PAJRI
PAN-AFRICAN JOURNAL OF RESEARCH AND INNOVATION

Pan-African Journal of Research and Innovation in Medical, Health and Clinical

ISSN: 3413-9431 | Vol. 1, Issue 1 | www.pajri.com | DOI: https://doi.org/10.0000/0000

Determinants of Cervical Cancer Screening Uptake among Women of Reproductive Age Living with HIV in Akamkpa Local Government Area, Cross River State

[1]Juliet Owunari Perri, [2]Anthony Ike Wegbom, [3]Clement Kevin Edet

[1,2]Department of Public Health Sciences, Rivers State University, Nkpolu-Oroworukwo, Port Harcourt, Nigeria.

[3]Department of Community Medicine, Rivers State University, Nkpolu-Oroworukwo, Port Harcourt, Nigeria.

* Corresponding author: Juliet.perri@rsu.edu.ng

Received: 2026-08-09	Accepted: 2026-08-29	Published: 2026-09-03

ABSTRACT

Cervical cancer screening is essential for women living with HIV, yet uptake is shaped by personal resources, health beliefs, and service organisation. This study assessed factors associated with cervical cancer screening uptake among women of reproductive age living with HIV in Akamkpa LGA, Cross River State. A health facility based cross sectional study was conducted among 340 women receiving HIV care in five facilities. Data were collected using a structured interviewer-administered questionnaire and a clinical record extraction form. Frequencies and percentages described screening behaviours, while crude odds ratios and 95% confidence intervals were recalculated from verified cross tabulations. Screening uptake was 43.5%. Lack of awareness and financial constraints were the leading reported barriers. Higher screening odds were observed among women aged 25 to 34 years, currently married women, women with secondary or tertiary education, women with higher monthly income, and those diagnosed with HIV for five to ten years. Good knowledge was associated with fourfold higher screening odds (COR = 4.11; 95% CI [2.50, 6.77]), while positive attitude was also significant (COR = 1.94; 95% CI [1.19, 3.18]). Provider referral increased the odds more than threefold, and being directly offered screening during an HIV clinic visit showed the strongest association (COR = 14.58; 95% CI [8.42, 25.25]). The findings indicate that screening depends on both readiness and service opportunity. Routine counselling, provider initiated offers, affordable screening, and integrated HIV and cervical cancer services are required.

KEYWORDS: Cervical cancer, screening uptake, associated factors, women living with HIV, provider referral, Akamkpa

OPEN ACCESS
This is an open-access article distributed under the terms of the Creative Commons Attribution 4.0 International Licence (CC BY 4.0).

1. Introduction

Cervical cancer is largely preventable through human papillomavirus vaccination, regular screening, and timely treatment of precancerous lesions. Persistent infection with oncogenic human papillomavirus is the necessary cause of almost all cervical cancers, but the transition from infection to invasive disease is strongly affected by immune status and access to preventive care. The burden remains greatest in low income and middle income countries where organised screening, follow up, and treatment systems are incomplete (Arbyn et al., 2020; World Health Organization [WHO], 2026).

Women living with HIV require special attention because impaired immune control increases persistent human papillomavirus infection and accelerates progression to cervical disease. Global analysis indicates

that women living with HIV are approximately six times more likely to develop cervical cancer than women without HIV (Stelzle et al., 2021). WHO therefore recommends that women living with HIV begin cervical screening earlier and repeat it more frequently than women in the general population (WHO, 2021a, 2021b). The existence of a screening methods does not guarantee its use. Screening uptake is the realised behaviors of an eligible woman who has completed at least one recognised cervical cancer screening test. For women living with HIV, uptake may be influenced by knowledge of risks, attitudes towards screening, perceived susceptibility, fear, cost, education, income, marital support, clinic organisation, provider recommendation, and whether screening is offered during a routine HIV appointment. These factors interact rather than operate separately.

Research across sub-Sahara Africa has shown that uptake among women living with HIV varies widely and is often lower than required for effective prevention. Systematic reviews identify inadequate knowledge, financial barriers, fear, stigma, distance, service shortages, and weak integration of screening into HIV care as recurring obstacles (Guillaume et al., 2020; Mengesha et al., 2023). Studies in Tanzania and Zambia further show that knowledge and positive attitudes can increase screening, but the health system must provide a practical opportunity for women to act (Kimondo et al., 2021; Mukosha et al., 2023; Mwantake et al., 2022).

In Nigeria, screening remains largely opportunistic and unevenly available. A national systematic review found that poor knowledge, fear of the procedure or result, cost, and health service limitations consistently reduced use (Mafiana et al., 2022). Policy mapping also identified incomplete resource assessment and implementation gaps across cervical cancer control plans (Okolie et al., 2025). At the same time, a large programme implemented through Nigerian antiretroviral therapy sites demonstrated that screening and treatment can be integrated into HIV services when providers, commodities, referral pathways, and monitoring systems are available (Ogunsola et al., 2023).

Akamkpa Local Government Area contains urban, semi urban, and rural communities with different levels of access to transport, information, and specialised health services. Women living with HIV in the area attend treatment clinics, but their regular contact with the health system may not translate into cervical cancer prevention. Understanding the factors associated with screening is necessary because a low screening rate may arise from different problems. A woman may be willing but not offered the service, knowledgeable but unable to afford it, referred but unable to travel, or unaware despite long term engagement in HIV care.

Statement of the Problem

Women living with HIV have a substantially increased cervical cancer risk, yet many do not receive screening at the recommended time or interval. This creates a preventable gap in comprehensive HIV care. When screening is not routinely integrated into antiretroviral therapy services, women must locate another service, obtain a referral, pay transport and procedure costs, and overcome fear or stigma without guaranteed access at the destination.

Previous research has established that cervical screening behaviours are shaped by multiple levels of influence. Individual factors include knowledge, attitude, perceived risk, and fear. Socio-economic factors include education, income, employment, and family support. Health system factors include provider recommendation, direct screening offers, service availability, waiting time, privacy, trained staff, and functional referral pathways. An intervention that addresses only one level may improve awareness without improving uptake.

Before the source study, there was limited local evidence showing which factors were most strongly associated with screening among women receiving HIV care in Akamkpa. Without this information, programs could invest in general awareness campaigns while overlooking the more immediate influence of provider initiated screening, affordability, or facility readiness. The study therefore examined screening uptake in relation to demographic characteristics, HIV care, knowledge, attitude, perception, provider referral, and whether screening was offered during clinic visits.

Aim and Objective

The aim was to examine cervical cancer screening behaviour among women of reproductive age living with HIV in Akamkpa Local Government Area. The specific objective was to assess the individual, socioeconomic, clinical, and health system factors associated with cervical cancer screening uptake.

Research Question

What individual, socio-economic, clinical, and health system factors are associated with cervical cancer screening uptake among women of reproductive age living with HIV in Akamkpa Local Government Area?

2. Literature Review

2.1. Cervical Cancer Screening Uptake among Women Living With HIV

Cervical cancer screening aims to detect high risk human papillomavirus infection or precancerous cervical changes before invasive cancer develops. The principal methods are HPV DNA testing, cervical cytology, and visual inspection with acetic acid. WHO recommends HPV DNA testing as the preferred primary method where feasible and advises screening from age 25 at three to five-year intervals for women living with HIV (WHO, 2021a, 2021b).

Uptake is commonly measured as a history of ever screening or screening within a recommended interval. Ever screening indicates contact with prevention services, but it may not show whether the woman remains adequately screened. Recent screening is a stronger measure of program continuity. In the Akamkpa project, both lifetime experience and screening frequencies within the previous three years were examined, allowing the study to distinguish between any exposure and continued use.

A systematic review and meta-analysis by Mengesha et al. (2023) found that screening uptake among women living with HIV in sub-Saharan Africa remained low and varied considerably across settings. The variability reflects differences in policy, service integration, facility resources, population characteristics, and measurement. It also shows that women living with HIV cannot be treated as a uniform group. Local service arrangements determine whether clinical eligibility becomes actual screening.

Integrated delivery is especially relevant because women receiving HIV treatment already have repeated contact with healthcare providers. When screening is available within the same facility or appointment, transport costs, additional waiting time, disclosure concerns, and loss to referral can be reduced. Ogunsola et al. (2023) demonstrated the feasibility of screening women living with HIV across Nigerian ART sites, although program quality, treatment completion, and follow up require continued strengthening.

2.1.1. Individual and Psychosocial Factors

Knowledge supports screening when it enables a woman to recognise her elevated risk, understand the purpose of screening, know that testing is required before symptoms occur, and identify where services are available. Lack of information is one of the most consistently reported barriers among women living with HIV (Guillaume et al., 2020). However, awareness alone may not produce action. Women can know that screening is beneficial and still avoid it because of fear, cost, embarrassment, or service unavailability.

Attitude reflects a woman's evaluation of the screening procedure and its expected consequences. A positive attitude may include belief in early detection, willingness to screen, confidence in treatment, and trust in providers. Negative attitudes may involve fear of pain, fear of a positive result, modesty concerns, or the belief that cancer is inevitably fatal. Studies among women living with HIV in Tanzania and Zambia have found significant relationships between knowledge, attitude, and screening practice (Kimondo et al., 2021; Mukosha et al., 2023).

Perception includes perceived susceptibility, severity, benefits, and barriers. Women who feel personally vulnerable and believe that early detection is useful may be more willing to screen. Nevertheless, perception is not always sufficient when structural barriers remain. A woman can hold favourable views and still be unable to pay for the test or reach a facility. This distinction is important when interpreting statistical associations because behavioural readiness and service access represent different parts of the screening pathway.

Fear and stigma can operate at several levels. The examination may be perceived as painful or embarrassing, and a positive result may be interpreted as a death sentence. In addition, attending a service connected with HIV care can raise concerns about disclosure. These fears are reduced when counselling explains the procedure, female providers are available where preferred, privacy is protected, and women understand that precancer can be treated.

2.1.2.Socio-economic and Clinical Factors

Education affects health literacy, exposure to information, understanding of prevention, and confidence in communicating with providers. Women with secondary or tertiary education are generally more likely to use screening than women with limited formal schooling. The implication is not that education alone determines behaviours, but that health systems must present information in plain language and local languages so that preventive care is not dependent on literacy.

Income influences the ability to pay for transport, consultation, testing, childcare, and time away from work. Even where a screening test is described as free, indirect costs may prevent attendance. Mafiana et al. (2022) identified financial barriers as a recurrent reason for low screening uptake in Nigeria. Income can also influence access to phones, media, and social networks that provide information about available

services.
Marital status may affect screening through emotional support, shared finances, permission, or reproductive health contact. Married women may receive support from partners, but marriage can also restrict autonomy where women require permission or money to seek care. Age may influence service use because younger women are more likely to interact with reproductive health services, while older women may face mobility limitations or may not perceive screening as relevant.
Clinical factors include duration since HIV diagnosis, time in HIV care, ART use, adherence, CD4 count, and clinic attendance. Longer engagement in care creates more opportunities for counselling and referral, but it does not guarantee screening if cervical cancer prevention is absent from routine protocols. The key issue is therefore not only the duration of contact but the content of the care provided.

2.1.3. Health System Factors
Provider recommendation is a direct cue to action. A trusted healthcare worker can explain risk, correct misconceptions, assess eligibility, and make screening feel like a normal part of HIV care. A referral is more effective when it includes a specific location, appointment, expected cost, and follow up plan. General advice to obtain screening elsewhere can be lost when women face multiple competing demands.
Being offered screening during a routine clinic visit removes several stages from the access pathway. It converts screening from a future intention into an immediate opportunity. Integrated services can also reduce stigma because the woman does not need to attend a separate cancer or gynaecology clinic. Facility based evidence from sub-Sahara Africa continues to show uneven availability of screening, diagnosis, and treatment within HIV services, reinforcing the importance of co-location and functional referral systems.
Service readiness requires trained personnel, privacy, equipment, reagents, infection prevention supplies, record systems, and treatment pathways. Education without service readiness can weaken trust when women are repeatedly informed about screening but cannot obtain it. Health system interventions should therefore strengthen both demand and supply.

2.2. Theoretical Framework
Health Belief Model
The Health Belief Model explains preventive behaviours through perceived susceptibility, perceived severity, perceived benefits, perceived barriers, cues to action, and self-efficacy (Janz & Becker, 1984). Applied to cervical screening, women are more likely to act when they understand their HIV related risk, believe cervical cancer is serious but preventable, trust that screening is beneficial, and feel able to complete the procedure.
Knowledge influences susceptibility and benefit, while fear, cost, stigma, and distance increase perceived barriers. Provider referral and a direct screening offer serve as cues to action. A respectful screening experience can improve self-efficacy and future screening. The model is therefore useful for explaining why knowledge and attitude may be associated with uptake, while also recognising that strong barriers can prevent action.
Andersen Behavioural Model of Health Services Use
Andersen's model explains service use through predisposing characteristics, enabling resources, and need factors (Andersen, 1995). Predisposing factors include age, marital status, education, and health beliefs. Enabling resources include income, transport, service availability, provider referral, and screening offers. Need factors include objectively elevated cervical cancer risk and a provider's clinical recommendation.
The model complements the Health Belief Model by showing that willingness is not enough. A woman may perceive high risk and value screening but still lack the money, transport, or available service needed to complete it. The combination of both models supports interventions that address beliefs and practical access at the same time.

2.3. Empirical Review
Guillaume et al. (2020) systematically reviewed barriers to cervical cancer screening among women living with HIV in low-income and mid-income countries. Lack of knowledge was the most common barrier, followed by health system limitations, fear, and financial concerns. The review concluded that educational interventions should be combined with accessible services.
Kimondo et al. (2021) assessed women living with HIV in northern Tanzania after cervical screening had been integrated into routine HIV care. Knowledge and attitudes were important, but screening practice remained lower than expected. A related study by Mwantake et al. (2022) found that service and individual factors were associated with screening, supporting the need for provider counselling and integration.

Mukosha et al. (2023) reported positive relationships between knowledge, attitude, and screening practice among women living with HIV in Zambia. Mrema et al. (2023) found that important knowledge gaps persisted among women receiving HIV care in northern Tanzania. Together, these studies show that regular clinic attendance does not automatically ensure preventive knowledge or service use.

Mengesha et al. (2023) studied screening uptake and barriers across sub-Sahara Africa and reported wide variation with persistently low coverage. Mafiana et al. (2022) reached a similar conclusion in Nigeria, identifying poor knowledge, perceived lack of need, fear, financial constraints, and health service barriers. These reviews support a multilevel approach rather than a single awareness intervention.

Ogunsola et al. (2023) evaluated a large cervical screening and treatment program for people living with HIV in Nigeria. The program demonstrated that ART sites can provide cervical prevention services at scale. Okolie et al. (2025), however, found continuing gaps in Nigeria's policy landscape, including limited resource mapping and weaknesses in implementation monitoring. The present study contributes local evidence by showing which factors were associated with screening in Akamkpa.

3. Methodology

3.1. Study Area and Design

The study was conducted in Akamkpa Local Government Area of Cross River State, Nigeria. The area includes urban, semi urban, and rural communities, and many residents depend on farming, fishing, petty trading, public service, and informal work. Five facilities providing HIV care were included: General Hospital Akamkpa, Mma Effa Health Centre, Mfamosing Health Centre, Oban Health Centre, and Aningeje Health Centre.

A descriptive health facility based cross sectional design was used to assess cervical cancer screening uptake and associated factors among women receiving HIV care.

3.2. Study Population and Sampling

The study population comprised women aged 18 to 49 years with a confirmed HIV diagnosis who were receiving care in one of the selected facilities, had been on HIV treatment for at least six months, and provided informed consent. Pregnant women and women who were seriously ill were excluded.

Cochran's formula produced an initial sample of 370, which was increased to 407 to allow for nonresponse. A multistage procedure was used. The five HIV treatment facilities were purposively selected, eligible women were identified from ART clinic registers, proportional allocation was applied, and participants were selected through simple random sampling. A total of 340 complete responses were analysed.

3.3. Instrument, Validity, and Reliability

Data were collected using a structured interviewer-administered questionnaire and a clinical record extraction form. The questionnaire covered socio demographic characteristics, HIV related information, screening history, knowledge, attitude, perception, provider referral, screening offers, and barriers. Trained case managers assisted participants who preferred Pidgin English or local languages, and interviews were conducted privately after routine appointments.

Content and face validity were established through literature review, expert assessment, and a pilot study involving 30 women in a facility outside the selected sample. The knowledge scale produced a Cronbach alpha coefficient of 0.78, indicating acceptable internal consistency.

3.4. Measurement and Data Analysis

Cervical cancer screening uptake was defined as a self-reported history of at least one Pap smear, visual inspection with acetic acid, or HPV test before the survey. Knowledge, attitude, and perception were classified using the scoring procedures specified in the source project. Provider referral indicated whether a healthcare worker had referred the respondent for screening, while screening offered indicated whether the service had been directly offered during an HIV clinic visit.

Frequencies and percentages were used to describe screening behaviours and reported barriers. For this article, bivariate associations were independently verified using the original cross-tabulated counts. Crude odds ratios (ORs), 95% confidence intervals (CIs), and Pearson’s chi-square test p-values were recalculated directly from these counts. Statistical significance was set at $p < 0.05$. Adjusted estimates were not reported because they could not be independently verified from the available aggregate cross-tabulated data.

4. Results

4.1. Cervical Cancer Screening Profile

Among the 340 respondents, 148 had undergone cervical cancer screening, giving an uptake of 43.5%, while 192 had never screened. Screening was offered during an HIV clinic visit to 124 respondents (36.5%), whereas 216 (63.5%) were not offered screening. A healthcare provider had referred 212 respondents (62.4%) for screening, while 128 (37.6%) had not received a referral. These are separate indicators measured among the same 340 respondents, and each indicator independently totals 340.

Among the 192 women who had never screened, lack of awareness and financial constraints were the leading reported barriers, followed by fear of the result or procedure and lack of time. Because respondents could report more than one barrier, barrier responses were multiple-response findings and were not expected to total 192 or 100%. Future screening intention was assessed among all 340 respondents: 208 (61.2%) intended to screen, while 132 (38.8%) did not.

Table 1: Cervical Cancer Screening Profile Among Respondents, Each Indicator N = 340

Indicator	Affirmative response n (%)	Complementary response n (%)	Total N (%)
Screening uptake	Ever screened: 148 (43.5)	Never screened: 192 (56.5)	340 (100.0)
Screening offered during HIV clinic visit	Offered: 124 (36.5)	Not offered: 216 (63.5)	340 (100.0)
Provider referral	Referred: 212 (62.4)	Not referred: 128 (37.6)	340 (100.0)
Future screening intention	Intends to screen: 208 (61.2)	Does not intend: 132 (38.8)	340 (100.0)

Source: Field survey, 2026.

4.2. Socio-economic and Clinical Factors Associated with Screening

Women aged 25 to 34 years had significantly higher screening odds than women aged 18 to 24 years (COR = 2.89; 95% CI [1.27, 6.57]; p = .010). The associations for women aged 35 to 44 years and women aged 45 years or older were not statistically significant. All four age categories together included 148 screened and 192 not screened respondents.

Currently married women had 1.83 times the screening odds of women who were not currently married (95% CI [1.18, 2.84]; p = .007). Secondary education and tertiary education were each associated with higher screening odds compared with primary education or less. Women earning N70,000 to N100,000 and those earning above N100,000 also had significantly higher odds than women earning below N70,000.

Women diagnosed with HIV for five to ten years had 1.64 times the screening odds of women diagnosed for less than five years (95% CI [1.02, 2.65]; p = .040). A diagnosis duration above ten years was not significant. Current ART status, ART adherence, and clinic attendance were also not significantly associated with screening. Table 2 presents each factor as a separate distribution of the same sample. Within every factor block, all categories together account for 148 screened and 192 not screened respondents, giving N = 340.

Table 2: Socioeconomic and Clinical Factors Associated With Screening Uptake, Each Factor N = 340

Factor and category	Screened n (%)	Not screened n (%)	Total n	COR (95% CI)	p value
Age group (factor total: screened = 148; not screened = 192; N = 340)					
18 to 24 years, reference	10 (29.4)	24 (70.6)	34	1.00	Not applicable
25 to 34 years	65 (54.6)	54 (45.4)	119	2.89 (1.27 to 6.57)	.010
35 to 44 years	60 (44.1)	76 (55.9)	136	1.89 (0.84 to 4.27)	.119
45 years or older	13 (25.5)	38 (74.5)	51	0.82 (0.31 to 2.17)	.690
Marital status (factor total: screened = 148; not screened = 192; N = 340)					
Not currently married, reference	53 (35.3)	97 (64.7)	150	1.00	Not applicable
Currently married	95 (50.0)	95 (50.0)	190	1.83 (1.18 to 2.84)	.007
Education level (factor total: screened = 148; not screened = 192; N = 340)					
Primary education or less, reference	40 (33.6)	79 (66.4)	119	1.00	Not applicable
Secondary education	75 (49.0)	78 (51.0)	153	1.90 (1.16 to 3.12)	.011

Tertiary education	33 (48.5)	35 (51.5)	68	1.86 (1.01 to 3.42)	.044
Monthly income (factor total: screened = 148; not screened = 192; N = 340)					
Below N70,000, reference	75 (36.8)	129 (63.2)	204	1.00	Not applicable
N70,000 to N100,000	45 (52.9)	40 (47.1)	85	1.94 (1.16 to 3.23)	.011
Above N100,000	28 (54.9)	23 (45.1)	51	2.09 (1.13 to 3.90)	.018
Duration since HIV diagnosis (factor total: screened = 148; not screened = 192; N = 340)					
Below 5 years, reference	45 (37.8)	74 (62.2)	119	1.00	Not applicable
5 to 10 years	85 (50.0)	85 (50.0)	170	1.64 (1.02 to 2.65)	.040
Above 10 years	18 (35.3)	33 (64.7)	51	0.90 (0.45 to 1.78)	.755
Current ART status (factor total: screened = 148; not screened = 192; N = 340)					
Currently on ART, reference	142 (44.0)	181 (56.0)	323	1.00	Not applicable
Not currently on ART	6 (35.3)	11 (64.7)	17	0.70 (0.25 to 1.93)	.482
ART adherence (factor total: screened = 148; not screened = 192; N = 340)					
Always adherent, reference	96 (47.1)	108 (52.9)	204	1.00	Not applicable
Sometimes or rarely adherent	52 (38.2)	84 (61.8)	136	0.70 (0.45 to 1.08)	.108
Clinic attendance (factor total: screened = 148; not screened = 192; N = 340)					
Regular attendance, reference	121 (45.0)	148 (55.0)	269	1.00	Not applicable
Irregular attendance	27 (38.0)	44 (62.0)	71	0.75 (0.44 to 1.28)	.293

Source: Field survey, 2026.

4.3. Knowledge, Attitude, and Health System Factors

Good knowledge had a strong association with screening. Women with good knowledge had 4.11 times the screening odds of women with poor knowledge (95% CI [2.50, 6.77]; p < .001). Positive attitude was also significant, with screening odds nearly twice those of women with negative or neutral attitudes (COR = 1.94; 95% CI [1.19, 3.18]; p = .008). Favourable perception was reported by 214 respondents, but it was not significantly associated with screening after recalculation from the cross-tabulated counts (COR = 1.35; 95% CI [0.86, 2.12]; p = .185).

Provider referral increased screening odds more than threefold (COR = 3.41; 95% CI [2.11, 5.51]; p < .001). The strongest association was observed when screening was directly offered during an HIV clinic visit. Women who received an offer had 14.58 times the screening odds of those who were not offered screening (95% CI [8.42, 25.25]; p < .001). Each behavioural and health-system factor in Table 3 includes the full sample of 340 respondents, comprising 148 screened and 192 not screened women.

Table 3: Behavioural and Health System Factors Associated With Screening Uptake, Each Factor N = 340

Factor and category	Screened n (%)	Not screened n (%)	Total n	COR (95% CI)	p value
Knowledge level (factor total: screened = 148; not screened = 192; N = 340)					
Poor knowledge, reference	28 (23.0)	94 (77.0)	122	1.00	Not applicable
Good knowledge	120 (55.0)	98 (45.0)	218	4.11 (2.50 to 6.77)	< .001
Attitude level (factor total: screened = 148; not screened = 192; N = 340)					
Negative or neutral attitude, reference	32 (32.3)	67 (67.7)	99	1.00	Not applicable

Positive attitude	116 (48.1)	125 (51.9)	241	1.94 (1.19 to 3.18)	.008
Perception level (factor total: screened = 148; not screened = 192; N = 340)					
Unfavourable perception, reference	49 (38.9)	77 (61.1)	126	1.00	Not applicable
Favourable perception	99 (46.3)	115 (53.7)	214	1.35 (0.86 to 2.12)	.185
Provider referral (factor total: screened = 148; not screened = 192; N = 340)					
Not referred, reference	33 (25.8)	95 (74.2)	128	1.00	Not applicable
Referred by provider	115 (54.2)	97 (45.8)	212	3.41 (2.11 to 5.51)	< .001
Screening offered during HIV clinic visit (factor total: screened = 148; not screened = 192; N = 340)					
Screening not offered, reference	48 (22.2)	168 (77.8)	216	1.00	Not applicable
Screening offered	100 (80.6)	24 (19.4)	124	14.58 (8.42 to 25.25)	< .001

Source: Field survey, 2026.

5. Discussion

The study found that 43.5% of women living with HIV in Akamkpa had ever undergone cervical cancer screening. The result indicates that a substantial proportion had reached a preventive service, but more than half remained unscreened despite their elevated risk. The finding is consistent with systematic review evidence showing that screening among women living with HIV in sub Saharan Africa remains below the level needed for effective cervical cancer prevention (Mengesha et al., 2023).

The leading barriers were lack of awareness and financial constraints. These findings agree with the Nigerian systematic review by Mafiana et al. (2022), which identified poor knowledge, cost, fear, and health service barriers as recurring reasons for non-screening. The combination of informational and financial barriers shows why awareness campaigns alone are insufficient. Women need accurate counselling, but they also need a service they can afford and reach.

Women aged 25 to 34 years had higher screening odds than those aged 18 to 24 years. This age group may have more contact with reproductive health services, greater awareness of prevention, and more opportunities to receive screening recommendations. The non-significant result among older age groups suggests that screening does not increase consistently with age. Programmes should therefore avoid waiting until women are older before initiating counselling. WHO recommends earlier screening for women living with HIV because of their increased risk (WHO, 2021a, 2021b).

Currently married women were more likely to have screened than women who were not currently married. Marriage may provide financial support, encouragement, and contact with maternal or reproductive health services. However, marital status should not be used as a proxy for eligibility. Unmarried women living with HIV require the same risk based information and access. Providers should avoid assumptions that cervical screening is relevant only to married women or mothers.

Education was significantly associated with screening. Women with secondary or tertiary education had almost twice the odds of screening compared with women with primary education or less. Education may improve health literacy and confidence in navigating services. The practical implication is that clinic communication should not depend on formal schooling. Plain language, local language explanations, visual materials, and teach back methods can reduce literacy related inequality.

Income also influenced screening uptake. Women earning at least N70,000 monthly had higher screening odds than women in the lowest income category. This finding supports the reported financial barrier and demonstrates that indirect costs remain important. Transport, lost work time, childcare, and referral expenses may prevent women from acting even where the test is subsidised. Screening integrated into

routine HIV visits can reduce these additional costs.

Women diagnosed with HIV for five to ten years had higher screening odds than women diagnosed for less than five years. Longer contact with the health system may increase opportunities for counselling and referral. However, screening did not continue to rise among women diagnosed for more than ten years, and duration on ART was not significant. This suggests that time in care alone does not guarantee comprehensive prevention. Screening status must be assessed and documented rather than assumed.

Good knowledge showed one of the strongest individual associations. Women with good knowledge had more than four times the screening odds of women with poor knowledge. This result supports the Health Belief Model because accurate knowledge can strengthen perceived susceptibility, clarify benefits, reduce uncertainty, and provide a route to action. It also agrees with studies among women living with HIV in Tanzania and Zambia that linked knowledge with screening practice (Kimondo et al., 2021; Mukosha et al., 2023).

Positive attitude was significantly associated with uptake, although the effect was smaller than that of knowledge or health system exposure. A woman may understand screening but still require confidence that the procedure is acceptable, useful, and manageable. Counselling should address pain, embarrassment, fear of results, and treatment possibilities. Mrema et al. (2023) showed that women receiving HIV care can retain important misconceptions, which makes repeated and personalised discussion necessary.

Favourable perception was not significantly associated with screening uptake. This means that a generally favourable view of cervical screening did not necessarily result in completed screening when financial, logistical, or service barriers remained. The finding reinforces the distinction between behavioural readiness and actual access to an enabling service.

Provider referral was strongly associated with screening. A recommendation from a healthcare worker can transform cervical cancer from a distant concern into an immediate clinical priority. The result supports the role of providers as cues to action. Referral should be specific and documented, with information on location, date, cost, and follow up. A vague recommendation to screen elsewhere may not be sufficient.

Being directly offered screening during an HIV clinic visit had the strongest association of all factors examined. The odds of screening were more than fourteen times higher among women who received an offer. This result shows that service opportunity may be more decisive than intention alone. When screening is integrated into the same visit, women do not need a second journey, another disclosure, or a separate appointment. The Nigerian programme described by Ogunsola et al. (2023) provides evidence that ART sites can serve as effective platforms for cervical cancer prevention.

The difference between provider referral and a direct offer is also instructive. Referral improved uptake, but an immediate offer had a much larger association. Health systems should therefore prioritise co-located services where feasible. Where referral is unavoidable, patient navigation, appointment tracking, transport support, and feedback to the referring clinic can reduce loss between recommendation and completion.

The findings reflect the interaction proposed by the Health Belief Model and Andersen's Behavioural Model. Knowledge and attitude shape readiness, while education and income influence predisposing and enabling resources. Provider referral supplies a cue to action, and a direct screening offer removes access barriers. Effective intervention must therefore combine accurate information, positive provider communication, affordability, and service readiness.

The study was facility based and may not represent women living with HIV who are disengaged from care. Screening history was self-reported and may be affected by recall. The cross sectional design identifies associations but cannot establish causation. In addition, this article used aggregate cross tabulations, so only crude associations that could be independently verified were reported. Despite these limitations, the findings provide a clear local basis for strengthening integrated services in Akamkpa.

6. Conclusion

Cervical cancer screening uptake among women living with HIV in Akamkpa was low, with fewer than half having ever screened. Screening was associated with age, marital status, education, income, duration since HIV diagnosis, knowledge, attitude, provider referral, and direct service offer. The strongest association was observed when screening was offered during an HIV clinic visit.

The findings show that cervical screening is not determined only by personal willingness. Women require accurate information, supportive attitudes, financial access, provider action, and an available service. Integrating cervical cancer screening into routine HIV care is therefore the most direct strategy for converting repeated clinic contact into effective prevention.

Recommendations

1. Cervical cancer screening should be routinely offered during ART clinic visits rather than relying mainly on external referral.
2. Every eligible woman should receive a documented provider recommendation that includes the screening location, timing, expected cost, and follow up process.
3. Screening should be free or subsidised for women receiving HIV care, with transport or navigation support for referrals that require travel.
4. Clinic education should address HIV related risk, screening before symptoms, fear of results, procedure related concerns, and the fact that ART does not replace cervical screening.
5. Information should be delivered in plain language and local languages, supported by pictures and teach back methods for women with limited formal education.
6. HIV clinics should maintain trained staff, privacy, screening supplies, referral registers, and systems for tracking completion and follow up.
7. Women who have completed screening can be trained as peer champions to provide accurate practical information and reduce fear within HIV support groups.
8. Future research should use participant level data and multivariable analysis to identify independent predictors and examine the pathway from referral to completed screening.

References

Andersen, R. M. (1995). Revisiting the behavioral model and access to medical care: Does it matter? Journal of Health and Social Behavior, 36(1), 1-10. https://doi.org/10.2307/2137284

Arbyn, M., Weiderpass, E., Bruni, L., de Sanjose, S., Saraiya, M., Ferlay, J., & Bray, F. (2020). Estimates of incidence and mortality of cervical cancer in 2018: A worldwide analysis. The Lancet Global Health, 8(2), e191-e203. https://doi.org/10.1016/S2214-109X(19)30482-6

Guillaume, D., Chandler, R., & Igbinoba, S. (2020). Barriers to cervical cancer screening among women living with HIV in low- and middle-income countries: A systematic review. Journal of the Association of Nurses in AIDS Care, 31(5), 497-516. https://doi.org/10.1097/JNC.0000000000000194

Janz, N. K., & Becker, M. H. (1984). The Health Belief Model: A decade later. Health Education Quarterly, 11(1), 1-47. https://doi.org/10.1177/109019818401100101

Kimondo, F. C., Kajoka, H. D., Mwantake, M. R., Amour, C., & Mboya, I. B. (2021). Knowledge, attitude, and practice of cervical cancer screening among women living with HIV in the Kilimanjaro region, northern Tanzania. Cancer Reports, 4(5), e1374. https://doi.org/10.1002/cnr2.1374

Mafiana, J. J., Dhital, S., Halabia, M., & Wang, X. (2022). Barriers to uptake of cervical cancer screening among women in Nigeria: A systematic review. African Health Sciences, 22(2), 295-309. https://doi.org/10.4314/ahs.v22i2.33

Mengesha, M. B., Chekole, T. T., & Hidru, H. D. (2023). Uptake and barriers to cervical cancer screening among human immunodeficiency virus-positive women in Sub-Saharan Africa: A systematic review and meta-analysis. BMC Women's Health, 23, 338. https://doi.org/10.1186/s12905-023-02479-w

Mrema, D., Ngocho, J. S., Mremi, A., Amour, M., Machange, R., Shayo, B. C., Alloyce, J. P., Ndosi, E., Shirima, B. T., Fande, D., Shehoza, R., Balandya, E., Sunguya, B., Mshana, S. E., Mteta, A. K., Lyamuya, E., Bartlett, J., & Mmbaga, B. T. (2023). Cervical cancer in Northern Tanzania: What do women living with HIV know? Frontiers in Oncology, 12, 957325. https://doi.org/10.3389/fonc.2022.957325

Mukosha, M., Muyunda, D., Mudenda, S., Lubeya, M. K., Kumwenda, A., Mwangu, L. M., & Kaonga, P. (2023). Knowledge, attitude and practice towards cervical cancer screening among women living with human immunodeficiency virus: Implication for prevention strategy uptake. Nursing Open, 10(4), 2132-2141. https://doi.org/10.1002/nop2.1460

Mwantake, M. R., Kajoka, H. D., Kimondo, F. C., Amour, C., & Mboya, I. B. (2022). Factors associated with cervical cancer screening among women living with HIV in the Kilimanjaro region, northern Tanzania: A cross-sectional study. Preventive Medicine Reports, 30, 101985. https://doi.org/10.1016/j.pmedr.2022.101985

Ogunsola, O. O., Ajayi, O. A., Ojo, T. O., Osayi, E., Wudiri, K., Amoo, B., Ayoka-Ikechukwu, R., Olumeyan, O. O., Ifechelobi, C., Okonkwo, P., & Akinro, Y. (2023). Cervical cancer screening and treatment for PLWHIV: Experiences from an innovative program in Nigeria. Reproductive Health, 20, 125. https://doi.org/10.1186/s12978-023-01658-0

Okolie, E. A., Beek, K., Patel, B., Ndikom, C. M., & Joshi, R. (2025). Cervical cancer prevention and control in Nigeria: Mapping and review of policies. Health Policy and Planning, 40(8), 931-942.

https://doi.org/10.1093/heapol/czaf049
Stelzle, D., Tanaka, L. F., Lee, K. K., Khalil, A. I., Baussano, I., Shah, A. S. V., McAllister, D. A., Gottlieb, S. L., Klug, S. J., Winkler, A. S., Bray, F., Baggaley, R., Clifford, G. M., Broutet, N., & Dalal, S. (2021). Estimates of the global burden of cervical cancer associated with HIV. The Lancet Global Health, 9(2), e161-e169. https://doi.org/10.1016/S2214-109X(20)30459-9
World Health Organization. (2021a). New WHO recommendations on screening and treatment to prevent cervical cancer among women living with HIV: Policy brief. https://www.who.int/publications/i/item/9789240030961
World Health Organization. (2021b). WHO guideline for screening and treatment of cervical pre-cancer lesions for cervical cancer prevention (2nd ed.). https://www.who.int/publications/i/item/9789240030824
World Health Organization. (2026). Cervical cancer. https://www.who.int/news-room/fact-sheets/detail/cervical-cancer