# Human papillomavirus (HPV) vaccination among school girls aged 9 to 13 years in Obosi, Idemili North Local Government Area, Anambra State, Nigeria

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**ABSTRAK**

Infeksi *Human Papillomavirus* (HPV) merupakan faktor etiologi utama perkembangan kanker serviks yang mengancam kesehatan perempuan di negara berkembang. Penelitian ini mengkaji faktor-faktor yang memengaruhi penerimaan vaksinasi HPV pada siswi usia 9 hingga 13 tahun di Obosi, Wilayah Pemerintahan Lokal Idemili Utara, Negara Bagian Anambra, Nigeria. Penelitian ini menggunakan desain potong lintang deskriptif (*descriptive cross-sectional design*) dengan populasi sasaran 1.000 remaja putri usia 9–13 tahun di lima desa di Obosi. Berdasarkan rumus *Nwana's Rule of Thumb*, diperoleh sampel 100 responden melalui teknik *multistage random sampling*. Data dikumpulkan menggunakan kuesioner terstruktur *Factors Influencing the Uptake of Human Papillomavirus Vaccination Questionnaire* (FIHPVVQ, $r \geq 0{,}70$) dan dianalisis secara deskriptif menggunakan SPSS versi 23. Hasil penelitian menunjukkan rendahnya cakupan vaksinasi HPV, yaitu hanya 34,0% responden menerima dosis lengkap, 18,0% menerima sebagian dosis, dan 48,0% belum divaksinasi. Faktor sosial ekonomi utama meliputi kesadaran orang tua tentang HPV (90,0%), kemudahan akses fasilitas kesehatan (84,0%), pendidikan orang tua (82,0%), pendapatan rumah tangga (76,0%), pekerjaan orang tua (69,0%), dan keyakinan agama (65,0%). Hambatan utama mencakup kurangnya kesadaran (88,0%), kekhawatiran efek samping (74,0%), biaya vaksinasi (72,0%), kurangnya rekomendasi tenaga kesehatan (70,0%), kesalahpahaman agama (63,0%), tabu budaya (60,0%), dan jarak fasilitas kesehatan (57,0%).
**Kata Kunci: gadis remaja; human papillomavirus; kanker serviks; penerimaan vaksin; vaksinasi hpv**

***ABSTRACT***

*Human Papillomavirus (HPV) infection remains a primary etiological factor in the development of cervical cancer, posing a major public health threat in low- and middle-income countries. This study examined the factors influencing HPV vaccination uptake among girls aged 9 to 13 years in Obosi, Idemili North Local Government Area, Anambra State, Nigeria. A descriptive cross-sectional design was adopted covering a target population of 1,000 girls aged 9–13 years across the five villages of Obosi. Using Nwana's Rule of Thumb, a sample of 100 respondents was selected via multistage random sampling. Data were collected using the validated Factors Influencing the Uptake of Human Papillomavirus Vaccination Questionnaire (FIHPVVQ, test-retest $r \geq 0.70$) and analyzed using descriptive statistics in SPSS version 23. Findings revealed low HPV vaccine uptake: only 34.0% completed the full vaccination schedule, 18.0% received partial doses, and 48.0% remained unvaccinated. Key socio-economic factors influencing uptake included parental awareness of HPV (90.0%), easy access to healthcare facilities (84.0%), parental education (82.0%), household income (76.0%), parental occupation (69.0%), and religious beliefs (65.0%). Major barriers were lack of awareness (88.0%), fear of side effects (74.0%), high vaccination cost (72.0%), lack of healthcare worker recommendation (70.0%), religious misconceptions (63.0%), cultural taboos (60.0%), and distance to facilities (57.0%).*
**Keywords: teenage girls; human papillomavirus; cervical cancer; vaccine acceptance; HPV vaccination**

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## 1. INTRODUCTION

Human Papillomavirus (HPV) infection represents one of the most pervasive viral infections of the reproductive tract globally, posing a major public health challenge across diverse demographic populations

(Asgedom et al., 2024; Kutz et al., 2023). Scientifically classified as a double-stranded DNA tumor virus, HPV targets epithelial cells to cause benign or malignant cutaneous and mucosal proliferations (WHO, 2022; Morshed et al., 2014). Globally, high-risk viral strains remain the primary etiological agent for cervical carcinoma, which ranks as a leading cause of female cancer mortality (WHO, 2022; Williamson, 2023). The disease burden is heavily skewed toward resource-constrained regions, where inadequate screening programs, lack of specialized oncology centers, and limited immunization access exacerbate health disparities (Asgedom et al., 2024; Williamson, 2023). Addressing this persistent burden requires comprehensive preventive strategies, among which prophylactic vaccination remains the most effective long-term intervention ( ).

In Sub-Saharan Africa, HPV-related malignancies and cervical cancer present severe public health threats (Asgedom et al., 2024; Kutz et al., 2023). The region exhibits disproportionately elevated incidence and mortality rates, driven by systemic healthcare deficits, low public awareness, economic hardships, and deep-seated cultural misconceptions regarding reproductive health interventions (Asgedom et al., 2024; Kutz et al., 2023). Persistent transmission of high-risk mucosal strains continues unabated in communities where routine preventive care is virtually absent (Asgedom et al., 2024). Consequently, adolescent girls in Sub-Saharan Africa remain exceptionally vulnerable to acquiring chronic HPV infections that later manifest as invasive cervical neoplasms (WHO, 2022; Williamson, 2023). Expanding access to immunizations across African nations is thus vital to reducing lifetime cancer risks and strengthening regional health outcomes (Williamson, 2023).

Across the African continent, cervical cancer remains a leading cause of cancer-related deaths among women of reproductive age (Asgedom et al., 2024; Kutz et al., 2023). Inadequate health infrastructure, poor routine screening programs, and limited vaccine deployment severely hinder efforts to suppress HPV-related diseases (Asgedom et al., 2024; Nwoko & Offor, 2024c). Furthermore, several African countries struggle with operational barriers, including supply chain disruptions, inadequate public health funding, parental hesitancy, and misinformation concerning adolescent immunizations (Aminu et al., 2026; Kutz et al., 2023). Overcoming these multi-faceted challenges requires an evidence-based approach that integrates structural healthcare improvements with localized community engagement strategies (Aminu et al., 2026; Asaolu et al., 2025).

In Nigeria, cervical cancer ranks as the second most common female malignancy and continues to claim thousands of lives annually (Agha & Nsofor, 2025; Aminu et al., 2026). Despite expanded public health campaigns and national immunization drives, awareness and uptake of the HPV vaccine among eligible adolescents remain low (Agha & Nsofor, 2025; Elebiyo, 2023). Various empirical studies across Nigerian communities identify major barriers to vaccine acceptance, including limited parental knowledge, low maternal education levels, religious doctrines, fear of adverse side effects, direct and indirect costs, and physical distance from immunization centers (Adedeji & Bello, 2026; Rabiu et al., 2020; Yusuf et al., 2024). Addressing these barriers is essential to improving vaccine coverage and achieving national cervical cancer control objectives (Ezeogidi et al., 2020; Mezieobi et al., 2022).

In Anambra State, government agencies, non-governmental organizations, and development partners have intensified public health campaigns to raise awareness about HPV infection and promote adolescent vaccination (Amuzie et al., 2025; Asaolu et al., 2025). However, clinical reports and field surveys indicate that vaccine uptake among eligible girls remains suboptimal across several local government areas (Agha & Nsofor, 2025; Amuzie et al., 2025). These challenges are particularly evident in peri-urban and semi-rural settings like Obosi in Idemili North Local Government Area, where socio-demographic factors, parental decision-making dynamics, and cultural beliefs heavily influence healthcare-seeking behavior ( ). Investigating the specific determinants of HPV vaccine uptake among adolescent girls aged 9 to 13 years in Obosi is necessary to design targeted interventions that improve coverage and mitigate future cancer risks (Amuzie et al., 2025; Rabiu et al., 2020).

In health sciences and epidemiological research, factors refer to the underlying social, economic, environmental, and behavioral conditions or circumstances that influence individual decisions, health behaviors, and clinical outcomes ( ). Determinants such as age, educational background, occupational status, religious affiliation, household income, and health literacy shape how individuals interact with health systems and accept preventive measures (Agha & Nsofor, 2025; Aminu et al., 2026). Within the context of this study, factors refer specifically to the socio-demographic, economic, cultural, and institutional conditions that influence whether parents or guardians in Obosi consent to the administration of the HPV vaccine to their adolescent daughters (Adedeji & Bello, 2026; Aminu et al., 2026). Uptake is defined as the acceptance, utilization, and receipt of a specific health service or preventive intervention by an eligible population (Asgedom et al., 2024; Kutz et al., 2023; Thompson & Flowers, 2020). In public health programs, uptake reflects both the willingness of target populations to participate in interventions and the actual delivery efficiency of healthcare providers (Asgedom et al., 2024; Williamson, 2023). High uptake rates are essential for achieving herd immunity and maximizing the population-level benefits of immunization programs (WHO,

2022). In this study, uptake refers specifically to the proportion of eligible girls aged 9 to 13 years in Obosi who have received the recommended doses of the HPV vaccine (Agha & Nsofor, 2025; Amuzie et al., 2025).

Human Papillomavirus comprises a large family of non-enveloped DNA viruses that infect cutaneous and mucosal epithelia throughout the human body (WHO, 2022; Morshed et al., 2014). While many low-risk HPV strains cause benign epithelial lesions such as common warts, high-risk oncogenic strains—most notably types 16 and 18—integrate into host cell genomes, expressing viral oncoproteins that dysregulate cell cycle checkpoints and promote malignant transformation (Asgedom et al., 2024; Williamson, 2023). Vaccination is the administration of antigenic material—such as recombinant virus-like particles—to stimulate an individual's immune system, generating adaptive immunity and long-term immunological memory against a specific pathogen (WHO, 2022; Williamson, 2023). Prophylactic HPV vaccines trigger the production of neutralizing antibodies that prevent viral entry into host epithelial cells (Morshed et al., 2014; Asgedom et al., 2024). Adolescent girls aged 9 to 13 years constitute the primary target group for prophylactic HPV vaccination as recommended by the World Health Organization and national immunization guidelines (Asgedom et al., 2024; Kutz et al., 2023; Thompson & Flowers, 2020). Administering the vaccine within this age window maximizes immunological efficacy and ensures protection prior to sexual debut (WHO, 2022; Morshed et al., 2014; Agha & Nsofor, 2025; Amuzie et al., 2025; Williamson, 2023).

Obosi is a major semi-urban community located in Idemili North Local Government Area of Anambra State, South-East Nigeria, situated strategically along the Onitsha–Enugu commercial corridor (Chukwu et al., 2025; Molokwu et al., 2023; Asgedom et al., 2024; Kutz et al., 2023). The inhabitants engage primarily in trading, civil service, artisanal work, entrepreneurship, and small-scale farming (Agha & Nsofor, 2025; Aminu et al., 2026). Parental educational attainment, household income levels, community traditions, religious doctrines, physical proximity to health facilities, and institutional governance frameworks all interact to shape healthcare utilization and vaccine acceptance in the community (Agha & Nsofor, 2025; Aminu et al., 2026; Amuzie et al., 2025; Asaolu et al., 2025). Accordingly, this study was guided by three research questions: (1) What is the level of uptake of Human Papillomavirus (HPV) vaccination among girls aged 9 to 13 years in Obosi, Idemili North Local Government Area, Anambra State? (2) What are the socio-economic factors associated with the uptake of HPV vaccination among girls aged 9 to 13 years in Obosi? and (3) What are the major barriers to the uptake of HPV vaccination among girls aged 9 to 13 years in Obosi?

## 2. RESEARCH METHOD

The study utilized a descriptive cross-sectional research design to examine the factors influencing Human Papillomavirus (HPV) vaccine uptake among girls aged 9 to 13 years in Obosi, located within the Idemili North Local Government Area of Anambra State, Nigeria. Data were collected from respondents at a single point in time without manipulating variables. The choice of Obosi was based on its significant population of eligible adolescent girls, available healthcare facilities offering immunization, and strategic commercial location along the Onitsha–Enugu Expressway.

The target population comprised 1,000 girls aged 9 to 13 years residing across Obosi's five villages, selected because they met the vaccination age criteria established by the World Health Organization (WHO) and the National Primary Health Care Development Agency (NPHCDA). Applying Nwana's Rule of Thumb, a 10% representative sample size was calculated, resulting in a total sample of 100 respondents. A multistage sampling technique was employed to select participants. First, simple random sampling was used to choose villages. Schools and households containing eligible girls were identified next, followed by a final round of simple random sampling to select respondents proportionately, ensuring equal selection probability.

Data were gathered using a researcher-designed structured questionnaire titled the Factors Influencing the Uptake of Human Papillomavirus Vaccination Questionnaire (FIHPVVQ). The instrument contained four structured, close-ended sections covering socio-demographic characteristics, vaccine uptake, socio-economic influences, and uptake barriers and facilitators. Face and content validity were established by three experts from the Department of Community Health and related disciplines at Anambra State College of Health Technology, Obosi, who evaluated item clarity, relevance, and content adequacy. Reliability was evaluated via the test-retest method by administering the instrument twice over a two-week interval to 20 non-participant girls in Idemili South Local Government Area. Scores were evaluated using the Pearson Product Moment Correlation, where a coefficient of $r \geq 0.70$ was established as acceptable.

Before administration, ethical approval was obtained from the institution's Research Ethics Committee alongside permission from local healthcare centers. One hundred (100) copies of the questionnaire were directly administered to participants after securing informed consent, with completed forms retrieved immediately to ensure a 100% response rate. Collected data were screened, coded, and entered into the Statistical Package for Social Sciences (SPSS) version 23 for analysis, using descriptive statistics such as frequencies and percentages to summarize vaccine uptake levels and demographic influences.

## 3. RESULTS AND DISCUSSION

### *A. Socio-Demographic Characteristics of Respondents*

Table 1. Socio-Demographic Characteristics of the Respondents (N = 100)

| Socio-Demographic Variable | Category | Frequency (f) | Percentage (%) |
|---|---|---|---|
| **Age of Girls (Years)** | 9 years | 20 | 20.0 |
| | 10 years | 24 | 24.0 |
| | 11 years | 22 | 22.0 |
| | 12 years | 18 | 18.0 |
| | 13 years | 16 | 16.0 |
| | **Total** | **100** | **100.0** |
| **Educational Level** | Primary 4 | 17 | 17.0 |
| | Primary 5 | 24 | 24.0 |
| | Primary 6 | 20 | 20.0 |
| | JSS 1 | 22 | 22.0 |
| | JSS 2 | 17 | 17.0 |
| | **Total** | **100** | **100.0** |
| **Parents'/Guardians' Occupation** | Civil servant | 28 | 28.0 |
| | Trader | 36 | 36.0 |
| | Farmer | 10 | 10.0 |
| | Artisan | 14 | 14.0 |
| | Others | 12 | 12.0 |
| | **Total** | **100** | **100.0** |
| **Religion** | Christianity | 89 | 89.0 |
| | Islam | 4 | 4.0 |
| | Traditional religion | 7 | 7.0 |
| | **Total** | **100** | **100.0** |
| **Monthly Household Income** | Less than ₦50,000 | 18 | 18.0 |
| | ₦50,000–₦99,999 | 34 | 34.0 |
| | ₦100,000–₦149,999 | 26 | 26.0 |
| | ₦150,000 and above | 22 | 22.0 |
| | **Total** | **100** | **100.0** |

Table 1 presents the socio-demographic characteristics of the respondents. The findings show that 24 (24.0%) of the respondents were 10 years old, representing the highest proportion of the study population. This was followed by 22 (22.0%) who were 11 years old, 20 (20.0%) who were 9 years old, 18 (18.0%) who were 12 years old, while 16 (16.0%) were 13 years old. This indicates that respondents were fairly distributed across the recommended age group for HPV vaccination, with a slightly higher representation of girls aged 10 and 11 years. Regarding educational level, the results reveal that 24 (24.0%) of the respondents were in Primary Five, 22 (22.0%) were in Junior Secondary School One (JSS 1), 20 (20.0%) were in Primary Six, while 17 (17.0%) each were in Primary Four and Junior Secondary School Two (JSS 2). This suggests that the respondents were drawn from both upper primary and junior secondary school levels, reflecting the educational distribution of girls within the target age range.

The findings on the occupation of parents or guardians indicate that 36 (36.0%) were traders, constituting the largest occupational group. This was followed by 28 (28.0%) who were civil servants, 14 (14.0%) who were artisans, 12 (12.0%) who engaged in other occupations, while 10 (10.0%) were farmers. This implies that trading is the predominant occupation among the parents or guardians of the respondents, reflecting the commercial nature of Obosi and its surrounding communities. With respect to religion, the majority of the respondents, 89 (89.0%), were Christians, while 7 (7.0%) practiced traditional religion and only 4 (4.0%) were Muslims, indicating that Christianity is the dominant religion in the study area. Concerning monthly household income, 34 (34.0%) of the respondents reported a household income of ₦50,000–₦99,999, representing the largest proportion. This was followed by 26 (26.0%) whose households earned ₦100,000–₦149,999, 22 (22.0%) whose households earned ₦150,000 and above, while 18 (18.0%) reported a monthly household income of less than ₦50,000. The findings suggest that most respondents came from households with low- to middle-income earnings, which may influence their ability to access healthcare services, including HPV vaccination.

### *B. Level of Uptake of Human Papillomavirus (HPV) Vaccination*

Table 2. Level of HPV Vaccination Uptake Among Girls Aged 9–13 Years in Obosi

| HPV Vaccination Status | Frequency (f) | Percentage (%) |
|---|---|---|
| **Fully vaccinated** | 34 | 34.0 |
| **Partially vaccinated** | 18 | 18.0 |
| **Not vaccinated** | 48 | 48.0 |
| **Total** | **100** | **100.0** |

Table 2 presents the level of Human Papillomavirus (HPV) vaccination uptake among girls aged 9–13 years in Obosi, Idemili North Local Government Area, Anambra State. The findings reveal that 48 (48.0%) of the respondents had not received any dose of the HPV vaccine, representing the highest proportion of the study population. Furthermore, 34 (34.0%) of the respondents were fully vaccinated, while 18 (18.0%) had received only part of the recommended vaccination doses. The findings indicate that HPV vaccine uptake among girls in the study area is generally low, as nearly half of the eligible girls had not received the vaccine, while only about one-third had completed the recommended vaccination schedule.

### *C. Socio-Economic Factors Associated with HPV Vaccination Uptake*

Table 3. Socio-Economic Factors Influencing HPV Vaccine Uptake

| No. | Variable | Agree f (%) | Disagree f (%) |
|---|---|---|---|
| **1** | Parents with higher educational level are more likely to vaccinate their daughters | 82 (82.0%) | 18 (18.0%) |
| **2** | Higher household income improves vaccine uptake | 76 (76.0%) | 24 (24.0%) |
| **3** | Parents who are aware of HPV are more likely to accept vaccination | 90 (90.0%) | 10 (10.0%) |
| **4** | Occupation of parents influences vaccine uptake | 69 (69.0%) | 31 (31.0%) |
| **5** | Religious beliefs influence parents' vaccination decisions | 65 (65.0%) | 35 (35.0%) |
| **6** | Easy access to healthcare facilities encourages vaccination | 84 (84.0%) | 16 (16.0%) |

Table 3 shows the socio-economic factors associated with the uptake of Human Papillomavirus (HPV) vaccination among girls aged 9–13 years in Obosi, Idemili North Local Government Area, Anambra State. The results indicate that 90 (90.0%) of the respondents agreed that parents who are aware of HPV are more likely to accept vaccination, making it the most commonly identified socio-economic factor influencing vaccine uptake. This was followed by 84 (84.0%) who agreed that easy access to healthcare facilities encourages vaccination, while 82 (82.0%) agreed that parents with higher educational levels are more likely to vaccinate their daughters. In addition, 76 (76.0%) believed that higher household income improves vaccine uptake, 69 (69.0%) agreed that parents' occupation influences vaccine uptake, and 65 (65.0%) agreed that religious beliefs influence parents' vaccination decisions. Overall, the findings suggest that parental awareness, accessibility to healthcare services, educational attainment, household income, occupation, and religious beliefs are important socio-economic factors associated with HPV vaccine uptake among girls in the study area.

### *D. Major Barriers to the Uptake of HPV Vaccination*

**Table 4.** Major Barriers to HPV Vaccine Uptake

| No. | Barrier | Agree f (%) | Disagree f (%) |
|---|---|---|---|
| **1** | Lack of awareness about HPV vaccine | 88 (88.0%) | 12 (12.0%) |
| **2** | Fear of vaccine side effects | 74 (74.0%) | 26 (26.0%) |
| **3** | High cost of vaccination | 72 (72.0%) | 28 (28.0%) |
| **4** | Cultural beliefs discourage vaccination | 60 (60.0%) | 40 (40.0%) |
| **5** | Religious misconceptions hinder vaccination | 63 (63.0%) | 37 (37.0%) |
| **6** | Long distance to health facilities | 57 (57.0%) | 43 (43.0%) |
| **7** | Lack of recommendation by healthcare workers | 70 (70.0%) | 30 (30.0%) |

Table 4 presents the major barriers to the uptake of Human Papillomavirus (HPV) vaccination among girls aged 9–13 years in Obosi, Idemili North Local Government Area, Anambra State. The findings show that 88 (88.0%) of the respondents agreed that lack of awareness about the HPV vaccine is a major barrier to vaccination, making it the most frequently reported obstacle. This was followed by 74 (74.0%) who identified fear of vaccine side effects, 72 (72.0%) who cited the high cost of vaccination, and 70 (70.0%) who agreed that lack of recommendation by healthcare workers discourages vaccine uptake. Furthermore, 63 (63.0%) of the respondents believed that religious misconceptions hinder vaccination, 60 (60.0%) agreed that cultural beliefs discourage vaccination, while 57 (57.0%) identified long distance to healthcare facilities as a barrier. These findings indicate that inadequate awareness, misconceptions, financial constraints, insufficient healthcare provider recommendations, religious and cultural beliefs, and poor accessibility to vaccination services are the major barriers limiting HPV vaccine uptake among girls in the study area.

### *E. Discussion of Findings*

The empirical investigation into Human Papillomavirus (HPV) vaccine uptake among adolescent girls aged 9 to 13 years residing in Obosi, Idemili North Local Government Area, Anambra State, revealed that immunization coverage remains generally low across the studied demographic (Asgedom et al., 2024; Kutz et al., 2023). Quantitative analysis indicated that while 34.0% of the respondents had completed the full, recommended HPV vaccination series and 18.0% had received at least one initial dose, almost half of the population (48.0%) had never received any dose of the vaccine. These findings highlight a critical gap in preventive healthcare delivery within semi-urban communities, leaving a substantial proportion of young females biologically vulnerable to persistent high-risk HPV acquisition and subsequent neoplastic conditions, most notably invasive cervical carcinoma (WHO, 2022; Morshed et al., 2014; Asgedom et al., 2024).

Suboptimal vaccine coverage in regional communities aligns with widespread public health observations across low- and middle-income territories where structural and educational barriers hinder primary prevention efforts (Asgedom et al., 2024; Kutz et al., 2023; Sathish et al., 2014). While international benchmarks emphasize the necessity of achieving high population-level coverage prior to sexual debut, local execution often faces operational hurdles that depress overall completion rates (Agha & Nsofor, 2025; Aminu et al., 2026). However, variations in uptake figures across different African jurisdictions suggest that strong institutional backing, such as structured school-based delivery initiatives, can substantially elevate immunization outcomes relative to localized, facility-based approaches (Asaolu et al., 2025; Kutz et al., 2023).

Beyond basic coverage figures, the study demonstrated that a complex array of socio-demographic and economic variables significantly influences parental consent and adolescent vaccine receipt (Agha & Nsofor, 2025; Aminu et al., 2026; Rabiu et al., 2020). A significant majority of participants identified parental awareness of the virus (90.0%), easy physical access to primary health centers (84.0%), parental educational background (82.0%), household income capacity (76.0%), maternal and paternal occupational status (69.0%), and deep-seated religious convictions (65.0%) as pivotal determinants shaping overall uptake. These responses confirm that pediatric preventive health behaviors are intrinsically tied to household resources, caregiver health literacy, and regional healthcare infrastructure (Akinleye et al., 2020; Rabiu et al., 2020). When parents possess an accurate understanding of viral transmission pathways, oncogenic risks, and the safety profiles of recombinant vaccines, their willingness to authorize immunization for their daughters increases markedly (WHO, 2022; Williamson, 2023). Conversely, low health literacy among guardians creates a vacuum easily filled by vaccine hesitancy and misinformation (Adedeji & Bello, 2026; Yusuf et al., 2024).

Parental educational level similarly emerged as a key predictor of vaccine acceptance within the Obosi community (Agha & Nsofor, 2025; Aminu et al., 2026; Rabiu et al., 2020). Caregivers with higher educational attainment generally demonstrate greater capacity to navigate public health messaging, evaluate the long-term protective benefits of prophylactic interventions, and proactively seek out clinical services for their dependents (Asaolu et al., 2025; Kutz et al., 2023). Economic capacity, measured through household income and parental occupation, represents another major determinant of vaccine utilization (Agha & Nsofor, 2025; Aminu et al., 2026). Financial constraints directly impact a family's ability to absorb associated healthcare expenses, such as out-of-pocket costs, clinical administration fees, and transportation to distant health centers (Akinleye et al., 2020; Aminu et al., 2026). Furthermore, physical proximity and easy access to functional healthcare facilities serve as essential catalysts for optimal vaccine delivery, bridging the operational gap between caregiver intention and actual clinical administration (Asgedom et al., 2024; Stella & Ikechukwu, 2020).

Religious and cultural beliefs also exercise a profound influence over parental health choices across South-Eastern Nigeria (Nwankwo, 2018; Agha & Nsofor, 2025; Aminu et al., 2026; Rabiu et al., 2020). Addressing these sociocultural dynamics requires respectful, culturally grounded public health communication strategies that align medical evidence with community values. Moreover, respondents overwhelmingly cited a widespread lack of public awareness regarding the HPV vaccine (88.0%), acute fears regarding potential vaccine side effects and adverse safety outcomes (74.0%), the high direct cost of obtaining the vaccine (72.0%), a noticeable absence of formal recommendations from primary healthcare providers (70.0%), religious misconceptions (63.0%), cultural taboos (60.0%), and excessive physical distances to designated immunization facilities (57.0%) as the principal obstacles to optimal coverage (WHO, 2022; Asgedom et al., 2024; Kutz et al., 2023; Morshed et al., 2014; Asgedom et al., 2024; Nwankwo, 2018; Sathish et al., 2014; Agha & Nsofor, 2025; Aminu et al., 2026; Rabiu et al., 2020; ). Addressing these challenges demands a multi-pronged intervention strategy that combines free or subsidized vaccine provision, robust school-based delivery systems, active clinician endorsement, and culturally sensitive community education drives to reduce the future burden of cervical cancer across Anambra State (Aminu et al., 2026; Asaolu et al., 2025; Kutz et al., 2023; Olubayo et al., 2026).

## 4. CONCLUSION

Based on the findings of this study, it is concluded that the uptake of Human Papillomavirus (HPV) vaccination among girls aged 9–13 years in Obosi, Idemili North Local Government Area, Anambra State, remains low, with nearly half of the eligible girls (48.0%) yet to receive the vaccine. This low level of vaccine uptake suggests that many girls remain vulnerable to HPV infection and its long-term complications, including cervical cancer. The study further concludes that HPV vaccine uptake is influenced by several socio-economic factors, particularly parental awareness of HPV and its vaccine, accessibility to healthcare facilities, educational level, household income, occupation, and religious beliefs. Furthermore, lack of awareness, fear of vaccine side effects, high vaccination cost, inadequate recommendation by healthcare workers, religious misconceptions, cultural beliefs, and poor access to healthcare facilities constitute the major barriers to HPV vaccine uptake in the study area. Therefore, improving public awareness, strengthening health education,

enhancing healthcare provider involvement, and ensuring easier access to affordable vaccination services are essential for increasing HPV vaccine uptake and reducing the future burden of cervical cancer among adolescent girls.

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