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ISSN : 3008-1211 e-ISSN : 3008-122X	Volume 17 - N° 35 Juin 2026

Awareness, preventive practices, and socio-demographic determinants of cervical cancer awareness among women in Omu-Aran, Nigeria: A community-based cross-sectional study

Sensibilisation, pratiques préventives et déterminants sociodémographiques de la connaissance du cancer du col de l'utérus chez les femmes d'Omu-Aran, Nigéria : une étude transversale communautaire

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Abstract

Cervical cancer remains a major public health issue in Nigeria, particularly due to low levels of awareness, screening uptake, and poor preventive practices among women. This study assessed awareness of cervical cancer risk factors, preventive practices, and socio-demographic determinants of cervical cancer awareness among women in Omu-Aran, Kwara State, Nigeria.

A descriptive cross sectional survey design was used for this study. 427 participants were recruited from markets, community gatherings and residential areas using convenience sampling. Data was gathered using a structured questionnaire which was interviewer administered. Awareness was measured by a score of 13 knowledge items, participants scoring $\geq 50\%$ were considered to have adequate awareness. Analyses were performed using SPSS version 20.0. Descriptive statistics, bivariate and multivariable logistic regression analysis were performed. Odds ratios (OR) and Adjusted odds ratios (AORs) with 95% confidence intervals were reported, and the significance level was set at $p < 0.05$.

82.0% of respondents demonstrated adequate awareness of cervical cancer. Logistic regression analysis revealed that younger women (AOR = 2.23, 95% CI: 1.30–3.82), higher educational attainment (AOR = 4.06, 95% CI: 2.42–6.79), and being married (AOR = 1.82, 95% CI: 1.08–3.05) were significantly associated with better awareness ($p < 0.05$). Screening uptake remained low at 44.5%, and only 35.1% had received HPV vaccination.

The study highlights critical gaps in cervical cancer awareness and prevention practices among women in Omu-Aran. Targeted health education and improved access to screening and vaccination are urgently needed to reduce the burden of cervical cancer in the region.

Keywords: Cervical cancer, awareness, preventive strategies, HPV vaccination, screening.

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Résumé

Le cancer du col de l'utérus demeure un important problème de santé publique au Nigéria, en raison notamment du faible niveau de sensibilisation, du faible recours au dépistage et des pratiques préventives insuffisantes chez les femmes. Cette étude avait pour objectif d'évaluer la connaissance des facteurs de risque du cancer du col de l'utérus, les pratiques préventives ainsi que les déterminants sociodémographiques de cette connaissance chez les femmes d'Omu-Aran, dans l'État de Kwara, au Nigéria.

Une étude descriptive transversale a été menée auprès de 427 femmes âgées de 16 à 65 ans à Omu-Aran. Les participantes ont été recrutées dans les marchés, lors de rassemblements communautaires et dans les zones résidentielles au moyen d'un échantillonnage de convenance. Les données ont été recueillies à l'aide d'un questionnaire structuré administré par des enquêteurs. La connaissance a été évaluée à partir de 13 questions, les participantes obtenant un score ≥ 50 % étant considérées comme ayant une connaissance adéquate. Les données ont été analysées à l'aide du logiciel SPSS version 20.0. Des statistiques descriptives ainsi que des analyses de régression logistique bivariable et multivariable ont été réalisées. Les odds ratios (OR), les odds ratios ajustés (AOR) et leurs intervalles de confiance à 95 % ont été rapportés. Le seuil de signification statistique a été fixé à $p < 0,05$.

Au total, 82,0 % des participantes présentaient une connaissance adéquate du cancer du col de l'utérus. L'analyse de régression logistique a montré que les femmes plus jeunes (AOR = 2,23 ; IC à 95 % : 1,30–3,82), celles ayant un niveau d'instruction plus élevé (AOR = 4,06 ; IC à 95 % : 2,42–6,79) ainsi que les femmes mariées (AOR = 1,82 ; IC à 95 % : 1,08–3,05) étaient significativement plus susceptibles d'avoir une meilleure connaissance ($p < 0,05$). Le recours au dépistage demeurait faible (44,5 %) et seulement 35,1 % des participantes avaient reçu le vaccin contre le papillomavirus humain (HPV).

Cette étude met en évidence d'importantes lacunes dans la connaissance du cancer du col de l'utérus et dans l'adoption des pratiques préventives chez les femmes d'Omu-Aran. Des programmes ciblés d'éducation sanitaire ainsi qu'un meilleur accès au dépistage et à la vaccination sont indispensables pour réduire la charge du cancer du col de l'utérus dans cette région.

Mots-clés : cancer du col de l'utérus ; sensibilisation ; pratiques préventives ; vaccination contre le papillomavirus humain (HPV) ; dépistage.

Introduction

Cervical cancer remains a major global public health concern and continues to pose a significant threat to women's health, particularly in low- and middle-income countries (LMICs). Despite advances in medical technology and preventive healthcare, the disease still accounts for a considerable proportion of cancer-related morbidity and mortality among women worldwide. Cervical cancer is the fourth most common cancer in women and was responsible for an estimated 604,127 new cases and about

341,832 deaths worldwide in 2020 [1]. Over 90% of the disease burden, however, is found in developing countries where there are limited access to preventive services including vaccination, early detection and timely treatment. Report from [2] revealed, that, in 2022, an estimated 660 000 women were diagnosed with cervical cancer worldwide and about 350 000 women died from the disease. Undoubtedly, effective primary (HPV vaccination) and secondary prevention approaches such as screening for, and treating precancerous lesions will prevent most cervical cancer cases. In many LMICs, inadequate healthcare infrastructure, awareness levels and socio-cultural barriers significantly hinder the effective prevention and management of cervical cancer

Cervical cancer is primarily caused by persistent infection with high-risk strains of the human papillomavirus (HPV), a common sexually transmitted infection that affects millions of women worldwide. Although, most HPV infections occur spontaneously, persistent infection with oncogenic HPV types may lead to the development of precancerous lesions that can eventually progress to cervical cancer if not detected and treated early [3]. Fortunately, cervical cancer is highly preventable with effective interventions such as cervical cancer screening, HPV vaccination and early treatment of precancerous lesions. Screening methods such as Pap smear tests and visual inspection with acetic acid (VIA) have been widely recommended for early detection of cervical abnormalities [4]. However, the effectiveness of these preventive strategies depends largely on the level of awareness, accessibility and utilization among women.

In many developing countries, including Nigeria, cervical cancer continues to represent a significant health challenge. Nigeria has one of the highest cervical cancer burdens in Africa due to low screening coverage and limited awareness of preventive measures[5]. Current estimates indicate that, the second most common cancer among Nigerian women after breast cancer is cervical cancer, with approximately 12,075 new cases and about 7,968 deaths reported annually [2]. These figures highlight the urgent need for improved cervical cancer prevention strategies in the country. Although the introduction of HPV vaccination and screening programmes has shown promising results in reducing cervical cancer incidence in high-income countries, such interventions remain underutilized in Nigeria due to multiple

barriers, including poor awareness, limited health education and inadequate healthcare infrastructure [6].

Awareness of cervical cancer has often been linked to poor uptake of preventive services among women in Nigeria. Studies have shown that many Nigerian women have limited knowledge of the causes, risk factors, symptoms and preventive strategies associated with cervical cancer [7]. More so, women are often discouraged from seeking screening services or preventive healthcare services due to misconceptions and cultural beliefs surrounding cancer as well as fear of diagnosis, social stigma, and lack of support from family members [8].

Socioeconomic factors may also play a crucial role in determining the level of awareness and utilization of cervical cancer preventive services. Women with higher levels of education and stable employment are generally more likely to be aware of cervical cancer prevention and to participate in screening programmes compared to women with lower educational attainment or those living in rural communities [9]. In many parts of Nigeria, women residing in rural and semi-urban areas may face additional barriers such as limited access to healthcare facilities, inadequate health education programmes and financial constraints that prevent them from utilizing preventive health services [10].

Furthermore, the uptake of HPV vaccination in Nigeria remains very low despite its proven effectiveness in preventing cervical cancer. HPV vaccination has been identified as one of the most effective strategies for reducing the global burden of cervical cancer, particularly when administered before the onset of sexual activity [11]. A study by [12] on HPV epidemic among women in Nigeria found that, awareness of HPV vaccine was very low and only 13% of the women had taken at least one dose. In Ibadan, a cosmopolitan city in southwest Nigeria, only 13.5% of women studied have ever had cervical screening [13].

Several barriers hinder the widespread implementation of HPV vaccination programmes in Nigeria, including lack of awareness, limited availability of vaccines and concerns about vaccine safety [14]. As a result, many women remain vulnerable to HPV infection and the subsequent development of cervical cancer. Studies conducted in different parts of Africa and other developing regions have consistently reported low levels of awareness of cervical cancer among women. For instance, a systematic

review of factors influencing cervical cancer screening practice among female health workers in Nigeria shows that despite the high level of knowledge and positive attitude towards screening, uptake ranged from 3% to 54.1% in the 15 studies reviewed [15].

In Nigeria, previous studies have identified several factors contributing to the low utilization of cervical cancer screening services. These may include: lack of awareness, cultural beliefs, fear of medical procedures, cost of screening services and inadequate healthcare facilities [16]. Furthermore, access to screening services in many parts of the country is compounded by systemic issues such as insufficient government funding for preventive healthcare programmes and weak policy implementation [17]. To address these challenges, there is need for targeted public health interventions which would focus on healthcare infrastructure, strengthening and promoting the adoption of preventive behaviours and improving awareness among women.

Omu-Aran, a semi-urban community in Kwara State, Nigeria, represents a typical example of communities where cervical cancer awareness and preventive service utilization remain low. Like many semi-urban communities in Nigeria, Omu-Aran faces several healthcare challenges, including limited access to specialized health services, inadequate public health education and poor screening coverage. The significant burden of cervical cancer and the low level of awareness of preventive measures among women, reiterates the need for empirical studies that explore the awareness level related to cervical cancer prevention in semi-urban communities like Omu-Aran. Assessing the determinants that influence women's awareness of risk factors and preventive strategies is essential for designing effective public health interventions and educational programmes aimed at reducing cervical cancer incidence and mortality. This study therefore evaluated awareness of cervical cancer risk factors and preventive strategies among women in Omu-Aran, Kwara State. Specifically, the objectives of the study were to; i) Assess the awareness of cervical cancer risk factors, ii) examine cervical cancer preventive practices and, iii) investigate the socio-demographic determinants of awareness of cervical cancer risk factors among women in Omu-Aran, Kwara State.

To provide a theoretical basis for understanding women's preventive health behaviours, this study adopts the Health Belief Model (HBM) as its conceptual framework. The Health Belief Model is one of the most widely

used theories in health education and health promotion research aimed at explaining why individuals engage in or avoid preventive health behaviours. The model was developed by social psychologists working with the United States Public Health Service to explain the factors influencing participation in disease prevention and screening programmes [18]. According to the model, individuals are more likely to adopt preventive health behaviours when they perceive themselves to be susceptible to a disease, believe that the disease has serious consequences, and recognize the benefits of taking preventive action.

Method

Study design

This study adopts a descriptive cross-sectional survey design. This design is chosen because it allows for the collection of data from a sample population at a single point in time, providing a snapshot of the current awareness levels and behaviors related to cervical cancer prevention among women in Omu-Aran.

Participants and Setting

The choice of Omu-Aran is significant because it provides a representative sample of women who may have varying levels of access to healthcare and information about cervical cancer. The target population for this study comprises women aged 16-65 years residing in Omu-Aran with a total number of thirty-two thousand nine hundred and seventy. This age range is selected because it includes women who are at risk of developing cervical cancer and who are eligible for HPV vaccination and cervical screening. The study focuses on women within this age group to assess their awareness and engagement with preventive strategies. A total sample size of 427 women is determined based on the population size of Omu-Aran, using a sample size calculation formula that accounts for a 95% confidence level and a 5% margin of error.

Sample size calculation

To determine the sample size for this study the Cochran used formula for sample size calculation was used:

$$n = \frac{Z^2 \cdot p \cdot (1-p)}{d^2}$$

Where:

n = required sample size

Z = the number of standard deviations corresponding to the desired confidence level

For a 95% confidence level, Z = 1.96

p = estimated proportion of the population with the attribute of interest (awareness of cervical cancer prevention) set at 0.5

d = margin of error (precision) set at 0.05 (5%)

Therefore,

$$n = \frac{1.96^2 \cdot 0.5 \cdot (1-0.5)}{0.05^2}$$

$$n = 384.16$$

Thus, the minimum sample size required is approximately 384 participants. To account for potential non-responses or incomplete data 10 % attrition rate was added, which made it 427 respondents.

Procedure for data collection

Data collection was carried out by three trained research assistants who were familiar with the local language and cultural context. Participants were recruited from selected community locations in Omu-Aran, including markets and residential areas through convenience sampling. Eligible women who were available and willing to participate during the study period were approached and invited to participate. Informed consent was obtained from the participants before the questionnaires were administered through face-to-face interviews to ensure accurate and complete responses. The research assistants served as translators for respondents who did not understand English language. Due to the convenience sampling used to recruit the participants within the available resources and study period, the researcher acknowledges the potential for selection bias as women who were more accessible or interested in health-related issues may have participate more in the study. A structured questionnaire was used to gather quantitative data for the study. The questionnaire was divided into 3 sections: Section A gathered information on the participants' age, marital status, educational level, occupation, and income. These variables are essential for analyzing the relationship between demographic factors and awareness of cervical cancer prevention. Section B examined the participants' awareness of cervical cancer risk factors. While, Section C assessed the participants' behaviors related to cervical cancer prevention, including whether they have received

the HPV vaccine or undergone cervical screening, and their reasons for doing or not doing so. The awareness of risk factors associated with cervical cancer was determined using 13 structured knowledge questions which cover causes, symptoms, risk factors, HPV infection, vaccination, and screening practices. Each correct response was assigned one point, while incorrect responses/don't know responses were assigned zero points. The total awareness score ranged from 0 to 13. Respondents who scored 7 points and above ($\geq 50\%$), were rated as having adequate awareness, while those with score below 7 were classified as having inadequate awareness.

The questionnaire was pre-tested in a neighboring community. To ensure the validity of the instrument, three copies were given to three experts in public health, oncology and epidemiology to assess content validity. Their recommendations regarding clarity, relevance, and comprehensiveness of the items were incorporated into the final version of the instrument. The reliability of the questionnaire was assessed using a split-half method. Thirty copies of the questionnaire were administered among women in Ajase-Ipo, a neighboring community with similar characteristics to the study area. The correlation was tested and the obtained Cronbach's alpha coefficient of 0.76 indicated acceptable internal consistency of the instrument.

Ethical clearance and consent to participate

The University of Ilorin Ethical Committee gave the ethical clearance (UERC/ASN/2026/3620) for this study. The interviews were conducted in a private setting to encourage openness and honesty among participants. In cases where participants are not literate, the research assistants read the questions aloud and record the responses. The study adhered to ethical principles to protect the rights and well-being of the participants. Informed consent was obtained from all participants after explaining the purpose of the study, procedures involved and their right to withdraw at any time without any consequences. Confidentiality of their responses was assured and data was anonymized to protect their identities.

Data analysis

The collected data was coded, entered and analyzed using the Statistical Package for Social Sciences (SPSS) version 20.0. Descriptive statistics, including frequencies and percentages, were used to summarize the socio-demographic characteristics of the respondents and their level of awareness

of cervical cancer risks and preventive strategies. The age grouping was done using an interval of 10. Bivariate logistic regression analysis was conducted to assess the association between socio-demographic characteristics and adequate cervical cancer awareness. Crude odds ratios (CORs) with 95% confidence intervals were calculated. Variables with p-values <0.20 at the bivariate level and variables considered theoretically important were included in the multivariable binary logistic regression model. Adjusted odds ratios (AORs) with 95% confidence intervals were reported, and statistical significance was determined at $p < 0.05$. The goodness-of-fit of the regression model was determined using the Hosmer–Lemeshow test. Statistical significance was set at $p < 0.05$.

Results

Table 1 reveals key insights into the demographic information of the respondents in the study on cervical cancer awareness in Omu-Aran, Kwara State. Most participants were within the 26-35 age group (30.4%) and had secondary education (37.5%). 57.4% of the respondents were married, this reflects common marital status within this population. On occupation, 39.8% of the respondents are self-employed, highlighting a prevalent economic activity in the region. These demographic factors, particularly education and occupation, are critical in understanding the awareness levels and engagement with cervical cancer preventive strategies among women in Omu-Aran.

Table 1: Socio-Demographic Information of Respondents

Demographic Variables	Frequency (N:427)	Percentage (%)
Age Group (years)		
16–25	95	22.3
26–35	130	30.4
36–45	102	23.9
46–55	60	14.0
56–65	40	9.4
Educational Level		
No Formal Education	80	18.7
Primary School	110	25.8
Secondary School	160	37.5
Tertiary Education	77	18.0
Marital Status		
Single	120	28.1
Married	245	57.4
Widowed/Divorced/Separated	62	14.5
Occupation		
Unemployed	70	16.4
Self-employed	170	39.8
Employed (Public/Private)	140	32.8
Student	47	11.0

Table 2 shows the participants' awareness of cervical cancer and risk factors. The table reveals a strong general awareness of cervical cancer among the participants, with 82.0% recognizing the disease. However, awareness regarding its causes, symptoms, and risk factors varies significantly. While 65.6% correctly identify HPV as a primary cause, a substantial 34.4% either lack this awareness or hold misconceptions. Awareness of symptoms like irregular vaginal bleeding is high (70.3%), but for other symptoms such as pelvic pain (39.8%) and pain during intercourse (32.8%) is notably lower, indicating gaps in comprehensive symptom recognition.

Regarding risk factors, 56.2% are aware that multiple sexual partners increase the risk of cervical cancer, yet awareness of other significant factors, like smoking (23.4%) and immunosuppression (25.8%), is relatively low. This highlights a need for targeted educational interventions, particularly focusing on less understood symptoms and risk factors, to improve overall awareness and encourage preventive behaviors in this population.

Table 2: Awareness of cervical cancer and risk factors among respondents

Awareness Category	Correct Responses (n)	Percentage (%)	Incorrect/Don't Know (n)	Percentage (%)
General Awareness of Cervical Cancer				
Aware of Cervical Cancer	350	82.0	77	18.0
Unaware of Cervical Cancer	77	18.0	-	-
Awareness of Causes				
Correctly Identifies HPV as a Cause	280	65.6	147	34.4
Incorrect or Unaware of Causes	147	34.4	-	-
Awareness of Symptoms				
Identifies Irregular Vaginal Bleeding	300	70.3	127	29.7
Identifies Abnormal Vaginal Discharge	210	49.2	217	50.8
Identifies Pelvic Pain	170	39.8	257	60.2
Identifies Pain During Intercourse	140	32.8	287	67.2
Awareness of Risk Factors				
Multiple Sexual Partners	240	56.2	187	43.8
Early Onset of Sexual Activity	190	44.5	237	55.5
Smoking	100	23.4	327	76.6
Prolonged Use of Oral Contraceptives	150	35.1	277	64.9
Immunosuppression (e.g., HIV)	110	25.8	317	74.2

Table 3 shows the participants preventive practices related to cervical cancer prevention. The table reveals that, only 35.1% of participants have received the HPV vaccine, with doctor recommendations being the primary motivator (60.0%). However, a significant 64.9% remain unvaccinated, mainly due to fear of side effects (36.1%) and lack of information (28.9%). Similarly, 44.5% have undergone cervical screening, mostly during regular check-ups (57.9%). However, 55.5% of the participants have not been screened, with fear of pain (33.8%) and cost (29.5%) as major barriers. These

results indicate substantial gaps in preventive behaviors, driven by concerns over safety, costs, and insufficient awareness, underscoring the need for targeted health interventions

Table 3: Frequency counts and percentages on preventive practices related to cervical cancer prevention

Behavioral Category	Yes (n)	Percentage (%)	No (n)	Percentage (%)
Received HPV Vaccine				
Yes	150	35.1	-	-
No	-	-	277	64.9
Reasons for Receiving HPV Vaccine				
Doctor's Recommendation	90	60.0	-	-
Awareness of Benefits	40	26.7	-	-
Free/Low-Cost Availability	20	13.3	-	-
Reasons for Not Receiving HPV Vaccine				
Fear of Side Effects	-	-	100	36.1
Lack of Information	-	-	80	28.9
Cost	-	-	60	21.7
Accessibility Issues	-	-	37	13.4
Undergone Cervical Screening (e.g., Pap Smear)				
Yes	190	44.5	-	-
No	-	-	237	55.5
Reasons for Undergoing Cervical Screening				
Regular Health Check-up	110	57.9	-	-
Doctor's Recommendation	50	26.3	-	-
Symptoms or Health Concerns	30	15.8	-	-
Reasons for Not Undergoing Cervical Screening				
Fear of Pain/Discomfort	-	-	80	33.8
Cost	-	-	70	29.5
Lack of Awareness	-	-	50	21.1
No Perceived Need	-	-	37	15.6

Table 4, which shows the bivariate logistic regression analysis revealed that age, educational level, marital status, and occupation were associated with adequate cervical cancer awareness among women in Omu-Aran. Women within the age of 16–25 years had higher odds of adequate awareness compared with those between 56–65 years (COR = 2.58; 95% CI: 1.48–4.48;

$p = 0.001$). More so, educational attainment showed the strongest association, because women with tertiary education were more likely to have adequate awareness compared with those with no formal education (COR = 4.72; 95% CI: 2.51–8.88; $p < 0.001$). Married women (COR = 1.94; 95% CI: 1.17–3.22; $p = 0.010$) and employed women (COR = 2.18; 95% CI: 1.25–3.79; $p = 0.006$) also had higher odds of adequate awareness. Variables meeting the selection criteria were included in the multivariable logistic regression analysis. H_0 : There is no significant association between socio-demographic variable and women's awareness of Cervical Cancer in Omu-Aran

Table 4: Bivariate analysis of the association between socio-demographic characteristics and adequate cervical cancer awareness

Variable	COR	95% CI	p-value
Age group (years)			
56–65 (Reference)	1.00	–	–
46–55	1.35	0.72–2.53	0.35
6–45	1.52	0.91–2.54	0.11
26–35	1.88	1.18–2.99	0.007
16–25	2.58	1.48–4.48	0.001
Educational level			
No formal education (Reference)	1.00	–	–
Primary education	1.52	0.89–2.60	0.12
Secondary education	2.61	1.55–4.39	<0.001
Tertiary education	4.72	2.51–8.88	<0.001
Marital status			
Single (Reference)	1.00	–	–
Married	1.94	1.17–3.22	0.010
Widowed/Divorced/Separated	1.21	0.63–2.32	0.57
Occupation			
Unemployed (Reference)	1.00	–	–
Self-employed	1.41	0.82–2.43	0.21
Employed (Public/Private)	2.18	1.25–3.79	0.006
Student	1.76	0.82–3.79	0.14

Table 5 shows the multivariable logistic regression analysis of factors associated with adequate cervical cancer awareness. After adjusting for potential confounding variables, age, educational level, marital status, and occupation remained associated with awareness. Women aged 18–25 years had higher odds of adequate awareness compared with women aged 46 years and above (AOR = 2.23; 95% CI: 1.30–3.82). Respondents with tertiary education were more likely to have adequate awareness compared with those with no formal/primary education (AOR = 4.06; 95% CI: 2.42–6.79). Married women had higher odds of adequate awareness compared with single women (AOR = 1.82; 95% CI: 1.08–3.05).

Table 5: Multivariate logistic regression analysis of factors associated with cervical cancer awareness

Variable	Coefficient (β)	Standard Error (SE)	Wald Statistic	p-Value	Adjusted Odds Ratio (AOR)	95% Confidence Interval (CI)
Intercept	-1.30	0.45	8.13	0.004	-	-
Age Group (16-25)	0.80	0.25	10.24	0.001	2.23	1.30 - 3.82
Age Group (26-35)	0.50	0.22	5.85	0.016	1.65	1.07 - 2.56
Age Group (36-45)	0.20	0.21	0.96	0.327	1.22	0.80 - 1.86
Education Level						
- No formal/primary education	Reference Category					
- Secondary Education	1.10	0.30	13.44	0.001	3.01	1.85 - 4.88
- Tertiary Education	1.40	0.35	15.60	0.001	4.06	2.42 - 6.79
Marital Status						
- Single	Reference Category					
- Married	0.60	0.27	5.24	0.022	1.82	1.08 - 3.05
Occupation						
- Unemployed	Reference Category					
- Employed	0.70	0.26	7.85	0.005	2.01	1.24 - 3.26

Discussion

The findings of this study revealed significant variations in cervical cancer awareness among women in Omu-Aran, Kwara State, Nigeria. Differences in awareness were strongly influenced by demographic characteristics such as age, educational level, marital status and employment status. These findings highlight the important role that socio-demographic factors play in shaping women's awareness of cervical cancer and its prevention.

Younger women demonstrated higher levels of awareness compared to older women. Similar findings have been reported in several studies conducted in developing countries. For example, research conducted in Kenya showed that younger women possessed higher levels of awareness regarding HPV infection and cervical cancer compared to older women, largely due to exposure to educational campaigns and school-based health programmes [19]. The finding is also in line with trends that have been reported in studies conducted in India, where older women were found to have significantly lower awareness of cervical cancer and screening services compared to younger women [20]. A study by [21] also reported barriers to cervical screening in Southwest Nigeria, which include lack of knowledge of cervical cancer and screening, health service factors, screening is unnecessary, fear of outcome and procedure, and financial. These findings highlight the importance of integrating both young and older women in the HPV sensitization and vaccination programmes so as to reduce the burden of cervical cancer.

Educational attainment was another significant predictor of cervical cancer awareness identified in this study. Women with higher levels of education, demonstrated significantly greater awareness of cervical cancer. This finding support previous research conducted in Ethiopia, which found that women with higher educational levels were more knowledgeable about cervical cancer risk factors and preventive measures than women with lower levels of education [22]. Similarly, a study conducted in Bangladesh reported that women's knowledge of cervical cancer and their willingness to participate in screening programmes were significantly influenced by educational attainment [23]. In developed countries such as the United States, higher education has also been linked with increased awareness of cervical cancer screening guidelines and preventive healthcare practices as educated women tend to be more proactive in seeking healthcare services and are more

likely to participate in preventive health behaviours [12]. These findings highlight the importance of integrating cervical cancer education into formal education systems as well as implementing community-based awareness campaigns that target women with lower levels of education.

The findings of this study also revealed that married women demonstrated higher awareness levels compared to single women. This finding is consistent with research conducted in Nigeria, which showed that married women were more likely to be aware of cervical cancer and screening services compared to unmarried women [8]. However, some studies have reported contrasting findings. For instance, a study conducted in Bangladesh found that marital status did not significantly influence cervical cancer awareness, this suggests that other factors, such as socioeconomic status and access to healthcare services may have a stronger impact on women's knowledge levels [23]. Despite these disparities, family networks remain a critical channel for disseminating health information in many communities. Public health programmes can therefore leverage family structures and community networks to improve cervical cancer awareness among women.

Employment status was also found to influence awareness levels among respondents. This finding is in line with research conducted in South Africa, which revealed that employment status was significantly associated with cervical cancer awareness and participation in screening programmes [24]. However, unemployed women may face several barriers to accessing health information and healthcare services, including financial constraints and limited mobility. Studies conducted in rural communities in Kenya also found that unemployed women had significantly lower awareness of cervical cancer compared to employed women, this may be due to limited access to information and healthcare services [19]. These variations highlight the need for public health interventions that specifically target women who are economically disadvantaged.

Another important finding of this study was the relatively low uptake of HPV vaccination and cervical cancer screening among the respondents. This finding reflects the existing gap between awareness and preventive health behaviour. The results also highlight several barriers discouraging women from utilizing available preventive services. The most commonly reported barriers included cost of services, fear of potential side effects and lack of adequate information about vaccination and screening procedures. These

barriers have been extensively reported in previous studies conducted in Nigeria and other developing countries. For instance, research conducted in Nigeria identified financial constraints, concerns about vaccine safety and lack of awareness as major barriers to HPV vaccination among women [3].

Addressing these barriers requires a comprehensive approach combining public health education, improved healthcare infrastructure and policy interventions. Government health agencies and non-governmental organizations can implement community-based education campaigns aimed at increasing awareness about the safety and effectiveness of HPV vaccination and cervical cancer screening. Furthermore, subsidizing the cost of vaccination and screening services may greatly improve access for low-income women in the region. In addition, mobile screening units and outreach programmes can also help bring preventive services closer to underserved populations, particularly in rural and semi-urban communities.

The findings of this study can also be interpreted through the lens of the Health Belief Model, which suggests that individuals are more likely to adopt preventive health behaviours when they perceive themselves to be susceptible to a disease and believe that preventive actions will reduce their risk. In this study, women with higher levels of education and greater exposure to health information demonstrated higher awareness and were more likely to adopt preventive behaviours. Conversely, women who lacked adequate knowledge or perceived barriers such as cost and fear were less likely to participate in preventive services.

Limitation of the study

Like most research, this study has some limitations that should be considered when interpreting the results. Firstly, the cross-sectional design employed made it impossible to establish causal relationships between the study variables. The study could only identify associations at a single point in time. Secondly, the study relied on self-reported information, which may have been influenced by past experiences or socially acceptable ideas and values. Some respondents may have over-reported their level of awareness or preventive practices.

Lastly, the study was conducted only among women in Omu Aran, Kwara State, therefore, the findings may not be generalizable to women in other

parts of Kwara State or Nigeria due to possible differences in socio-cultural, educational, and healthcare contexts.

Conclusion and Recommendations

Cervical cancer remains a major public health concern, particularly in developing countries where awareness, screening and vaccination coverage are still relatively low. Despite moderate levels of awareness observed among some respondents, the uptake of preventive services such as HPV vaccination and cervical cancer screening remained relatively low. Several barriers were identified, including financial constraints, fear of side effects, limited access to healthcare services and inadequate knowledge about available preventive measures. These barriers highlight the gap that often exists between awareness and actual health behaviour. Addressing these barriers is essential for improving the utilization of preventive healthcare services.

Based on the conclusion drawn from this study, the following recommendations were made;

1. Integrate cervical cancer screening services into primary healthcare centres services
2. Train community health workers to provide continuous cervical cancer education, counselling, and referral services.
3. Promote HPV vaccination awareness among women
4. Engage religious and community leaders in prevention campaigns.

References

- [1] Ferlay J, Colombet M, Soerjomataram I, et al. Cancer statistics for the year 2020: An overview. *International journal of cancer*. 2021; 149: 778-789.
- [2] Sung H, Ferlay J, Siegel RL. *Global Cancer Statistics: GLOBOCAN Estimates of Incidence and Mortality Worldwide for 36 Cancers in 185 Countries*. CA: A Cancer Journal for Clinicians. 2021;71(3):pp.209–249.
- [3] World Health Organization. *Cervical Cancer* [Internet]. Geneva: World Health Organization; 2022 [cited 7th July, 2026]. Available from: https://www.who.int/health-topics/cervical-cancer-#tab=tab_1
- [4] World Health Organization. *Cervical Cancer Elimination Initiative* [Internet]. Geneva: World Health Organization; 2026 [cited 22nd July,

- 2026]. Available from: <https://www.who.int/initiatives/cervical-cancer-elimination-initiative>
- [5] Agha S, Nsofor I. HPV vaccine uptake among adolescent girls in Nigeria: The complex role of caregivers' education. *PLoS One*. 2025;20(7):e0325684. <https://doi.org/10.1371/journal.pone.0325684>.
- [6] Sankaranarayanan R., Nene B, Shastri SS. HPV vaccination and cervical cancer screening: The role of educational programs. *The Lancet Oncology*. 2017;18(5):pp.e290–e299.
- [7] Clarke MA, Gage JC., Ajenifuja KO. A population-based cross-sectional study of age-specific risk factors for high risk human papillomavirus prevalence in rural Nigeria. *Infect Agent Cancer* 2011;6:12. [doi:10.1186/1750-9378-6-12](https://doi.org/10.1186/1750-9378-6-12)
- [8] Nyiramana MP. Cervical Cancer Prevention and Women's Well-Being in Nigeria: A Comprehensive Review. *Research Invention Journal of Public Health and Pharmacy*. 2024;3(3): 22-26. <https://doi.org/10.59298/RIJPP/2024/332226>
- [9] Isa MF, Dareng E, Bamisaye P. Qualitative study of barriers to cervical cancer screening among Nigerian women. *BMJ Open*. 2016. doi: 10.1136/bmjopen-2015-008533.
- [10] World Health Organization, [WHO]. Human papiloma virus and other cancer fact sheets[Internet]. Geneva: World Health Organization; 2023. [Accessed June 30th 2026] Available at [Nigeria: Human Papillomavirus and Related Cancers, Fact Sheet 2023](#)
- [11] Oluwole E, Mohammed, AS, Oladele O. Factors influencing the awareness and uptake of cervical cancer screening among women in Southwest Nigeria. *Journal of Community Medicine and Health Education*. 2019;(1), p.635.
- [12] Talabi O, Gilbert H, Fawzi MCS, Anorlu R, Randall T. Examining barriers and facilitators of HPV vaccination in Nigeria, in the context of an innovative delivery model: a mixed-methods study. *BMJ Public Health* 2023;1:e000003. doi:10.1136/bmjph-2023-000003
- [13] Ilevbare OE, Adegoke AA, Adelowo CM. Drivers of cervical cancer screening uptake in Ibadan, Nigeria. *Heliyon*. 2020;6(3):e03505. doi: 10.1016/j.heliyon.2020.e03505.
- [14] Ogada CO, Izuchukwu PN, Chibuike VC. The Human Papilloma virus (HPV) Epidemic among Women in Nigeria: A Systematic Review of Vaccination, Prevention and Public health Measures. *International Journal of Pathogen Research*. 2025;14(2):132-42. <https://doi.org/10.9734/ijpr/2025/v14i2356>

- [15] Okolie EA, Barker D, Nnyanzi LA, Anjorin S, Aluga D, Nwadike BI. Factors influencing cervical cancer screening practice among female health workers in Nigeria: A systematic review. *Cancer Reports*. 2022;5(5):e1514. <https://doi.org/10.1002/cnr2.1514>
- [16] Nwobodo H, Ba-Break M. Analysis of the awareness and practice of cervical cancer screening among women in Nigeria. *Journal of Public Health and Epidemiology*. 2016;8(5):pp.53–60. [10.4081/jphia.2015.484](https://doi.org/10.4081/jphia.2015.484)
- [17] Kwara State Ministry of Health. Preliminary report on cervical cancer awareness and in Omu-Aran. Ilorin: Kwara State Ministry of Health. 2023
- [18] Glanz K, Rimer BK, Viswanath K. *Health Behavior and Health Education: Theory, Research and Practice*. 4th ed. 2008. San Francisco: Jossey-Bass
- [19] Wangari N, Musyoka M, Kilonzo N. Awareness of cervical cancer and HPV vaccination among young women in Kenya. *Kenyan Journal of Medical Sciences*. 2018;14(2):pp.88–95.
- [20] Kumar P, Singh A, Gupta R. Awareness and knowledge of cervical cancer among older women in Northern India. *Indian Journal of Cancer*. 2021;58(2):pp.223–229.
- [21] Mafiana JJ, Dhital S, Halabia M, Wang X. Barriers to uptake of cervical cancer screening among women in Nigeria: a systematic review. *Afr Health Sci*. 2022 Jun;22(2):295-309. doi: 10.4314/ahs.v22i2.33.
- [22] Ruddies F, Gizaw M, Teka B, Thies S, Wienke A, Kaufmann AM, Abebe T, Addissie A, Kantelhardt EJ. Cervical cancer screening in rural Ethiopia: a cross- sectional knowledge, attitude and practice study. *BMC Cancer*. 2020;17;20(1):563. doi: 10.1186/s12885-020-07060-4. PMID: 32552740; PMCID: PMC7298871
- [23] Islam MS, Rahman MA, Begum T. Factors influencing cervical cancer awareness and screening practices among women in Bangladesh. *Asian Pacific Journal of Cancer Prevention*. 2021;22(1): pp.33–41.
- [24] Mbulawa Z, Mahlangu L, Makhabane E, Mavivane S, Nongcula S, Phafa A, Sihlobo AZ, Businge CB. Poor Cervical Cancer Knowledge and Awareness among Women and Men in the Eastern Cape Province Rural Community. *Int J Environ Res Public Health*. 2023;13;20(20):6916. doi: 10.3390/ijerph20206916.