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Awareness and access barriers to cervical cancer screening among rural women in Nigeria: An extended literature review

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Abstract

Cervical cancer remains a major public health challenge in Nigeria, particularly among rural women, where awareness of the disease and participation in screening programmes remain low. This extended literature review examines the level of awareness of cervical cancer screening among rural women in Nigeria and identifies barriers that limit access to screening services. A comprehensive search of MEDLINE, CINAHL, and PubMed identified five relevant studies published between 2017 and 2023, including two qualitative and three quantitative studies. The PEO (Population, Exposure, Outcome) framework guided study selection and data extraction, while a modified Critical Appraisal Skills Programme (CASP) checklist was used to assess study quality. Findings were analysed thematically. The review identified several key barriers to cervical cancer screening, including limited knowledge and awareness, socio-cultural beliefs and misconceptions, financial constraints, geographical inaccessibility, inadequate healthcare infrastructure, and limited support from healthcare providers. Although awareness campaigns and community-based interventions have improved knowledge in some settings, significant challenges continue to hinder access to and uptake of screening services among rural women. The review highlights the need for culturally appropriate health education, improved access to affordable screening services, and strengthened healthcare delivery in rural communities. Addressing these barriers is essential for increasing screening uptake and reducing the burden of cervical cancer among rural women in Nigeria.

Keywords: Cervical cancer screening; Awareness; Healthcare access; Rural women; Nigeria

1. Introduction

Cervical cancer (CC) is one of the most common cancers affecting women worldwide and remains a major public health concern, particularly in low- and middle-income countries (Ajayi et al., 2019). It develops in the cervix through a gradual process of abnormal cellular changes known as cervical dysplasia, which may progress to cervical intraepithelial neoplasia (CIN) and eventually invasive cancer if left untreated (Lemp et al., 2020; Zhou et al., 2023). Early detection and treatment at the dysplasia stage can result in a near-complete cure rate and preserve reproductive health (Lemp et al., 2020). Human papillomavirus (HPV), a sexually transmitted infection, is responsible for approximately 99.7% of cervical cancer cases globally (Zhou et al., 2023).

Several risk factors increase women's susceptibility to cervical cancer, including early sexual debut, multiple sexual partners, high parity, co-infection with sexually transmitted infections such as HIV and Chlamydia, prolonged use of oral contraceptives, immunosuppression, and low uptake of cervical cancer screening services (Lyimo and Beran, 2012).

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Screening remains one of the most effective preventive measures, enabling the detection of precancerous lesions before symptoms develop. Common screening methods include the Pap smear, Visual Inspection with Acetic Acid (VIA), and Visual Inspection with Lugol's Iodine (VILI), with Pap smear cytology remaining one of the most sensitive and widely used techniques (Yu et al., 2017; Idowu et al., 2016).

Globally, cervical cancer is the fourth most common cancer among women, with approximately 660,000 new cases and 350,000 deaths reported in 2022, the majority occurring in low- and middle-income countries (WHO, 2022). In Africa, an estimated 80,000 new cases are diagnosed annually, and more than 267 million women remain at risk (WHO, 2023). Nigeria bears a particularly high burden, where cervical cancer ranks as the third most common cancer overall and the second leading cause of cancer-related deaths among women aged 15–44 years (UN, 2023). Despite ongoing efforts to strengthen cancer surveillance, awareness campaigns, and screening services, cervical cancer control in Nigeria continues to face challenges such as inadequate funding, weak policy implementation, and the absence of organized nationwide screening programmes (Jedy-Agba et al., 2015; Sowemimo, Ojo and Fasubaa, 2017; Babatunde Ajayi Olofinbiyi et al., 2024).

Recognizing the global burden of cervical cancer, the World Health Organization called for intensified cervical cancer prevention and screening efforts in low- and middle-income countries to eliminate the disease as a public health threat (Ghebreyesu, 2018). However, access to screening services in Nigeria remains uneven. Most screening facilities are concentrated in urban secondary and tertiary health institutions, leaving many rural women with limited awareness of cervical cancer and inadequate access to preventive services (Oluwole et al., 2017; Walji et al., 2021). Consequently, delayed diagnosis and high mortality rates persist, particularly in underserved communities. Understanding the level of awareness and the barriers that hinder access to cervical cancer screening among rural women is therefore essential for designing effective interventions and improving screening uptake. This extended literature review examines existing evidence on awareness and access barriers to cervical cancer screening among rural women in Nigeria, with the aim of informing policies and strategies that can reduce the burden of the disease.

Contribution of the Review

This review contributes to the existing literature by:

- Synthesising current evidence on cervical cancer screening awareness among rural women in Nigeria.
- Identifying key socio-cultural, economic, geographical, and healthcare-system barriers affecting access to screening services.
- Highlighting gaps in existing cervical cancer prevention and screening programmes targeting rural populations.
- Providing evidence-based recommendations for policymakers, healthcare providers, and public health practitioners.
- Supporting the development of culturally appropriate and accessible interventions aimed at increasing cervical cancer screening uptake among rural women in Nigeria.

2. Methods

The exploratory objectives of this review suggest the use of both textual and numerical data, hence, the inclusion of both qualitative and quantitative studies. This therefore influences the consideration for data extraction and analysis (Hiebl, 2021). Single systematic reviews often use thematic synthesis or meta-analysis for qualitative and quantitative respectively while mixed methods SRs like this use narrative synthesis or embedded analysis (Lin, Lin, and Shu, 2023).

The quality of findings obtained through systematic review is dependent on the characteristics of included studies with respect their homogeneity and heterogeneity which further dictates the type of data analysis used. Homogeneity enhances the combination and comparison of outcomes from different studies and heterogeneity relates to differences observed in target participants, methodologies and implemented interventions across studies (Campbell et al., 2016). Therefore, for the purpose of data reliability and in-depth understanding of the review's objectives, the choices of both qualitative and quantitative studies have been made for this review. This will be achieved by following the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines, which include a flow diagram and checklists.

This will be accomplished by adhering to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines, which include the use of a flow diagram and checklists.

2.1. Review Criteria

Review criteria are vital in carrying out systematic review as it involves a well-structured and detailed approach in obtaining and evaluating findings to ensure validity and reliability. To achieve this, clear and well-articulated research objectives must be developed to guide the review process (Hunt et al., 2018). Inclusion and exclusion criteria for demographics, study design, target population, interventions, comparisons, research contexts and outcomes must be stated to avoid bias (McElroy and Ladner, 2013). The PEO (Population, Exposure, Outcome) framework, however, is often used for qualitative research and studies exploring exposure effects rather than interventions as in the case of this review (VanderWeele and Tchetgen Tchetgen, 2014). To investigate the awareness and barriers to access CC screening among rural women in Nigeria, the PEO framework was adopted since the PICO/PEO framework is mostly used in developing research questions and guiding literature search as it provides structure and enhances the identification of selected studies (Kloda, Boruff and Cavalcante, 2020).

Table 1 The PEO Framework

Factors	Description
Population (P)	Women in Nigeria rural communities
Expected (E)	Access to CC screening
Outcome (O)	Awareness and barriers to screening services

2.1.1. Population

This review focuses on women in rural Nigeria, particularly those vulnerable to CC, due to a lack of available research. The study also includes older women, as rural areas lack good healthcare, low income, and differing health perceptions. It is focused on rural regions because most of them are not linked with good healthcare amenities, low income, and different perceptions of health. Common reviews are usually focused on urban settings, hence minimizing their applicability to rural communities.

2.1.2. Exposure

In this context, Exposure to CC risks includes limited awareness and obstacles to accessing screening services. It assesses rural women's knowledge about the disease and its importance, identifying barriers that hinder health-seeking behaviors.

2.1.3. Outcome

The outcome of the PEO framework refers to the findings gathered from the searched databases and related literature (Ahmad et al., 2022). This review sets out to explore the awareness levels of CC screening services and identify what stands in the way of such services. This includes metrics of awareness levels and identifying and categorizing the barriers. Having clearly described the terms of the PEO, the inclusion and exclusion criteria for the review are presented in the table below;

Table 2 Inclusion and Exclusion Criteria

	Inclusion criteria	Justification	Exclusion criteria
Population	Studies carried out among adult women (18-65years) in Nigeria rural communities	Urban and rural communities display different health behaviors (van der Hoeven, Kruger and Greeff, 2012)	Studies done outside Nigeria Studies carried out in urban settings
Exposure	Studies focusing on CC screening	To ensure the inclusion of the most recent research and evidence on CC screening among Nigerian women, reflecting current trends and interventions (Mafiana et al., 2022).	Studies that do not focus on CC screening Studies that focus on other cancer screenings

Outcomes	Studies that assess CC awareness levels and barriers to CC screening	To ensure the study's relevance and findings related to CC awareness levels and screening barriers.	Studies that do not assess awareness levels on CC screening and barriers to cervical screening
Studies	Qualitative, quantitative, randomized control trials, and mixed method studies	The diversity in study design allows a wide range of real-world data that experimental and systematic reviews may not offer.	Experimental studies, systematic reviews

2.2. Search Strategy

This review followed a structured search strategy guided by the PEO framework to identify relevant studies addressing cervical cancer awareness and screening barriers (Foo et al., 2021). A comprehensive search was conducted across multiple electronic databases to ensure a thorough and unbiased retrieval of studies (McKeown and Mir, 2021), including MEDLINE, CINAHL, and PubMed, which provide extensive coverage of biomedical and health-related literature (Justesen, Freyberg and Schultz, 2021).

A combination of MeSH terms and free-text keywords was used, including terms related to cervical cancer (e.g., cervical carcinoma, uterine cervix cancer), screening (e.g., detection, testing), awareness (e.g., knowledge, perception), barriers (e.g., obstacles, challenges), rural women, and Nigeria (Sharma, 2022; Kloda, Boruff and Cavalcante, 2020). Boolean operators were applied to refine the search, with "OR" used to combine synonyms and "AND" used to link key concepts (e.g., awareness AND barriers AND Nigeria AND rural women).

2.3. Selection of Studies

Study selection was conducted in two stages: initial screening of titles and abstracts, followed by full-text review (Waffenschmidt et al., 2019). A structured inclusion process using "Yes," "No," and "Unsure" decisions was applied to ensure consistency and transparency.

2.4. Quality Assessment

The quality of included studies was assessed using the Critical Appraisal Skills Programme (CASP) tools for both qualitative and quantitative studies (Noble and Smith, 2015; Pussegoda et al., 2017). Qualitative studies were first screened using two key questions on research aims and methodological appropriateness (Galdas, 2015). Quantitative studies were assessed using a modified CASP checklist covering study design, sample representativeness, validity, reliability, and relevance (Zeng et al., 2015). Studies were scored and categorized as low, medium, or high quality based on predefined thresholds.

2.5. Data Extraction

Data extraction involved systematically collecting key information from each included study, including authorship, objectives, population, methods, outcomes, and findings related to cervical cancer awareness and screening barriers (Afifi et al., 2023).

2.6. Data Analysis

A mixed-methods synthesis was used, combining narrative synthesis for quantitative studies and thematic analysis for qualitative studies (Quintana, 2015; Macura et al., 2019). Narrative synthesis involved identifying patterns and relationships across studies, while thematic analysis involved coding, grouping, and refining themes to capture key qualitative insights. This dual approach allowed for a comprehensive interpretation of both quantitative trends and qualitative experiences.

3. Results and Analysis

3.1. Introduction

Various studies have explored the awareness and barriers to access CC screening among rural women in Nigeria. This chapter outlines the findings of 5 literature review on the awareness and barriers to access CC screening among rural women in Nigeria. This section contains the characteristics of the included studies, findings summary and the main themes from the reviewed studies.

3.2. Article Selection after the Database Search

This study context, the PRISMA guideline was used to present the search result. From the initial electronic database search 2015 articles were identified from CINAH 500, PysCINFO 330, MEDLINE 1170, while 15 articles were also identified from other sources. After 845 duplicates were eliminated, 1170 articles remained when the duplicates were removed. For screening out of the 1170 articles, 1155 were excluded after sorting title, abstract, Systematic review, incomplete studies, old studies, and Other Language. After screening 15 studies were included for full text extraction. During the full text screening, 10 studies were further excluded for not meeting the inclusion criteria. While 5 studies were added to the included in this review. The PRISMA flowchart is shown below.

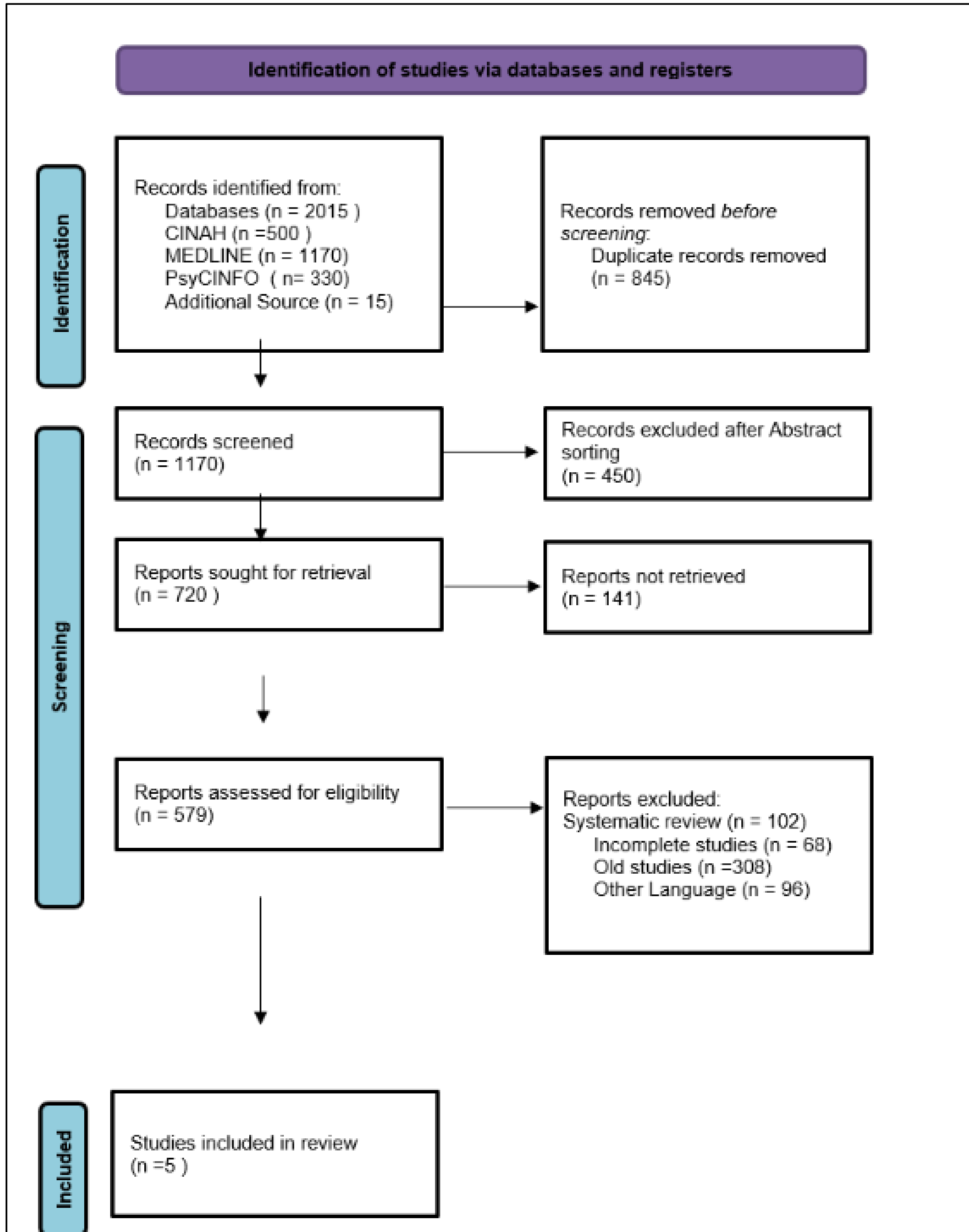

Figure 1 Prisma Flowchart

3.3. Accepting/Rejecting Studies

The study search revealed several studies that investigated the awareness and barriers to CC screening among rural women in Nigeria. However, the systematic process needed for identification of the studies obtained from the database that will be either accepted or rejected was strictly adhered to. The process includes the reading of the titles, the study abstract and rudiment adherence to the inclusion and exclusion criteria highlighted in the methodology. Also, the body, methodology, findings, and analysis were meticulously read for analysis and synthesis.

3.4. Included Studies Characteristics

Table 3 below provides the summary of the included studies. A total of five studies, 2 qualitative and 3 quantitative and were published between 2017 and 2023, studies conducted in various regions of Nigeria were included in this review. The characteristics state the methodological choice of the included studies and present their findings. The studies included in a systematic review are the backbone of the review process. Their selection, assessment, and synthesis form the basis for drawing meaningful conclusions, making evidence-based recommendations, and contributing to the advancement of knowledge in a particular field.

Table 3 Study Characteristics

S/N	Author name and Year	The study aim/objectives	Brief description of the methodology	Data collection method and sample size	Key Findings	Conclusion
1	Oluwole et al., (2017)	To determine the awareness, knowledge, and use of CC screening services among rural women in Lagos State, Nigeria.	A cross-sectional, descriptive study was conducted using a structured, interviewer-administered questionnaire.	Quantitative Data was collected from a total of 400 women, eliciting information about their socio-demographic characteristics, awareness, knowledge, and use of screening services.	There was low awareness of CC and screening uptake among the respondents, and overall knowledge was poor. However, there was a strong willingness to undergo screening.	There is a need for community education and awareness to promote a more positive attitude and increased use of screening services among rural women.
2	Yahya and Mande (2019)	To assess the awareness of CC and its screening methods among women attending primary healthcare centers in Zaria, Nigeria.	A cross-sectional study using focus group discussions (FGDs) to gather data.	Qualitative data were obtained from women accessing healthcare at eight purposively selected primary healthcare centers in Zaria.	Many participants were aware of CC symptoms but not of the risk factors. Pap smear was the only known screening method among participants.	Awareness of CC and screening methods did not equate to adequate knowledge about the disease and its screening. There is a need for healthcare providers to offer more comprehensive health education on CC and its screening methods.

3	Olubodun et al., (2022)	To explore women's knowledge about CC, their perceived barriers, and recommendations for a CC screening program in two slum areas in Lagos, Nigeria.	A qualitative study using focus group discussions (FGDs).	Qualitative data was collected by conducting FGDs among 35 women aged 21-65 years.	Most women were unaware of CC, its symptoms, or risk factors. Participants believed the CC screening program would be accepted but had concerns about the cost and the sex of the person performing the test.	Interventions to increase the uptake of CC screening among women in low-resource settings need to improve knowledge about CC and address barriers such as cost, distance, and the sex of the healthcare provider.
4	Akpan et al., (2023)	To investigate the rate of CC screening among adult women in Cross River State, Nigeria, using a randomized controlled trial.	A randomized controlled trial with women divided into an experimental group (with and without incentives) and a control group.	Quantitative Data were collected using a semi-structured questionnaire	The intervention significantly improved knowledge, attitude, and screening uptake among the intervention groups compared to the control groups.	The study recommends mobile screening centers and income-based subsidized tests to improve CC screening rates
5	Sharma et al., 2021	This study aimed to describe potential barriers to accessing cancer care within a rural community- based adult population in Southwest Nigeria.	A cross-sectional, descriptive study was conducted using a face- to-face survey in local dialect	Quantitative Data was collected from 346 individuals who were consecutively enrolled in the study and interviewed during the recruitment period with incentives.	The study highlighted a significant deficiency in cancer screening among the community-based adult population in Nigeria, despite the increasing burden of cancer cases.	The study determined that, notwithstanding the increasing prevalence of cancer in Nigeria, there is an urgent necessity for enhanced cancer screening and comprehensive healthcare coverage.

3.5. Thematic Analysis

This section presents the four themes derived from the analysis of the four included studies.

3.5.1. Theme 1: Awareness and Knowledge about Cervical Cancer

Shama et al., (2021), Yahya and Mande (2019), Oluwole et al.. (2017), Akpan et al., (2023), and Olubodun et al., (2022) all found that women have a low level of awareness and knowledge about CC. Shama et al., (2021) discovered that many participants had never heard of CC, and a significant proportion were unable to recognise its symptoms or risk factors. Similarly, Yahya and Mande (2019) found that women attending primary healthcare facilities had little knowledge of CC and frequently confused it with other health conditions. Oluwole et al., (2017) confirmed similar findings, pointing

out that knowledge was especially poor in rural areas where access to information is limited. Akpan et al., (2023) also pointed out that misunderstandings concerning CC, such as the idea that it primarily affects older women, contributed to a lack of awareness among younger groups. Olubodun et al., (2022) also found that while some women had heard of CC, their understanding was superficial, frequently restricted to general cancer knowledge rather than CC-specific information. These studies' strengths include their complete approach to evaluate awareness levels using both qualitative and quantitative methodologies. However, one problem is that the studies were conducted in specific geographic areas, so they may not be representative of larger populations.

3.6. Theme 2: Barriers to Screening.

The studies consistently revealed various impediments to CC screening, which impacted women's health outcomes. According to Shama et al. (2021), financial constraints were the most significant barrier, with many women unable to afford screening expenses. This finding is consistent with Oluwole et al., (2017), who identified economic factors as a substantial barrier to screening uptake.

Yahya and Mande (2019) observed that cultural beliefs and stigma associated with CC related to women's unwillingness to get screening. Many participants mentioned dread of the process and privacy issues, which were supported by Akpan et al., (2023). The latter study discovered that women were typically unwilling to discuss CC due to societal taboos, which reduced their propensity to seek screening.

These studies are notable for their emphasis on the multiple nature of screening obstacles, which acknowledges that economic, cultural, and social issues all play a role. However, not all research presented specific techniques for overcoming these hurdles, resulting in a lack of practical advice for health practitioners and policymakers.

3.7. Theme 3: The acceptability of screening programs

Another key element emerged: the acceptance of CC screening programs. Shama et al., (2021) discovered that, while women were willing to participate in screening, they emphasised the importance of making programs affordable and accessible. Oluwole et al., (2017) also found that women were open to the idea of CC screening but stressed the significance of addressing their worries regarding the process.

Akpan et al., (2023) proposed that community-based efforts could increase acceptability by offering education and support in familiar settings. Olubodun et al., (2022) emphasised the necessity of using female healthcare practitioners and maintaining privacy during screening to boost women's comfort and participation rates. These studies are notable for their emphasis on community engagement as a method for increasing the acceptability of screening programs. However, one disadvantage is that some studies did not investigate the specific characteristics of successful community-based interventions, which could provide useful information for implementation.

3.8. Theme 4: Public health interventions and policies

Akpan et al., (2023) demonstrated that innovative interventions, such as mobile screening centers and income-based subsidies, can significantly improve knowledge, attitudes, and screening uptake. These findings suggest that current public health policies should be re-evaluated to incorporate successful strategies from the intervention, such as reducing travel and logistical challenges for underserved populations. Similarly, Olubodun et al., (2022) emphasized the need for public health interventions to address socio-cultural barriers to CC screening. Recommendations from the study included organizing health education sessions to improve perceptions of susceptibility and knowledge about CC. The study also stressed the importance of making screening more accessible and affordable through subsidies or free programs and using effective communication strategies like SMS, phone calls, and local health talks. Continuous education and awareness campaigns are crucial to maintaining and building upon initial gains (Akpan et al., 2023). Shama et al., (2021) proposed that health education initiatives focus on raising awareness and knowledge of CC, using culturally relevant messaging to counter misconceptions. Yahya and Mande (2019) emphasised the necessity of disseminating screening information through numerous platforms, including social media and community activities.

4. Discussion

This review found that awareness of cervical cancer (CC) and screening services remains low among rural women in Nigeria. Although some women were familiar with cervical cancer and the Pap smear test, knowledge of risk factors, symptoms, and alternative screening methods was generally limited. Similar findings have been reported among rural women in India, where awareness of cervical cancer did not necessarily translate into knowledge of prevention or screening practices (Kadian et al., 2021). Low literacy levels and limited access to health information continue to

constrain awareness in rural communities (Stormacq et al., 2023). Educational interventions have been shown to improve knowledge and screening uptake in rural populations (Zhang et al., 2022; Demissie et al., 2018; Ntekim, 2017).

Beyond awareness, the review identified several socio-cultural, economic, and practical barriers to screening uptake. Cultural beliefs, misconceptions about cancer, stigma, and preferences for female healthcare providers discouraged participation in screening programmes. Similar barriers have been reported in Nigeria and other African countries (Egede et al., 2021; Adewumi et al., 2019; Adewunmi et al., 2022; Mittal et al., 2023; Srinath et al., 2023). Economic constraints, particularly the cost of screening and transportation, further limited access among rural women, consistent with findings from Nigeria and other low-resource settings (Shrestha et al., 2018; Ntekim et al., 2017). Although Peterson et al. (2022) reported that economic barriers were less influential in some contexts, lack of awareness remained a significant obstacle. Fear of pain, embarrassment, and misconceptions about screening procedures also contributed to low uptake (Shrestha et al., 2018).

The review further highlights the importance of targeted public health interventions. Mobile screening services, community outreach programmes, and subsidised screening have demonstrated success in improving access and participation among rural populations (Huchko et al., 2019; Kureya et al., 2024; Shrestha et al., 2018). Community-based education involving traditional and religious leaders has also been effective in addressing misconceptions and increasing acceptance of screening (Nkwonta, 2018; Khan, 2020). Additionally, culturally sensitive communication strategies using local languages, health talks, telephone messaging, and short message services may enhance awareness and engagement, particularly in settings with low literacy levels (Mitchell et al., 2016).

The findings can be interpreted through the Health Belief Model (HBM). Low awareness of cervical cancer reduces women's perceived susceptibility to and perceived severity of the disease, while cultural beliefs, stigma, cost, and limited access increase perceived barriers to screening (Shama et al., 2021; Yahya and Mande, 2019; Oluwole et al., 2017; Akpan et al., 2023; Olubodun et al., 2022). Conversely, health education interventions improve perceived benefits, self-efficacy, and cues to action, thereby increasing the likelihood of screening participation (Olubodun et al., 2022; Akpan et al., 2023). These findings suggest that effective interventions should combine awareness campaigns with strategies that address structural and socio-cultural barriers to improve cervical cancer screening uptake among rural women in Nigeria.

5. Conclusion

This review examined awareness and barriers to cervical cancer (CC) screening among rural women in Nigeria, where CC remains a major cause of cancer-related mortality, particularly in low- and middle-income countries. The findings show persistently low awareness of CC and its screening, with many women only recognizing the Pap smear test while lacking knowledge of risk factors, symptoms, and the full range of screening options.

In addition to limited awareness, multiple barriers hinder screening uptake, including cost of services, limited availability of screening facilities, and preferences regarding the gender of healthcare providers. Socio-cultural beliefs, particularly those related to privacy and gender norms, further reduce willingness to participate in screening. These findings indicate that awareness alone is insufficient; structural, cultural, and economic barriers must also be addressed to improve uptake. Overall, the review highlights the need for context-sensitive interventions that integrate health education with strategies aimed at reducing access barriers. Without addressing these combined challenges, efforts to reduce cervical cancer incidence and mortality among rural women in Nigeria will remain limited.

Recommendations

Based on the findings, the following recommendations are made:

- Community-based health education: Implement culturally appropriate awareness programmes involving local leaders to address misconceptions and improve knowledge of CC, its risk factors, and screening benefits.
- Improved access to services: Strengthen outreach through mobile screening units and partnerships with local health facilities to bring services closer to rural communities and improve follow-up care.
- Financial support mechanisms: Introduce subsidised or free screening services and ensure inclusion of CC screening in health insurance coverage to reduce cost barriers for low-income women.
- Continuous monitoring and evaluation: Establish systems to track screening uptake, awareness levels, and programme effectiveness to guide ongoing improvements in implementation.

Compliance with ethical standards

Disclosure of conflict of interest

No conflict of interest to be disclosed.

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