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Amadi, Azubuike Ikemeafula, Lawal, Muili, Khan, Hafiz T.A. ORCID logoORCID:
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Examining women's perspectives regarding colposcopy in the cervical cancer screening program in rural Nigeria

by Azubuike Ikemeafula Amadi, Muili Lawal, Hafiz T. A. Khan, Sharry Leah Japhet, Edidong Nsikan Ekong, and Ernest Erenven Isemeye

ABSTRACT

Background: Cervical cancer remains a leading cause of morbidity and mortality among women in sub-Saharan Africa, with Nigeria bearing a significant burden. Despite the availability of screening programs, uptake remains low, particularly in rural areas. Understanding women's perspectives on colposcopy as part of cervical cancer screening is crucial for program improvement.

Objective: To examine women's experiences, perceptions, and attitudes toward colposcopy cervical cancer screening programs in rural Nigeria, including knowledge of cervical cancer, screening procedure, and factors influencing screening uptake.

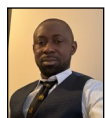
Methods: In-depth interviews were conducted with 41 women aged 25–49 years in rural Nigeria. Participants included both HIV-positive and HIV-negative women who had either undergone cervical cancer screening or had not accessed services. Thematic analysis was employed to analyze interview transcripts.

Results: Four major themes emerged: (1) Limited knowledge and awareness about cervical cancer and screening procedures; (2) Mixed experiences with screening processes, including inadequate pre-procedure education; (3) Multiple barriers to screening uptake including fear, stigma, transportation costs, and service delivery challenges; and (4) Recommendations for program improvement focusing on community awareness and service accessibility.

Conclusion: Women's perspectives reveal significant knowledge gaps, service delivery challenges, and structural barriers that impede optimal cervical cancer screening uptake. Comprehensive awareness campaigns, improved service delivery including better patient education about screening procedures, and community-based approaches are essential for enhancing program effectiveness in rural Nigeria.

Keywords: cervical cancer, screening, colposcopy, women's perspectives, barriers, rural Nigeria, HPV, visual inspection

AUTHOR NOTES

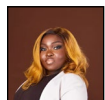


Dr. Azubuike Ikemeafula Amadi, College of Nursing, Midwifery and Health, University of West London, UK, iykedaissy@yahoo.com, Azubuike.amadi@uwl.ac.uk
ORCID ID: <https://orcid.org/0009-0005-8357-8012>

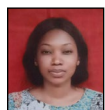
Muili Lawal, Professor, College of Nursing, Midwifery and Health, University of West London, UK, Muili.lawal@uwl.ac.uk



Hafiz T. A. Khan, Professor, College of Nursing, Midwifery and Health, University of West London, UK, Hafiz.khan@uwl.ac.uk
ORCID ID: <https://orcid.org/0000-0002-1817-3730>



Sharry Leah Japhet, National Agency for Food and Drug Administration and Control, Nigeria, sharryjaphet@yahoo.com



Edidong Nsikan Ekong, University of Port Harcourt, Nigeria, eddiensikan@gmail.com



Ernest Erenven Isemeye, University of Eastern Finland, ernestisemede@gmail.com

Corresponding author: Azubuike Ikemeafula Amadi, Azubuike.amadi@uwl.ac.uk

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INTRODUCTION

Cervical cancer represents the fourth most common cancer among women globally, with approximately 604,000 new cases and 342,000 deaths recorded in 2020 (Sung et al., 2021). The burden is disproportionately high in low- and middle-income countries, where 90% of deaths occur (World Health Organization [WHO], 2022). In Nigeria, cervical cancer is the second most common cancer among women, with an estimated 12,075 new cases and 8,240 deaths annually (Globocan, 2020).

The World Health Organization has established a global strategy for cervical cancer elimination, emphasizing the “90-70-90” targets: 90% of girls vaccinated by age 15, 70% of women screened by ages 35 and 45, and 90% of women with cervical disease receiving treatment (WHO, 2020; Amadi et al., 2024). However, achieving these targets remains challenging, particularly in resource-limited settings where screening coverage is often below 20% (Arbyn et al., 2020).

Colposcopy, a diagnostic procedure that provides magnified visualization of the cervix, plays a crucial role in cervical cancer screening programs. It enables healthcare providers to identify precancerous lesions and guide appropriate management decisions (Perkins et al., 2020). Despite its importance, women's acceptance and experiences with colposcopy vary significantly, influenced by factors including knowledge, cultural beliefs, healthcare system characteristics, and individual circumstances (Akinlotan et al., 2017).

In rural Nigeria, cervical cancer screening uptake remains suboptimal, with numerous studies documenting low awareness levels and poor service utilization. Studies report screening uptake rates ranging from 0.6% to 13.3% among rural women, with awareness levels as low as 15% in some communities (Eze et al., 2012; Ifemelumma et al., 2019; Wright et al., 2014). Among Igbo women in rural southeastern Nigeria, only 0.6% had ever been screened, while screening uptake in rural Lagos was reported at 13.3% (Eze et al., 2012; Wright et al., 2014). Even in settings with higher awareness, the translation from knowledge to screening behaviour remains poor, with studies showing that, while 50.9% of women may be aware of cervical cancer, only 10.2% have actually undergone screening (Hyacinth et al., 2012). This disparity is more pronounced in rural compared to urban areas, where 82.4% of screened women reside in urban settings versus only 17.6% in rural areas (Nwankwo et al., 2011).

Colposcopy plays a critical role in cervical cancer prevention as the standard diagnostic procedure following abnormal screening results, enabling direct visualisation of the cervix under magnification and guided biopsy of suspicious lesions (Perkins et al., 2020; Wentzensen et al., 2017). While primary screening tests, such as visual inspection with acetic acid (VIA), Pap smears, and HPV testing, identify women at risk, colposcopy provides definitive diagnosis and localization of precancerous lesions when screening results are abnormal (Massad et al., 2013).

Understanding women's perspectives on cervical cancer screening procedures, including visual inspection, HPV testing, and where indicated, colposcopy, is essential for developing targeted interventions to improve program effectiveness and reduce cervical cancer burden. These procedures require vaginal examination and can cause physical discomfort and psychological anxiety, potentially deterring women from accessing screening services (Galaal et al., 2011). In low-resource settings like rural Nigeria, where cervical cancer prevention programs are being scaled up using various screening approaches, women's acceptance of and experiences with these procedures significantly influence screening uptake and ultimately program impact (Adewole et al., 2005). Understanding barriers to screening, including procedural fears, inadequate patient education, and service delivery challenges, is therefore crucial for designing interventions that improve the entire screening-to-treatment continuum.

This study aims to examine women's perspectives toward colposcopy cervical cancer screening programs in rural Nigeria, exploring their knowledge of cervical cancer, experiences with emphasis on the colposcopy screening procedure, perceptions of screening services, and recommendations for service improvement.

METHODS

Study Design and Setting

This qualitative study employed in-depth interviews to explore women's perspectives on cervical cancer screening. A qualitative approach was selected as most appropriate for this study because it enables detailed exploration of complex

personal experiences, beliefs, and contextual factors that influence health-seeking behaviours, which cannot be adequately captured through quantitative methods (Creswell & Poth, 2018). In-depth interviews were specifically chosen over other qualitative methods, such as focus groups, to allow participants to discuss sensitive topics, including sexual health, HIV status, and personal experiences with intimate examinations, in a confidential setting where they could speak freely without fear of judgment from peers (Patton, 2015). This method is particularly valuable for understanding the "how" and "why" questions surrounding screening behaviours and for eliciting rich, detailed narratives about barriers and facilitators that women experience (Pope and Mays, 1995). Additionally, the qualitative approach allowed for exploration of unanticipated themes and perspectives that participants themselves considered important, rather than constraining responses to predetermined categories (Green and Thorogood, 2018).

The study was conducted in rural communities in Ahoada, Rivers State, Nigeria, where cervical cancer screening services using various methods, including colposcopy, visual inspection with acetic acid (VIA), HPV testing, and Pap smears, have been implemented as part of national cancer control efforts.

Participants and Sampling

Participants were recruited from multiple settings including health centres, community gatherings, and religious institutions in Ahoada Local Government Area, Rivers State. Inclusion criteria comprised women aged 25–49 years (HIV positive), 30–49 years (HIV negative), resident in the study area for at least 12 months, and able to provide informed consent. This age range was selected based on Nigerian national cervical cancer screening guidelines, which recommend screening for women aged 25–49 years, with the lower age limit of 25 years allowing for adequate exposure to HPV and time for precancerous lesions to develop, while the upper limit of 49 years captures the peak incidence period for cervical cancer in Nigeria (Federal Ministry of Health Nigeria, 2023; Ezechi et al., 2019). For HIV-positive women, screening is recommended from age 25 years, due to their increased risk of persistent HPV infection and accelerated progression to cervical cancer, while HIV-negative women in the general population typically begin screening at age 30 years (WHO, 2021). Exclusion criteria included women who were pregnant, menstruating at the time of the interview, or had undergone a hysterectomy.

Purposive sampling was employed to ensure maximum variation in screening experiences and HIV status (Patton, 2015). Healthcare workers at participating facilities (i.e., one general hospital, three rural health centres, and two HIV treatment centres) served as gatekeepers who identified potential participants during routine clinic visits and provided them with information about the study (Emmel et al., 2007). Interested women who met the inclusion criteria were then referred to the research team. The investigators reviewed eligibility, explained the study purpose and procedures in detail, obtained written informed consent, and scheduled interviews at times and locations convenient for participants. This

two-stage recruitment process helped protect patient privacy while allowing researchers to ensure voluntary participation free from coercion by healthcare providers (Robinson, 2014). Additionally, community leaders and religious institutions assisted in identifying eligible women who were not actively accessing health services, enabling recruitment of both screened and unscreened women to capture diverse perspectives. Recruitment continued until data saturation was achieved. After 41 interviews, it was evident that no new themes or perspectives emerged from three consecutive interviews (Guest et al., 2006).

Data Collection – interview guide

A semi-structured interview guide was developed specifically for this study by the research team following extensive literature review of cervical cancer screening studies in sub-Saharan Africa and consultation with local healthcare providers and community representatives to ensure contextual relevance (i.e., the process of interview guide development followed principles outlined by Kim, 2011). The initial draft guide contained 15 main questions with associated probes. This guide was piloted with five women from a neighbouring community not included in the main study. Based on the pilot interviews, refinements were made, including simplifying medical terminology (e.g., changing “cervical cancer screening” to “test for womb cancer” in local language translations), reordering questions to begin with less sensitive topics before progressing to more personal health experiences, adding probes to elicit more detailed narratives about screening experiences, and removing one question that participants found confusing about their understanding of HPV transmission mechanisms (Kim, 2011).

The final interview guide comprised 12 main questions with associated probing questions used flexibly as needed to explore emerging themes or to clarify participant responses (see Supplementary File 1 for complete interview guide). Topics covered included

- knowledge and awareness of cervical cancer and its causes
- previous experiences with cervical cancer screening procedures (if applicable)
- perceptions and attitudes toward cervical cancer screening
- barriers and facilitators to screening uptake
- recommendations for program improvement.

In-depth interviews were conducted by the principal investigator with the help of a trained research assistant fluent in both English and local languages (Ikwerre, Ekpeye and Pidgin English). Initial interviews were conducted in English where participants were comfortable; however, when participants preferred local languages or appeared to struggle with English comprehension, interviews were conducted in their preferred language and subsequently translated by certified translators experienced in health research (Squires, 2009). Back-translation was performed for 20% of translated interviews to verify accuracy (Brislin, 1970). All interviews were audio-recorded with participant consent, lasted 30–60 minutes, and were subsequently transcribed verbatim.

Data Analysis

Thematic analysis was employed following Braun and Clarke's (2006) six-phase approach using NVivo 12 software (QSR International, 2020). Three researchers (two with qualitative research experience and one with clinical expertise in women's health) independently coded all transcripts to enhance analytical rigour (Saldaña, 2021). Initial codes were generated inductively, followed by the identification of themes and subthemes through constant comparative analysis (Glaser and Strauss, 1967).

Coding disagreements were resolved through consensus meetings where coders discussed discrepancies until agreement was reached, with a fourth researcher consulted when consensus could not be achieved (Barbour, 2001). To strengthen analytic depth, HIV status was used as an analytical lens to examine differential experiences and perspectives between HIV-positive and HIV-negative women, with separate sub-analyses conducted for each group before integration into the overall thematic framework (Pope et al., 2000). This approach enabled identification of HIV-specific barriers and concerns, particularly around stigma and discrimination, while maintaining the overall analytical coherence. Member checking was conducted with six participants to verify accuracy of interpretation and enhance trustworthiness of findings (Lincoln & Guba, 1985).

Ethical Considerations

Ethical approval was obtained from the Rivers State Ministry of Health Research Ethics Committee (Reference Number: RSHMB/RSHREC/2022/061). All participants provided written informed consent after receiving detailed information about the study purpose, procedures, risks, and benefits in their preferred language. The consent form, available in English and translated into local languages, was read aloud to participants with limited literacy, and their consent was documented with a thumbprint or signature witnessed by an independent literate witness. Participants were informed of their right to withdraw from the study at any time without consequences and were assured of confidentiality through the use of unique participant codes rather than names on all study documents. Audio recordings and transcripts were stored securely in password-protected files accessible only to the research team. Given the sensitive nature of discussions around HIV status and sexual health, additional safeguards were implemented including conducting interviews in private settings, offering referrals to counselling services if needed, and providing information about local cervical cancer screening services to all participants. A modest transport reimbursement (₦1,000 naira, approximately \$2.50 USD) was provided to participants to cover travel costs and time, which was deemed appropriate and non-coercive by the ethics committees.

RESULTS

Participant Characteristics

The 41 participants ranged in age from 26 to 49 years (mean age 35.8 years). Eleven participants (26.8%) were HIV-positive,

Table 1*Demographic Data of Participants*

Participant coding	Participant Age	Religion	Ethnicity	Marital Status	Level of Education	Occupation	Undergone Colposcopy (Yes/No)	HIV Status
W 1	36	Christian	Ekpeye	Married	Tertiary	Trader	Yes	Negative
W 2	49	Christian	Ekpeye	Married	Tertiary	Trader	Yes	Negative
W 3	28	Christian	Ekpeye	Unmarried	Tertiary	Unemployed	No	Positive
W 4	48	Christian	Ekpeye	Married	Tertiary	Civil servant	Yes	Positive
W 5	26	Christian	Ekpeye	Unmarried	Tertiary	Civil servant	No	Positive
W 6	41	Muslim	Ekpeye	Married	Tertiary	Trader	Yes	Negative
W 7	30	Christian	Ekpeye	Married	Tertiary	Civil servant	Yes	Negative
W 8	43	Christian	Ekpeye	Married	Tertiary	Trader	Yes	Negative
W 9	42	Muslim	Ekpeye	Widowed	Tertiary	Trader	Yes	Positive
W 10	38	Muslim	Ekpeye	Married	Tertiary	Civil servant	Yes	Positive
W 11	33	Christian	Ekpeye	Married	Secondary	Civil servant	Yes	Negative
W 12	31	Christian	Ekpeye	Married	Tertiary	Trader	Yes	Negative
W 13	48	Christian	Ekpeye	Married	Secondary	Civil servant	Yes	Negative
W 14	30	Christian	Ekpeye	Married	Secondary	Trader	No	Negative
W 15	49	Christian	Ekpeye	Widowed	Tertiary	Civil servant	Yes	Positive
W 16	30	Christian	Ekpeye	Unmarried	Tertiary	Civil servant	No	Negative
W 17	38	Christian	Ekpeye	Married	Secondary	Civil servant	Yes	Negative
W 18	27	Christian	Ekpeye	Married	Tertiary	Unemployed	No	Positive
W 19	26	Christian	Ekpeye	Unmarried	Secondary	Civil servant	No	Positive
W 20	34	Christian	Ekpeye	Unmarried	Tertiary	Trader	No	Negative
W 21	32	Muslim	Ekpeye	Widowed	Tertiary	Civil servant	No	Negative
W 22	30	Muslim	Ogba	Married	Secondary	Civil servant	No	Don't know
W 23	28	Christian	Ekpeye	Unmarried	Tertiary	Trader	No	Positive
W 24	30	Christian	Ekpeye	Married	Tertiary	Trader	No	Don't know
W 25	33	Muslim	Ekpeye	Unmarried	Tertiary	Civil servant	No	Negative
W 26	38	Christian	Ekpeye	Married	Secondary	Farmer	Yes	Negative
W 27	39	Christian	Ogba	Married	Secondary	Civil servant	Yes	Negative
W 28	34	Christian	Ekpeye	Unmarried	Secondary	Civil servant	No	Negative
W 29	40	Christian	Ekpeye	Married	Tertiary	Trader	No	Negative
W 30	30	Christian	Ekpeye	Married	Tertiary	Civil servant	No	Negative
W 31	41	Christian	Ekpeye	Widowed	Tertiary	Civil servant	No	Negative
W 32	30	Christian	Ikwerre	Married	Secondary	Farmer	No	Negative
W 33	30	Christian	Ikwerre	Married	Secondary	Trader	Yes	Positive
W 34	37	Christian	Ekpeye	Widow	Tertiary	Civil servant	No	Don't know
W 35	32	Christian	Ekpeye	Married	Secondary	Civil servant	Yes	Negative
W 36	28	Christian	Ekpeye	Unmarried	Tertiary	Trader	No	Positive
W 37	39	Christian	Ekpeye	Married	Secondary	Civil servant	No	Negative
W 38	35	Christian	Ekpeye	Widowed	Tertiary	Trader	No	Negative
W 39	44	Muslim	Abua	Married	Tertiary	Trader	No	Negative
W 40	40	Christian	Ekpeye	Married	Tertiary	Trader	No	Negative
W 41	40	Christian	Ekpeye	Married	Tertiary	Civil servant	No	Negative

Table 2

Percentage Record of Participants

Characteristics	Number (N)	Percent (%)
Age		
20–34	20	48.8
35–49	21	51.2
Level of education		
Primary	0	0
Secondary	13	31.7
Tertiary	28	68.3
Marital status		
Married	26	63.4
Unmarried	9	22
Widowed	6	14.6
Occupation		
Employed	20	48.8
Unemployed	2	4.9
Self-employed	19	46.3
Religion		
Christian	34	82.9
Muslim	7	17.1

while twenty-seven (65.9%) were HIV-negative. Three did not know their HIV status. Seventeen participants (41.5%) had undergone cervical cancer screening, while twenty-four (58.5%) had not accessed screening services.

Thematic Analysis

Four major themes emerged from the analysis.

Theme 1: Limited Knowledge and Misconceptions about Cervical Cancer

Most participants demonstrated limited understanding of cervical cancer, its causes, and prevention strategies. Knowledge gaps were evident across all age groups and HIV status categories.

Misconceptions about Causes: Many participants held misconceptions about cervical cancer aetiology. One participant stated, “It is an infection when a lady has more than one sexual partner” (W1). Another believed, “It’s something that concerns health... there is no juju about it” (W2), indicating confusion between medical and traditional explanations. Some participants confused cervical cancer with other conditions: “They said its infection that affects woman or woman breast according to what you eat” (W7), demonstrating fundamental misunderstandings about the disease.

Limited Awareness of Screening: Several participants had never heard of cervical cancer or screening prior to the interviews: “I have not heard of cervical cancer before” (W3). Even among those who had heard of the condition, understanding remained superficial: “I just heard about, I know is the cancer of the cervix” (W5).

Sources of Information: Those with some knowledge, typically acquired information through healthcare encounters or social media: “I heard about it on Facebook, my friend posted it” (W11). However, systematic health education was notably absent from most participants’ experiences.

Theme 2: Screening Experiences Among Women Who Accessed Services

Participants who had undergone screening reported diverse experiences encompassing their motivations for screening, the screening process itself, communication with healthcare providers, and their overall satisfaction with services. These experiences ranged from positive to concerning, with significant variations in service quality and patient-provider interactions.

Motivations and Pathways to Screening: Women accessed screening through various pathways and for different reasons. Some were motivated by health promotion events: “That day they were celebrating World HPV Day, so went for the screening” (W1). Others were referred during routine healthcare visits: “When I came for the drugs, they said they have to conduct the drugs, checked me” (W7). Social influence played a significant role, with one participant noting, “A sister in church motivated me. She motivated me in the church to check my status” (W8). For HIV-positive women, screening was often presented as mandatory: “When I went for my HIV clinic to take my drugs, I was told that female from 18 years and above (60 years) that government has mandated that all must go for the testing that is compulsory” (W9).

Inadequate Pre-procedure Education: A recurring concern from the women was insufficient explanation of procedures before screening: “No I wasn’t given any information” (W1). Another participant noted, “They did not explain anything to me” (W11). This lack of preparation left many women uncertain about what to expect.

Physical Experiences and Procedural Variations: Women’s perspectives on the physical experience of screening varied widely, with pain, discomfort, and fear of the procedure emerging as significant concerns that influenced their willingness to seek or repeat screening.

Experiences of Pain and Discomfort: While some participants reported minimal discomfort (i.e., “It was okay, it was normal” [W1]; “I didn’t feel pain; I felt good” [W4]) others experienced considerable pain that left lasting negative impressions. One woman stated plainly, “Yes, the procedure was painful” (W7), while another described the screening as “a bit scary” initially (W8). The fear associated with the procedure was often mentioned even by women who ultimately found it tolerable: “I was a bit reluctant; I never wanted to go” (W8).

Post-procedure complications further shaped women’s perceptions. One participant described significant distress: “After that day, I think I was feverish, maybe the doctor, the instrument they used for me... All my body was painning me and I was surprised; they should have informed me to take either paracetamol or any analgesic after the process to reduce the pain” (W8). This experience not only caused physical suffering but also

influenced her future intentions: *"I don't think I will go again... the pains I went through the 1st time. And the fever"* (W8), though she later reconsidered when assured her body would adjust.

Fear of the Unknown and Procedural Anxiety: For many women, particularly those who had not been screened, fear of what the procedure would entail was a major barrier. For those who had been screened, the instruments used provoked anxiety: *"I have not used such instrument on my system, they inserted into my vagina, and the instrument was scary"* (W8). This woman's fear was compounded when the procedure was repeated: *"They did it twice, because the first one they did, the lady was seeing something like egg, she had to call the doctor, so they checked me again"* (W8). Even receiving reassuring results, *"the doctor told me nothing is wrong with me,"* could not fully alleviate the distress of *"the whole thing was scary"* (W8).

Among unscreened women, fear of pain was a significant deterrent: *"Some people don't go because... the methods they use in the cervical screening exercise is scary, I think it is painful too. That's part of the problem women encounter that makes them not to go for the screening"* (W35). Another unscreened woman expressed hesitation based on others' experiences: *"Fear of the procedure, maybe it will be painful, or it will hurt them"* (W6).

Privacy, Dignity, and Gender Dynamics: Women's comfort with the screening procedure was significantly influenced by privacy concerns and the gender of the examiner. One participant noted her initial comfort: *"It was easy for me because, I am a woman and since it's a woman that was going to examine me, I was more free, because even my childbearing time, no doctor had seen me"* (W8). However, her comfort was disrupted when a male doctor was called: *"It was when the lady invited the doctor, that I was not too comfortable again"* (W8). This highlights the importance of women's preferences for same-sex examiners in intimate procedures, particularly in conservative cultural contexts.

The intimate nature of the examination created discomfort even in appropriate settings: *"When I entered there, they told me to pull my undies, they told me to raise my leg, I raised my legs they put something in the vagina and did their check-up"* (W12). While this description is matter-of-fact, the vulnerability inherent in such positioning was not lost on participants.

Procedural Variations and Women's Understanding: Screening procedures varied considerably across settings, reflecting the use of different screening modalities in the program. Some participants underwent visual inspection: *"I lay down and they used something like tube inside my vagina, then I was ovulating and the result was negative"* (W1). Others described procedures that appeared to involve sample collection: *"They told me to lie down and open my legs, and they inserted something like an instrument inside my vagina. Later she told me she was done that I should stand up"* (W11), *"They told me to lie down and they inserted something in my vagina"* (W10).

Notably, some participants described self-collection methods conducted in church settings: *"We were given a container, there was stick that looks like ear bud and we were asked to go and clean somewhere. We were told to squat and put the stick inside our vagina and scrub it and put it back into the container and return*

to them. That was what we did" (W13). While this method may reduce discomfort from provider-administered procedures, one participant suggested it was suboptimal: *"It could have been better if they did it themselves than telling us to do it"* (W13).

The variation in procedures raised questions about women's understanding of what screening they had actually received. One participant's description suggested confusion: *"They used the stethoscope to scan the upper part of my body"* (W17), which does not align with any cervical cancer screening method, indicating possible miscommunication or misunderstanding about the procedure performed.

Attitudes Toward Screening Procedures Among Screened Women: Despite concerns about pain and discomfort, many screened women held positive overall views of the procedure. When asked how they would describe it to others, responses included: *"It is a safe and easy procedure and it's not painful. And it's very fast"* (W6), *"It's just a simple thing. Just tell the person that it's a simple process for you to be checked"* (W7), and *"It is not something difficult, or something to be afraid of"* (W13). These women became advocates, emphasizing: *"I will advise them to go for the screening so they can have babies. I will tell them I have done it and is not painful"* (W12).

However, more nuanced perspectives acknowledged both benefits and challenges: *"For me the cervical cancer screening was good, in this country is good to know your health status. If I will convince someone about it, I will tell them to go for it whether is free or not so that you can know your health status"* (W33). This suggests that for some women, the value of knowing their status outweighed procedural discomfort.

Impact on Word-of-Mouth and Future Screening Behaviour: The physical discomfort and post-procedure complications reported by some participants clearly contributed to negative word-of-mouth communication that potentially deterred other women from seeking screening. As one unscreened woman explained: *"I went for the screening, but I was menstruating... I didn't go back... My friend tested for it and they said she had it and they burned it, I don't want to check again"* (W27). Here, second-hand knowledge of a friend's positive result and treatment created fear that prevented this woman from completing her own screening.

The link between negative experiences and reduced future uptake was explicitly stated: *"I don't know, I don't think I will go again... the pains I went through the 1st time. And the fever"* (W8). Even when women later expressed willingness to return if invited, their initial reluctance revealed the lasting impact of painful experiences. This underscores the critical importance of minimizing procedural discomfort, providing adequate pain management, and preparing women appropriately for what to expect during and after screening.

Communication Challenges and Understanding: Language barriers affected procedure comprehension: *"Because of their language, I didn't understand the process well, they spoke fluent English and it was difficult for me to understand"* (W4). This highlights the need for culturally appropriate communication strategies that accommodate diverse literacy and language levels.

Post-Screening Experiences and Follow-up: Experiences with follow-up varied considerably. Some women were given clear instructions to return: *"They gave me a date to come back after 1 year or 6 months. They gave me a card that I will come back for another screening"* (W6). However, many reported no invitation for follow-up screening: *"No, I have not been invited"* (W8). Distance and transportation costs prevented some from returning for follow-up: *"Yes I was invited... No [I didn't go]... yes I couldn't go due to distance"* (W4). One participant who tested positive described confusion and lack of follow-through: *"The first time I went they said I was cervical cancer positive... I actually went there and they told me those people did not come that very day. I didn't have transport to Abuja so I didn't go back there"* (W12). This breakdown in the screening-to-treatment cascade represents a critical program failure.

Overall Satisfaction and Willingness to Return: Despite challenges, many participants expressed satisfaction with their screening experience: *"I was satisfied; at least I was not diagnosed with cervical cancer"* (W8). However, negative experiences deterred some from future screening: *"I don't think I will go again... the pains I went through the 1st time. And the fever"* (W8). Others expressed willingness to return if invited: *"If they invite me for another screening, sure, I will come"* (W7), suggesting that positive experiences and proactive follow-up could improve retention in screening programs.

Theme 3: Multiple Barriers to Screening Uptake

Participants identified numerous interconnected barriers that impeded cervical cancer screening uptake in their communities.

Stigma and HIV-related Concerns: HIV-positive women expressed particular concerns about stigma and disclosure: *"If I go for the screening everybody will now know I have the HIV sickness"* (W3). The differential age criteria for HIV-positive women created additional challenges: *"People that don't have the virus their age for the screening is 30 years, am just 28 years, if I go they will all know I have it"* (W3).

Fear and Anxiety: Fear emerged as a dominant barrier, manifesting in multiple forms. Fear of positive results was common: *"The anxiety of being positive, the fear of knowing they have it"* (W25). Some participants expressed fear of the procedure itself: *"The first time I came I wasn't attended, they can't do the mixture for me alone"* (W11).

Transportation and Access Challenges: Geographic and economic barriers significantly impacted access: *"I couldn't go due to distance"* (W4). Transportation costs were prohibitive for many: *"Through and from the hospital is up to #1000"* (W6). These challenges were particularly acute for women from remote rural areas.

Service Delivery Issues: Participants identified several health system challenges, including inadequate staffing: *"They need more hands to do the work"* (W8), and poor scheduling: *"Sometimes there are long queue in the health centres, that's why I haven't done it"* (W14).

Cultural and Religious Factors: While most participants did not report religious objections, some expressed cultural discomfort: *"It was as if I wasn't taking my health serious"* (W8). However, religious fatalism occasionally influenced health-seeking behaviour: *"I believe in God"* (W10).

Theme 4: Recommendations for Program Improvement

Participants provided numerous suggestions for enhancing cervical cancer screening programs, focusing on awareness, accessibility, and service quality.

Enhanced Community Awareness: The need for comprehensive awareness campaigns was consistently emphasized: *"There is need to create more awareness to increase the uptake of cervical screening among women"* (W1). Participants suggested multiple communication channels: *"Through radio stations, many people listen to radio. Also, in social media platforms like Facebook"* (W11).

Community-based approaches were recommended: *"They should use the local people in the facility to talk to them in their dialect, to mobilize and sensitize them"* (W2). Religious institutions were identified as important platforms: *"I think the lecture should be done in different churches that are where they will listen more"* (W12).

Improved Service Accessibility: Participants recommended bringing services closer to communities: *"If they can fix a day, inform the village heads, get a venue in the community"* (W6). Mobile screening units and decentralized service delivery were suggested as solutions to transportation barriers.

Quality Improvement: Enhanced pre-procedure education was consistently recommended: *"They should explain very well to women that are for their own benefit"* (W10). Participants also suggested providing post-procedure medications: *"They should make drugs available too"* (W8) and ensuring adequate staffing levels.

Integration with Existing Services: Participants recommended integrating screening with routine healthcare encounters: *"When they come to see the doctor, the doctor can inform the person about it"* (W6). Antenatal care was identified as a key opportunity: *"Women should be told about it when they come for ante-natal"* (W6).

DISCUSSION

This study provides valuable insights into women's perspectives on colposcopy cervical cancer screening in rural Nigeria. The findings reveal significant challenges that must be addressed to improve program effectiveness and achieve cervical cancer elimination goals.

Knowledge and Awareness Gaps

The limited knowledge demonstrated by participants aligns with previous studies in Nigeria and other sub-Saharan African countries (Ezechi et al., 2013; Ndikom & Ofi, 2012). Misconceptions about cervical cancer aetiology, including attributing the disease to multiple sexual partners or dietary factors, reflect inadequate health education and the persistence of cultural explanations for disease causation. These knowledge gaps have important implications for screening

uptake. Women who do not understand cervical cancer or the purpose of screening are unlikely to seek services proactively (Akinlotan et al., 2017). The finding that many participants only learned about screening through chance healthcare encounters or social media highlights the inadequacy of current health education strategies.

Screening Experiences and Service Quality

The varied experiences reported by participants underscore the need for standardized protocols and improved quality assurance in cervical cancer screening programs. Women's perspectives on the physical experience of screening revealed significant concerns about pain, discomfort, and procedural anxiety that directly influenced screening uptake and retention.

Physical and Psychological Impact of Screening: The physical discomfort and post-procedure complications reported by some participants clearly contributed to negative word-of-mouth communication that potentially deterred other women from seeking screening. The case of the woman who experienced fever and body pain after screening, who was not advised to take analgesics, represents a failure in post-procedure care that could have been easily prevented (W8). Her initial statement that she would not return for screening demonstrates how inadequate management of procedural side effects can lead to program attrition.

Women's fears about screening procedures were not abstract concerns but were grounded in real experiences shared within their communities. The fact that unscreened women specifically mentioned fear of pain and scary instruments (W35, W6) suggests that negative experiences have ripple effects, influencing not just individual women but their social networks. This highlights the critical importance of ensuring positive screening experiences as a form of health promotion, each satisfied patient becomes an advocate, while each negative experience creates multiple deterred potential screeners.

Privacy, Gender Sensitivity, and Cultural Appropriateness: The concern expressed about male healthcare providers conducting intimate examinations (W8) raises important questions about service delivery in conservative cultural contexts. While resource constraints may limit the availability of female providers, programs must consider women's preferences and comfort levels. The participant who noted she had never been examined by a doctor even during childbirth represents a population for whom provider gender may be non-negotiable, and insisting on male examiners could effectively exclude these women from screening.

Procedural Variations and Quality Assurance Barriers to Screening Uptake

The multiple barriers to uptake of screening identified in this study reflect the complex interplay of individual, social, and structural factors that influence health-seeking behaviour in low-resource settings. The stigma experienced by HIV-positive women represents a particular challenge, as this population has elevated cervical cancer risk and requires more frequent screening (WHO, 2020).

Fear emerged as a dominant barrier, consistent with findings from other studies in similar contexts (Ebu et al., 2015).

Fear of positive results, procedure-related anxiety, and concerns about disclosure create significant psychological barriers that must be addressed through appropriate counselling and support services.

The transportation and access challenges highlighted by participants reflect broader issues with healthcare accessibility in rural Nigeria. These barriers disproportionately affect the most vulnerable populations and contribute to health inequities (Adamu et al., 2012).

Program Improvement Recommendations

The recommendations provided by participants offer valuable guidance for program enhancement. The emphasis on community-based awareness campaigns reflects recognition of the importance of community engagement in health promotion activities. Utilising local languages, community leaders, and religious institutions represents a culturally appropriate approach to health education.

The suggestion to integrate screening with existing healthcare services, particularly antenatal care, aligns with WHO recommendations for integrating cervical cancer prevention with other women's health services (WHO, 2020). Such integration could improve efficiency and reduce barriers to access.

Study Limitations

This study has several limitations that should be acknowledged. The findings are based on a relatively small sample from a specific geographic area, limiting generalizability to other rural Nigerian communities. The cross-sectional design provides insights into perspectives at a single time point, but cannot capture changes in attitudes or experiences over time.

Interviewer positionality may have influenced data collection, as researchers were perceived as healthcare-affiliated, potentially encouraging socially desirable responses regarding health-seeking behaviours (Berger, 2015). For interviews conducted in local languages and subsequently translated, there is potential for loss of nuanced meaning despite rigorous translation procedures, which may have affected the depth of cultural understanding captured (Santos et al., 2015).

Power dynamics between educated researchers and rural participants may have influenced the openness of responses, particularly regarding sensitive topics, such as sexual behaviour or HIV status (Sultana, 2007). Additionally, the study focused primarily on women's perspectives without incorporating healthcare providers' viewpoints, which would provide additional insights into service delivery challenges. Social desirability bias may have influenced participants' responses, particularly regarding sensitive topics, and the retrospective nature of some accounts may be subject to recall bias.

Implications for Policy and Practice

The findings have important implications for cervical cancer screening program design and implementation in Nigeria and similar contexts. First, comprehensive health education campaigns are essential to address knowledge gaps and misconceptions about cervical cancer. These campaigns should utilize multiple channels and culturally appropriate messaging to reach diverse populations.

Second, service delivery models must be redesigned to improve accessibility and quality. This includes training health-care providers in patient communication, implementing standardized protocols, and developing strategies to reach remote rural populations. Mobile screening units and community-based service delivery may be particularly valuable in addressing geographic barriers.

Third, specific attention must be paid to addressing stigma and discrimination, particularly affecting HIV-positive women. This requires both individual-level interventions (counselling and support services) and structural changes to ensure equitable access to services.

Fourth, health system strengthening is essential to address staffing shortages, improve infrastructure, and ensure sustainable service delivery. This includes investing in health-care worker training, equipment procurement, and service integration.

Fifth, monitoring and evaluation systems must be strengthened to track program performance, identify challenges, and guide continuous improvement efforts. Regular assessment of women's experiences and perspectives should be incorporated into routine program monitoring.

Finally, future research should explore the effectiveness of interventions designed to address the identified barriers, with particular attention to innovative service delivery models and community engagement strategies. Comparative studies examining women's experiences with different screening modalities (VIA, HPV testing, cytology) would provide valuable

insights for optimizing screening approaches in resource-limited settings. Longitudinal studies examining changes in knowledge, attitudes, and screening behaviour over time would provide valuable insights into program impact and sustainability.

CONCLUSION

This study provides important insights into women's perspectives on cervical cancer screening in rural Nigeria. The findings reveal significant challenges including limited knowledge and awareness, varied service quality across different screening modalities, multiple access barriers, and the need for comprehensive program improvements. Addressing these challenges requires a multifaceted approach combining health education, service delivery improvements, community engagement, and health system strengthening. The recommendations provided by participants offer valuable guidance for developing more effective and acceptable cervical cancer screening programs.

Achieving the WHO cervical cancer elimination goals in Nigeria will require sustained commitment to addressing the barriers identified in this study. By prioritizing women's perspectives and experiences, program designers and implementers can develop more responsive and effective interventions that ultimately reduce the burden of cervical cancer among Nigerian women.

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