

North-South Disparities in Human Papillomavirus Vaccine Uptake and Willingness among Female Secondary School Students in Nigeria: Evidence from Ekiti State and Gombe State

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ABSTRACT

Background: Cervical cancer remains a major public health concern, especially in low- and middle-income countries like Nigeria, where it is the second leading cause of cancer-related deaths among women. The disease is mainly caused by the Human Papillomavirus (HPV), and vaccination of girls aged 9–14 years is strongly recommended by the World Health Organization as an effective preventive measure. However, despite the vaccine's proven safety and effectiveness, uptake in Nigeria is still low. This study assessed HPV vaccine uptake, willingness, and predictors among female secondary school students in Ekiti state and Gombe State.

Material and methods: A comparative cross-sectional study was conducted among 576 female secondary school students selected through multistage sampling. Data was collected using semi-structured, interviewer-administered electronic questionnaires and analysed using SPSS version 26. Chi-square tests was used to test for associations, while binary logistic regression identified predictors of uptake. Statistical significance was set at $p < 0.05$.

Results: Overall HPV vaccine uptake was low at 83 (14.4%), with slightly higher uptake in Ekiti at 45 (15.6%) compared to Gombe at 38 (13.2%), but this difference was not statistically significant ($p = 0.406$). Willingness to receive the vaccine was relatively high, with 219 (76%) in Ekiti and 197 (68.4%) in Gombe, with a statistically significant difference between the states ($p < 0.001$). In the multivariable analysis, knowledge (AOR = 0.13; 95% CI: 0.07–0.24; $p < 0.001$), age of respondents (AOR = 7.95; 95% CI: 3.92–16.09; $p < 0.001$), and perception (AOR = 0.42; 95% CI: 0.23–0.79; $p = 0.007$) were predictors of HPV vaccine uptake. Although father's level of education was not significantly associated with vaccine uptake overall ($p = 0.118$), respondents whose fathers had secondary education had significantly lower odds of vaccine uptake compared with those whose fathers had tertiary education (AOR = 0.26; 95% CI: 0.09–0.69; $p = 0.007$).

Conclusion: Despite high willingness, HPV vaccine uptake among respondents was low. Knowledge, perception, and age were key predictors. Strengthening school-based health education and expanding access through school vaccination programs are essential in improving uptake and reducing cervical cancer burden in Nigeria.

KEYWORDS: Human Papillomavirus (HPV), HPV Vaccine, Cervical Cancer, Uptake, Ekiti State, Gombe State, Secondary school, Nigeria.

INTRODUCTION

North-South Disparities in Human Papillomavirus Vaccine Uptake and Willingness among Female Secondary School Students in Nigeria: Evidence from Ekiti State and Gombe State

Cervical cancer is the fourth most common cancer among women globally and remains one of the leading causes of cancer-related deaths in low- and middle-income countries [1]. In Nigeria, it is the second most frequent cancer and cause of cancer-related deaths among women. Current estimates indicate that every year 14,943 women are diagnosed with cervical cancer, and 10,403 die from the disease in Nigeria [2].

The development of prophylactic Human papillomavirus (HPV) vaccines represents one of the most significant advances in cervical cancer prevention. Currently available vaccines include the bivalent, quadrivalent, and nonavalent formulations which offer protection against the most oncogenic HPV strains [3]. The World Health Organization (WHO) recommends that females who are 9 to 14 years old should be vaccinated against HPV which is prior to sexual debut, when immunogenic response is highest [4].

Despite proven efficacy and safety, HPV vaccine uptake remains suboptimal in many African countries, Nigeria inclusive [5–7]. In Nigeria, a study by Akpor et al. found that only 5.4% of female undergraduates in Ekiti State had received the HPV vaccine [8]. The study identified low awareness of HPV and its vaccine, as well as concerns about vaccine cost and safety, as key barriers to its uptake. A descriptive cross sectional study design conducted among students of a tertiary institution in Gombe State revealed that the majority (96.3%) of the study participants, have not received HPV vaccine [9]. The study highlighted cultural and religious beliefs as significant barriers, with many parents opposing vaccination due to misconceptions about its purpose.

Given these results, there is a critical need to generate context-specific evidence comparing HPV vaccine uptake and willingness across different regions of Nigeria, especially among secondary school students. Understanding the North–South divide is particularly important due to longstanding disparities in health outcomes, education, and access to services between these regions. However, there is a paucity of comparative studies focusing specifically on adolescent girls in secondary schools which is a key target group for HPV vaccination programs. Ekiti State in southwestern Nigeria and Gombe State in north-eastern Nigeria represent contrasting socio-cultural and developmental contexts. The broad objective of this study was to assess and compare the uptake and willingness to accept the HPV vaccine among Female Secondary School students in Ekiti state and Gombe state, Nigeria, as well as to identify predictors of HPV vaccine uptake.

METHODOLOGY

Study Area

The study was conducted in two states in Nigeria which were Ekiti state and Gombe state. Ekiti State is located in the southwestern region of Nigeria. It lies between longitudes 40°51' and 50°45' East of the Greenwich meridian and latitudes 70°15' and 80°51' north of the Equator [10] and comprises of 16 Local Government Areas (LGAs). It is home to 380 private secondary schools and 200 public secondary schools [11]. Gombe state on the other hand is located in the centre of the north east of the country on latitude 9°30' and 12°30'N, Longitude 8°5' and 11°45'E [12]. There are 11 LGAs, 268 public secondary schools and 359 private secondary schools in the state [13].

Study Design

A comparative cross-sectional study design was used and it was conducted between February and March 2025.

Study Population

This comprised female students attending public and private secondary schools for at least one academic session in Ekiti state and Gombe state. Students that were too ill to answer questions were excluded.

Sample Size Calculation

The sample size for this study was calculated using the formula for comparing two populations:

$$n = \frac{(Z\alpha + Z\beta)^2 \cdot p_1q_1 + p_2q_2}{(p_1 - p_2)^2}$$

$Z\alpha$ = standard normal deviation (1.96 at 95% confidence level)

$Z\beta$ = the power of the study which is set at 20% (p-value 0.2 or 20% is 0.84)

p_1 = estimated proportion of young females with knowledge of HPV and HPV vaccine in a similar study area to Ekiti State is 53.3% [8].

p_2 = estimated proportion of young females with knowledge of HPV and HPV vaccine in a similar study area to Gombe State is 65% [14].

$$n = \frac{(1.96 + 0.84)^2 \times (0.53 \times 0.47) + (0.65 \times 0.35)}{(-0.12)^2} = 259.48$$

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To account for a potential non-response rate of 10%, the sample size should be increased by 10%. The adjusted minimal sample size for each state was approximately 288.

Sampling Technique:

A multi-stage sampling technique was employed:

Stage One (Selection of Local Government Areas {LGAs} in each of the two states): In Ekiti State, four LGAs (which is 25% of the 16 LGAs in Ekiti state) were selected using simple random sampling by balloting. Of which Ikole, Ado-Ekiti, Ijero, Oye were selected. For Gombe State, which has 11 LGAs, the same proportion of LGAs were selected also by balloting, which arrived at two LGAs. These were Dukku and Akko.

Stage Two (Selection of secondary schools from each sampled LGA): Ekiti State is home to a total of 524 secondary schools, which were categorized into public and private schools. Among these, there are 191 public schools, averaging approximately 11 public schools per Local Government Area (LGA). For this study, three public schools were randomly selected by balloting from each of the four LGAs being surveyed. Additionally, there are a total of 333 private schools in Ekiti State with an average of 20 private schools per LGA [11]. Five private schools (out of 20) were randomly selected by balloting from each LGA in the state. This results in the selection of eight schools (both public and private) from each LGA, leading to a combined total of 32 schools surveyed in Ekiti State. Similarly, the secondary schools in Gombe State were also stratified into public and private schools. There were 448 public secondary schools in Gombe state. Since Gombe State has 11 LGAs, this means that there is an average of 40 public secondary schools per LGA. In this study, three public secondary schools were randomly selected by balloting from each of the two LGAs selected in stage one. This brought the total of public secondary schools selected in this state to six i.e., three per LGA. Additionally, there are only 89 private secondary schools in Gombe State. Since there are 11 LGAs in Gombe State, this means the state has an average of nine private secondary schools per LGA. Five were randomly selected by balloting in each LGA, so that 10 private schools were selected from the two LGAs in Gombe state. In summary, this selection involved choosing a total of eight schools per LGA i.e., three from public schools and five from private schools resulting in a total of 16 schools surveyed in Gombe State.

Stage Three (Selection of classes from the selected secondary schools): In each selected school, classes were stratified into Senior and Junior classes (JSS and SSS) classes. Then one class was selected using simple random sampling by balloting from each class (senior and junior classes) for every school in both Ekiti state and Gombe state.

Stage Four (Selection of students): Using systematic random sampling, students were selected from each class. We first obtained the official class register, which served as our sampling frame and counted the total number of female students. Next, we calculated the sampling interval by dividing the total number of female students by the desired sample size. After that, we randomly selected a starting point, which was a number between one and the calculated sampling interval. We then chose the subsequent female students by repeatedly adding the sampling interval to the initial starting point until we reached the desired sample size. If the selection process exceeds the last female student on the register, we implemented a wrap-around procedure to ensure that the sampling continues appropriately. A total of nine students were selected from each school in Ekiti State. Five from the junior classes and four from the senior classes. 18 students were also selected from each school in Gombe State. Nine came from the junior classes, and the same number from the senior classes.

DATA COLLECTION

Data was collected with a pre-tested, semi-structured interviewer-administered questionnaire which was adapted from previous studies [5,9,15–17].

Validity and Reliability

The questionnaire underwent face and content validation by three public health physicians. The questionnaire was also pre-tested using 10% of our sample size in one school that was not selected in either Ekiti and Gombe State to fine tune the data collection tool. In addition, Cronbach's alpha was used to assess the internal consistency of the questionnaire with a threshold of ≥ 0.7 considered acceptable. After inputting the pre-test responses into SPSS 26.0 a Cronbach alpha of 0.8 was calculated which indicates a high level of internal consistency.

Data Collection Procedure

Trained research assistants administered the questionnaires to participants during regular school hours, following prior approval from the relevant school authorities and assents from parents/guardians where necessary. To ensure the accuracy and completeness of the data, the research assistants conducted face-to-face interviews with participants, guiding them through the questionnaire and addressing any questions or concerns that may arise during the process. These interviews were conducted in the teacher's offices, library, and dining rooms in utmost confidentiality. Where feasible, vaccination cards or school health

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records was used to validate self-reported uptake of HPV vaccine.

Data Analysis Plan

The data collected was cleaned in MS excel 365 and imported into the Statistical Package for Social Sciences (SPSS) version 26. Descriptive statistics such as frequencies and percentages were used to summarise quantitative data and the uptake. Non-parametric tests such as the chi-square tests was used to find associations between uptake and willingness to receive the HPV vaccine across both states. Binary logistic regression was performed to identify predictors of uptake of the HPV vaccine, with results presented as adjusted odd ratios (AORs) and 95% confidence intervals (CIs). A p-value <0.05 was considered statistically significant.

Ethical Considerations

Ethical approval was obtained from the Gombe State Ministry of Health (MOH/ADM/621/V.1/616) and the Ministry of Health and Human Services, Ado Ekiti, Ekiti State (MOH/EKHREC/EA/P/110). Permission was also obtained from school authorities in the LGAs where the study respondents were recruited. Furthermore, assent was obtained from students who were below the age of 18 while informed consent was obtained from those that were 18 years and above. Confidentiality and anonymity were maintained throughout the study, and participation was voluntary with the option to withdraw at any time without negative consequences.

RESULTS

A total of 576 responses were analysed. 288 respondents each were from Ekiti State and Gombe State resulting in a 100% response rate.

Table 1: Socio-demographic characteristics of respondents in study areas

Variables	Ekiti state (n=288)	Gombe state (n=288)
Age (in years)		
10-14	284(98.6)	27(9.4)
15-18	4(1.4)	261(90.6)
Mean	12.44±1.26	16.52±1.36
Class		
Junior secondary school	192(66.7)	117(40.6)
Senior secondary school	96(33.3)	171(59.4)
Religion		
Christianity	262(91.0)	0
Islam	24(8.3)	288(100)
Traditional	2(0.7)	0
Marital status		
Divorced	0	5(1.7)
Married	0	35(12.2)
Single	288(100)	245(85.1)
Widowed	0	3(1.0)
Father's level of education		
I don't know	112(38.9)	129(44.8)
No formal education	0(0)	20(6.9)
Primary	8(2.8)	11(3.8)
Secondary	59(20.5)	68(23.6)
Tertiary	109(37.8)	60(20.8)
Mother's level of education		
I don't know	101(35.1)	127(44.1)
No formal education	0	38(13.2)
Primary	10(3.5)	24(8.3)
Secondary	56(19.4)	78(27.1)
Tertiary	121(42.0)	21(7.3)

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The study participants from the Ekiti state arm were the youngest in this study with a mean age of 12.44 ± 1.26 years, while those from Gombe state were older with 16.52 ± 1.36 years. 91% of the respondents from Ekiti practiced Christianity with only about 8.3% being Muslims. In contrast, 100% of respondents from Gombe State were Muslims. Similarly, all the respondents in Ekiti State were single but there was more variation in marital status among those in Gombe state as 12.2% were married at the time of the study. The level of education of the parents of the respondents were higher in Ekiti State with more parents in this region having tertiary education.(Table 1)

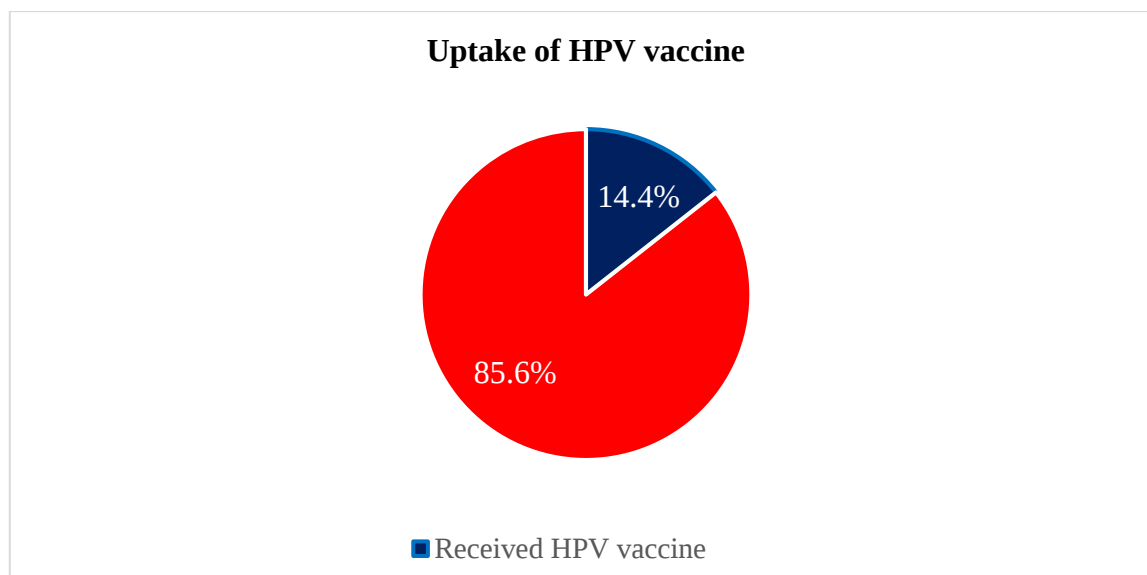


Figure 1: Overall uptake of the HPV vaccine by the students in Ekiti state and Gombe state

Table 2: Comparison of Uptake of the HPV vaccine and Willingness to receive the HPV vaccine across Ekiti state and Gombe state

Variables	Ekiti state (n=288)	Gombe state (n=288)	χ^2 value	p-value
Ever received the HPV vaccine before			0.69	0.406
No	243(84.4)	250(86.8)		
Yes	45(15.6)	38(13.2)		
If yes, number of doses			2.557	0.423
One dose	37(12.8)	33(11.5)		
Two doses	8(2.8)	4(1.4)		
Three doses	0	1(0.3)		
Willing to accept HPV vaccine in future			15.643	<0.001*
Yes	219(76.0)	197(68.4)		
No	39(13.5)	27(9.4)		
Maybe	30(10.4)	64(22.2)		

Table 2 shows that a higher percentage of respondents in Ekiti (15.6%) reported having received the HPV vaccine compared to Gombe (13.2%), though the difference is not statistically significant ($\chi^2 = 0.690$, $p = 0.406$). Regarding the number of doses received, most had received only one dose in both states 12.8% in Ekiti and 11.5% in Gombe with no significant difference ($\chi^2 = 2.557$, $p = 0.423$). For willingness to receive the HPV vaccine in the future, there was a statistical difference in the willingness to receive the vaccine between the two states.

Table 3: Multivariate Logistic Regression Analysis of the predictors of HPV Vaccine Uptake among Respondents

Variable	B	S.E.	Wald	df	p-value	AOR	95% CI for AOR
Father's level of education (overall)	—	—	7.350	4	0.118	—	—

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I don't know	-0.247	0.429	0.333	1	0.564	0.781	0.337–1.810
No formal education	-0.599	0.916	0.428	1	0.513	0.550	0.091–3.306
Primary	-0.296	0.850	0.121	1	0.728	0.744	0.141–3.940
Secondary	-1.364	0.510	7.165	1	0.007*	0.256	0.094–0.694
Tertiary (Reference)	—	—	—	—	—	1.000	—
Age category							
10–14 vs 15–18 years (Reference)	2.073	0.360	33.149	1	<0.001*	7.945	3.924–16.087
Perception category							
Negative vs Positive (Reference)	-0.861	0.319	7.286	1	0.007*	0.423	0.226–0.790
Knowledge category							
Poor vs Good (Reference)	-2.040	0.315	41.978	1	<0.001*	0.130	0.070–0.241
Mother's level of education (overall)							
I don't know	0.252	0.465	0.293	1	0.588	1.286	0.517–3.198
No formal education	0.203	0.696	0.085	1	0.770	1.226	0.313–4.799
Primary	-0.696	0.849	0.671	1	0.413	0.499	0.094–2.634
Secondary	-0.022	0.472	0.002	1	0.963	0.978	0.388–2.468
Tertiary (Reference)	—	—	—	—	—	1.000	—

In the multivariable logistic regression analysis, age, perception and knowledge were significantly associated with HPV vaccine uptake after adjusting for the other variables in the model. Respondents aged 10–14 years had approximately eight times the odds of HPV vaccine uptake compared with those aged 15–18 years (AOR = 7.95; 95% CI: 3.92–16.09; $p < 0.001$). Perception (AOR = 0.42; 95% CI: 0.23–0.79; $p = 0.007$) and knowledge (AOR = 0.13; 95% CI: 0.07–0.24; $p < 0.001$) were also significantly associated with vaccine uptake. Father's level of education was not significantly associated with HPV vaccine uptake overall ($p = 0.118$); however, respondents whose fathers had secondary education had significantly lower odds of vaccine uptake compared with those whose fathers had tertiary education (AOR = 0.26; 95% CI: 0.09–0.69; $p = 0.007$). Mother's level of education was not significantly associated with HPV vaccine uptake ($p = 0.835$) (Table 3).

DISCUSSION

This study involved 576 female secondary school students aged 10–18 years, with a mean age of 12.44 ± 1.26 years in Ekiti state and 16.52 ± 1.36 in Gombe state. The religious distribution reflected regional patterns as majority of respondents from Ekiti state were Christians while for Gombe state all the respondents were Muslims which highlights clear religious preferences between the two states and generally between the Southwest and Northeast of Nigeria. This religious differences was observed in other studies in these areas [14,16]. In contrast, all the respondents in Ekiti state were unmarried while majority of those from Gombe state were married reflecting early marriage patterns in parts of Northern Nigeria. There were also marked differences in parental education between the two states. It was observed that a substantial portion of respondents in Ekiti state had fathers and mothers with tertiary level of education, while a considerably minimal number of parents in Gombe state had tertiary education. Similarly, a higher proportion of respondents in Gombe reported not knowing their parents' level of education. These disparities suggest underlying socioeconomic and educational differences between the states, which are important contextual factors when interpreting HPV vaccine uptake.

Overall, the HPV vaccine uptake rate was low in this study with only 45 (15.6%) respondents in Ekiti state and 38 (13.2%) in Gombe state having received the HPV vaccine. These proportions were higher than a descriptive cross-sectional survey done in Lagos state where only 10 (2.6%) of the undergraduate females had received at least one dose of the HPV vaccine [18]. The differences in the results could be explained by the socio-demographic characteristics of the participants with those in the Lagos study focusing on female undergraduates which are demographically not usually targeted for free HPV vaccination activities. Similarly, a descriptive cross-sectional study done in the University of Ilorin among undergraduate students revealed that of the 410 participants, only 6 (1.5%) received the HPV vaccine [19]. Conversely, another cross-sectional survey done across multiple states in Nigeria found that the HPV vaccination rate among adolescent girls 9–17 was 53.9% [15] which is higher than the 45 (14.4%) found in this study. This study was done after an elaborate HPV vaccination campaign in the states which could explain the relatively high proportion of those vaccinated compared to other studies. However, the uptake of the HPV vaccine in these states are far below the WHO's projections for HPV vaccine uptake which is currently at about 90% [20]. If uptake remains persistently low this will lead to a continuation of the high burden of cervical cancer in Nigeria. Although HPV vaccine uptake was slightly higher in Ekiti compared to Gombe, the difference was not statistically significant ($p = 0.406$). The uptake rates in this study are comparable to those reported in a cross-sectional study done among female undergraduates in North-Central, Nigeria where only 4 (7.6%) respondents had received the vaccination in all three doses [16] and another similar study in Gombe state where just 2.1% of students

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in a tertiary institution had received at least a dose of the vaccine and only 0.4% of them had completed three doses[9]. The major barriers to HPV vaccine uptake identified in these studies were inadequate knowledge about the vaccine and concerns about its cost and safety. This finding suggests that despite notable sociodemographic and educational differences between the two states, this did not translate into significantly different HPV vaccine uptake. Structural issues such as cost, availability, and absence of widespread government-funded programs may be the dominant determinants.

The willingness of the respondents to receive the HPV vaccine in the future was generally high in both study locations, although a statistically significant difference was observed between the two states ($p < 0.001$). In Ekiti State, a large majority of the respondents 219 (76.0%) indicated that they were willing to accept the HPV vaccine in the future, compared with 197 (68.4%) of respondents in Gombe State. However, a greater proportion of students in Gombe State reported uncertainty about vaccination, with 64 (22.2%) indicating “maybe,” compared with 30 (10.4%) in Ekiti State. The proportion of respondents who were unwilling to receive the vaccine was relatively low in both settings at 39 (13.5%) in Ekiti and 27 (9.4%) in Gombe. This unwillingness to receive the vaccine may be due to the lack of knowledge about HPV vaccine benefits coupled with the myths and misinformation associated with the vaccine such as a myth that the vaccine may lead to sexual promiscuity [21]. In addition, lack of parental support and consent to receive the vaccine may be a contributing factor to the unwillingness as many parents have raised concerns about the vaccine’s safety and possible side effects. The higher level of willingness observed in Ekiti may reflect differences in sociocultural context, access to health information, and exposure to health promotion activities between the predominantly southern and northern regions of the country. These findings are consistent with several regional studies conducted in Nigeria that have reported relatively high levels of willingness to receive the HPV vaccine among adolescents and young women. A descriptive cross-sectional study done among mothers of young girls in Lagos state in 2012 showed that there was a high willingness and intention among the mothers to vaccinate their girls (88.9%) and to recommend the vaccine to others (91.0%) [22]. Similarly, a household survey of 1002 women who participated in the HPV Vaccine and Cervical Cancer Prevention Survey from 26 August to 29 September 2012 at Ibadan North Local Government Area, Mokola Ibadan, Nigeria revealed that there was high willingness (88.6%) to vaccinate[23]. In many of these settings, willingness has been shown to increase significantly after health education interventions, suggesting that knowledge gaps rather than outright resistance often explain vaccine hesitancy. From a public health perspective, the relatively high willingness to accept the HPV vaccine observed in this study represents a significant opportunity for cervical cancer prevention in Nigeria.

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The multivariable logistic regression analysis showed that knowledge, perception and age were predictors of HPV vaccine uptake among the respondents. Respondents aged 10–14 years had almost eight times the odds of having received the HPV vaccine compared with those aged 15–18 years (AOR = 7.95; 95% CI: 3.92–16.09; $p < 0.001$). The higher uptake among younger adolescents may reflect the current focus of HPV vaccination programmes on younger girls, particularly those aged 9–14 years, as vaccination is recommended before potential exposure to HPV. Younger adolescents may also be more likely to benefit from vaccination delivered through schools, community campaigns and decisions made by parents or caregivers on their behalf. Knowledge was also significantly associated with HPV vaccine uptake (AOR = 0.13; 95% CI: 0.07–0.24; $p < 0.001$), respondents with poor knowledge had 87% lower odds of having received the HPV vaccine compared with those with good knowledge. This finding highlights the important role that knowledge may play in vaccination behaviour. Adolescents who understand HPV infection, its link with cervical cancer and the benefits of vaccination may be more receptive to vaccination when it is offered. However, the relationship may also work in the other direction, as adolescents who have already received the vaccine may have gained knowledge about HPV through counselling or health education provided during vaccination. Given the cross-sectional design of this study, the direction of this relationship cannot be established. Perception was similarly associated with HPV vaccine uptake (AOR = 0.42; 95% CI: 0.23–0.79; $p = 0.007$). Respondents with a negative perception had about 58% lower odds of having received the vaccine compared with those with a positive perception. This suggests that how adolescents view the HPV vaccine may influence their willingness to accept and receive it. Concerns about vaccine safety, effectiveness or necessity may discourage uptake, while confidence in the benefits and safety of the vaccine may support acceptance. Father's level of education was not significantly associated with HPV vaccine uptake overall after adjusting for the other variables in the model ($p = 0.118$). However, respondents whose fathers had secondary education had significantly lower odds of HPV vaccine uptake compared with those whose fathers had tertiary education (AOR = 0.26; 95% CI: 0.09–0.69; $p = 0.007$). This finding should be interpreted cautiously because the overall association between paternal education and vaccine uptake was not statistically significant, and there was no consistent pattern across the different levels of paternal education. It therefore does not provide sufficient evidence to conclude that increasing paternal education consistently increases or decreases HPV vaccine uptake. The observed difference may reflect other factors related to parental knowledge, attitudes towards vaccination, access to vaccination services or involvement in healthcare decisions that were not fully captured in this study. Mother's level of education was also not significantly associated with HPV vaccine uptake overall ($p = 0.835$), and none of the individual maternal education categories was significantly associated with uptake after adjustment for the other variables. Although maternal education may improve access to health information and the ability to make informed healthcare decisions, educational attainment alone may not necessarily translate into HPV vaccine uptake. Vaccination decisions may be shaped by several other factors, including awareness of the vaccine, confidence in its safety, availability and accessibility of vaccination services, recommendations from healthcare workers and the circumstances under which vaccination is offered.

LIMITATION OF THE STUDY

The limitation of the study include the fact that this study did not do one to one matching of respondents in the two-study areas which resulted in majority of the respondents being younger in Ekiti state compared to their counterparts in Gombe state. This age difference may have contributed to the difference observed in willingness to receive the HPV vaccine. The relationships between variables observed in this study should be interpreted as associations rather than causal effects, particularly given the cross-sectional design of the study. Also, addition of a qualitative component to the study would have provided an opportunity for triangulation.

CONCLUSION

The findings revealed a very low level of HPV vaccination coverage, with only 14.4% of respondents having ever received the vaccine. In contrast, willingness to receive the vaccine in the future was relatively high in both states, although a significant proportion of respondents were uncertain about receiving the HPV vaccine, especially those from Gombe State. Furthermore, this study findings suggest that age, knowledge and perception were more strongly associated with HPV vaccine uptake than parental educational background in this study population. The strong associations observed with knowledge and perception highlight the importance of ensuring that adolescents and their parents have access to clear and accurate information about HPV and its vaccine.

THE RECOMMENDATIONS INCLUDE:

EKITI STATE

1. The Ekiti State Primary Health Care Development Agency should intensify age-targeted HPV vaccination for girls aged 9–14 years, while providing catch-up and targeted mop-up vaccination for eligible older adolescents who missed vaccination at the recommended age.
2. The Ekiti State Ministry of Education should strengthen HPV and cervical cancer education in secondary schools through existing school health programmes, health clubs and peer education activities. These activities should provide age-appropriate information on HPV transmission, cervical cancer prevention, vaccine effectiveness and safety.

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3. The Ekiti State Ministries of Health and Education should strengthen parent–school engagement on HPV vaccination through parent–teacher meetings and school health outreach programmes. These forums should provide parents with accurate information about HPV vaccination, address concerns about vaccine safety and encourage timely consent for eligible girls.

GOMBE STATE

4. The Gombe State Ministry of Health, Gombe State Primary Health Care Development Agency and Ministry of Education should intensify school- and community-based HPV vaccination activities, with particular attention to girls who have not previously received the vaccine.
5. The Gombe State Primary Health Care Development Agency should implement targeted catch-up and mop-up vaccination activities for older eligible adolescents, while continuing to prioritise girls aged 9–14 years for routine HPV vaccination. Outreach should extend beyond schools to communities and primary healthcare facilities to reach adolescents who may no longer be regularly attending school.
6. The Gombe State Ministries of Health and Education should implement HPV education programmes targeting students, parents and caregivers. Given the greater proportion of respondents in Gombe who were uncertain about receiving the vaccine, these programmes should specifically address misconceptions, concerns about vaccine safety and effectiveness, and the benefits of vaccination in preventing cervical cancer. Also, culturally appropriate educational materials, school health clubs and peer educators could be used to reinforce accurate knowledge and promote positive perceptions of HPV vaccination.
7. Community and religious leaders in Gombe State should be actively engaged in HPV vaccination advocacy and community mobilisation. Working with trusted community figures may help provide appropriate information, address misconceptions and improve confidence in HPV vaccination among adolescents and their parents or caregivers.

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