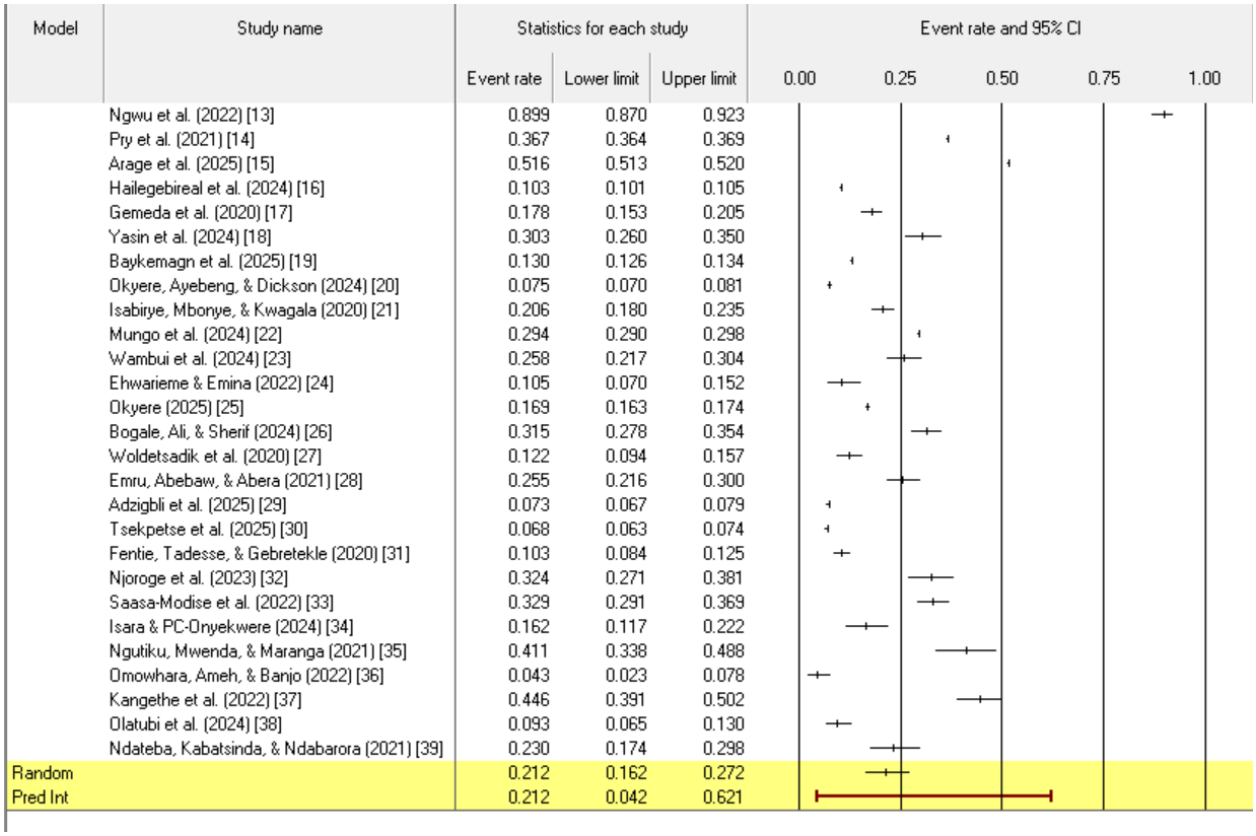

Figure 2: Forest Plot

Model	Effect size and 95% interval			Prediction Interval		Between-study		Other heterogeneity statistics			
Model	Number Studies	Point estimate	Lower limit	Upper limit	Lower limit	Upper limit	Tau	TauSq	Q-value	df (Q)	P-value	I-squared
Fixed	27	0.313	0.312	0.314					50210.699	26	0.000	99.948
Random	27	0.212	0.162	0.272	0.042	0.621	0.862	0.743				

Figure 3: Meta-analysis statistics

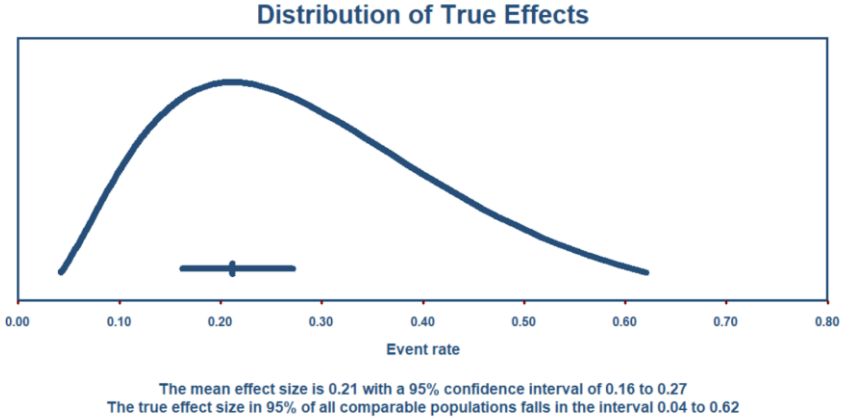

Figure 4: Distribution Plot of True effects

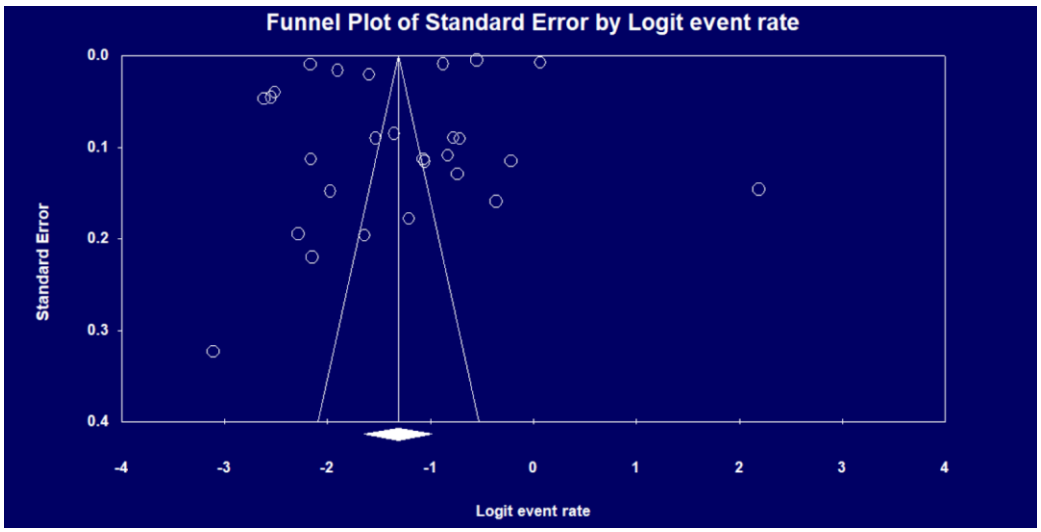

Figure 5: Funnel Plot

Narrative Synthesis for the Predictors of Cervical Cancer Screening Uptake

This section explores the predictors (facilitators and barriers) of cervical cancer screening uptake, based on findings from 27 studies included in this review. The information synthesized here reveals significant trends, variations, and disparities in the factors influencing screening uptake across different demographics, regions, and healthcare settings.

Facilitators of Cervical Cancer Screening Uptake

I. Knowledge and Awareness of Cervical Cancer

A critical facilitator of cervical cancer screening uptake is knowledge about the disease, including its risk factors, symptoms, and the benefits of early detection. Several studies underscore the importance of health education in improving screening rates, highlighting that women who are more aware of cervical cancer and its prevention methods are more likely to participate in screening programs. For instance, studies in Kenya found that increased knowledge about the risks of cervical cancer and the role of screening in early detection significantly correlates with higher screening uptake [21, 24]. Women who are informed about cervical cancer's preventability through screening are more likely to take part in programs aimed at early detection.

The studies also suggest that knowledge about the importance of early screening is more prevalent among women who have received health education either through formal healthcare settings or community outreach programs. In rural areas, however, knowledge gaps persist, leading to low participation rates in screening. For example, studies conducted in rural Ethiopia [26], and Nigeria [36] report a significant lack of awareness about the availability of screening services, contributing to lower uptake.

Furthermore, the effectiveness of education campaigns varies by demographic factors such as education level and location. For example, a study by Omowhara (2022) [36] in Nigeria found that women in urban areas had greater awareness of screening programs compared to their rural counterparts. The discrepancy in knowledge levels based on education and geographic location is clear—women with higher education levels and those residing in urban settings are more likely to be aware of cervical cancer and the screening options available [30, 37] These findings highlight the importance of targeted health education initiatives tailored to specific communities, particularly rural and underserved areas.

II. Education Level

The link between education level and cervical cancer screening uptake is widely recognized across the studies included in this review. Higher levels of education have consistently been found to facilitate better understanding and awareness of health issues, including cervical cancer. For instance, studies conducted in Ghana [29] and Ethiopia [18] found that women with higher education levels were significantly more likely to participate in screening programs compared to those with lower educational attainment. This finding is supported by other studies in Nigeria [34, 38], which reported a strong association between education and increased health literacy, leading to higher uptake of cervical cancer screening.

Education empowers women by providing them with the knowledge necessary to make informed decisions about their health. For example, women

with secondary and tertiary education were more likely to know about cervical cancer screening, the process involved, and its potential life-saving benefits. This was evident in studies, which found that educated women were not only more aware of cervical cancer but were also more likely to actively participate in screening programs [33, 35].

III. Age

Age is another factor influencing cervical cancer screening uptake. Older women generally exhibit higher screening participation, as they are more likely to be familiar with preventive health measures and may be more attuned to the risks associated with cervical cancer. In studies conducted in Ethiopia [31], Nigeria [36] and Kenya [37], older women showed greater participation in screening programs compared to younger women.

IV. Access to Healthcare Services

Proximity to healthcare facilities, availability of screening services, and healthcare infrastructure are critical factors influencing cervical cancer screening uptake. Studies across various Sub-Saharan African countries consistently show that urban areas with better access to healthcare services have higher screening rates. In several studies, urban women had higher screening uptake due to greater proximity to healthcare facilities, better infrastructure, and more available screening services [34, 35, 36]. Conversely, women in rural areas, where healthcare access is limited, were less likely to participate in screening programs.

A critical barrier to screening in rural areas is the distance to the nearest healthcare facility offering cervical cancer screening. In studies conducted in rural Ethiopia [26] and Kenya [37], long travel distances were identified as a significant factor contributing to low screening uptake. The lack of infrastructure and healthcare resources in rural areas further exacerbates this issue, highlighting the need for mobile screening services and outreach programs to bridge this gap.

V. Integration with Other Health Services (e.g., HIV care, family planning)

Integrating cervical cancer screening with other healthcare services, such as HIV care and family planning, has been shown to increase screening uptake. Studies conducted in Kenya [37], Ethiopia [18], and South Africa [33] found that when cervical cancer screening was offered alongside HIV testing or family planning services, there was an increase in uptake, particularly among women already engaged in these services. The convenience of receiving multiple health services in a single visit to a healthcare facility serves as a strong incentive for women to undergo screening.

VI. Health Worker Support and Counseling

Health workers play a pivotal role in facilitating cervical cancer screening uptake. Counseling, guidance, and recommendations from healthcare providers are significant facilitators. Studies show that healthcare providers who actively discuss cervical cancer screening with their patients significantly increase the likelihood of women participating in these programs [29, 34]. Health workers who provide information about the importance of early detection and make recommendations during routine health visits have a positive impact on women's decision to screen [36].

Barriers to Cervical Cancer Screening Uptake

I. Lack of Knowledge and Misconceptions

One of the most significant barriers to cervical cancer screening uptake in Sub-Saharan Africa is a lack of knowledge and misconceptions about the disease. Many women are unaware of the risk factors, symptoms, and the importance of regular screening. Studies conducted in rural areas show that women in these regions often lack knowledge about cervical cancer, leading to lower screening rates [30, 31]. In contrast, urban women, who are more likely to have received some form of health education, are more aware of the benefits of screening.

II. Cultural Beliefs and Stigma

Cultural beliefs and stigma surrounding cervical cancer and its screening process also play a significant role in deterring women from seeking screening services. In conservative communities, particularly in rural areas, the idea of a pelvic examination or the stigma attached to being screened for cancer creates fear and reluctance to participate. Studies from Nigeria [36] and Ethiopia [31] have found that cultural resistance and fear of a positive diagnosis contribute to low screening uptake, especially among younger women.

III. Socioeconomic Status and Financial Constraints

Socioeconomic status is another major barrier to cervical cancer screening uptake. Financial constraints, lack of insurance, and poverty prevent many women from accessing screening services, especially in low-resource settings. Studies have highlighted that women from lower socioeconomic backgrounds, who are often employed in informal sectors or live in rural areas, struggle to afford the costs associated with screening services [34, 35].

IV. Geographic and Logistical Barriers

Geographic barriers, including long travel distances and poor transportation infrastructure, are prevalent in many rural areas. Women in these regions often face significant challenges in accessing healthcare services due to limited local facilities. This is particularly true in remote areas of Ethiopia [26, 37], where the absence of mobile clinics and outreach programs limits access to screening services.

V. Fear, Privacy Concerns, and Personal Factors

Fear, embarrassment, and privacy concerns also prevent many women from undergoing cervical cancer screening. The fear of a positive diagnosis or embarrassment about the screening process prevents women from seeking the services they need. Several studies have found that privacy issues during the screening process, along with the fear of being diagnosed with cancer, are significant barriers that deter women from participating in screening programs [18, 37].

VI. Health System Factors

Finally, limitations within the health system, such as the lack of trained personnel, long waiting times, and insufficient healthcare infrastructure, contribute to low screening uptake. This is evident in studies that point to the lack of resources and training for health workers as critical factors that reduce the effectiveness of cervical cancer screening programs [30, 31].

Discussion

The findings of this study shows that there is persistent challenge of low cervical cancer screening uptake across Sub-Saharan Africa, with a pooled prevalence of 21.2% (95% CI: 16.2, 27.2%) across 27 studies. This finding echoes the World Health Organization's (WHO) assertion that SSA accounts for 85% of global cervical cancer deaths, largely due to inadequate screening programs [40]. Despite the availability of screening as a preventive measure, significant barriers, including lack of awareness, cultural stigma, financial constraints, and limited healthcare access, continue to hinder screening efforts. These results align with prior studies showing similar trends in the region, where rates of screening remain alarmingly low, particularly in rural areas [41, 42].

Comparing these findings with global trends, the World Health Organization (WHO) has emphasized the critical need for scaling up cervical cancer screening and HPV vaccination as part of the global strategy to eliminate cervical cancer and call for 70% of women to be screened by the age of 35 and again at 45 [40]. Yet, Sub-Saharan Africa remains far from achieving the screening coverage required to reduce the incidence and mortality of cervical cancer. Thereby highlighting the disparity between the region's current practices and the ideal coverage target.

It is noteworthy that this study emphasises the need to leverage the integration of screening with Other Health Services (e.g., HIV care, family planning) as a promising strategy to improve screening uptake. This is also evident in findings from several studies which found uptake increase among HIV-positive women, leveraging existing healthcare touchpoints [43-45]. This aligns with PEPFAR's 2023 guidelines and its Go Further: Partnership to End AIDS and Cervical Cancer initiative Launched in May 2018 which advocates bundling services to reduce missed opportunities [46, 47]. Accordingly, as of 2023, the partnership has supported over 7.4 million cervical cancer screenings for women living with HIV across partner countries [46, 47].

Despite the existence of initiatives such as WHO and PEPFAR, cervical cancer screening uptake remains critically low in Sub-Saharan Africa due to multiple, underlying challenges. These include inadequate health system readiness, particularly the shortage of trained healthcare providers and insufficient infrastructure to handle widespread screening programs [48]. Furthermore, deeply ingrained gender norms and cultural taboos around sexual health hinder women's willingness to seek screening, particularly in rural areas where such practices are more prevalent [49]. Policy enforcement gaps also play a role, as many national strategies lack the necessary accountability mechanisms to ensure their implementation at the local level [50]. Thus, the absence of a robust health system, combined with gendered social barriers and ineffective policy execution, continues to impede the success of cervical cancer screening efforts in the region.

As Sub-Saharan Africa confronts this preventable public health crisis, the findings of this study underscore an urgent imperative: cervical cancer must be prioritized as a critical component of regional health agendas as evident in Africa CDC 2030 Roadmap to accelerate the implementation of the regional framework to eliminate cervical cancer in Africa [51]. To ensure no woman dies from a preventable cancer, addressing disparities in education, healthcare access, and socioeconomic equity is essential to improving screening uptake and reducing mortality. Therefore immediate, evidence-based interventions are required to align with global elimination targets [51].

Strengths and Limitations

One of the strengths of this study lies in its comprehensive synthesis of data from diverse Sub-Saharan African countries, providing a broad view of the region's challenges and disparities. Nonetheless, the search was narrow; due to language limitations, and no grey literature search was performed. However, a key limitation is the considerable heterogeneity across the studies, which may affect the generalizability of the findings. Moreover, the review protocol was not registered with PROSPERO or any other database. Additionally, in this study, the sources of high heterogeneity recorded in this study were not evaluated as sub-group meta-analysis was not carried out. Future research should consider evaluating these heterogeneity.

Conclusion

This study highlights the alarmingly low prevalence of cervical cancer screening uptake in Sub-Saharan Africa, with significant barriers such as lack of awareness, financial constraints, and limited healthcare access. The findings underscore the urgent need for targeted health education, improved healthcare infrastructure, and integration with other health services, such as HIV care. Addressing these barriers through policy changes and community-driven interventions could significantly enhance screening uptake. Future research should focus on region-specific strategies and explore the role of mobile health initiatives in overcoming logistical barriers.

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