

# Knowledge of Cervical Cancer Vaccine Amongst Students of Federal Polytechnic Nekede, Imo State, Nigeria

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## Abstract—

**Introduction:** Cervical cancer is a highly preventable disease that disproportionately affects women in developing countries, with an estimated incidence rate of 33 cases per 100,000 women in Nigeria. Over the years, knowledge of Human Papillomavirus (HPV) vaccine services has remained poor in developing countries. This study assessed the knowledge of the cervical cancer and HBV vaccine among undergraduate students at the Federal Polytechnic Nekede, Imo State, Nigeria.

**Methodology:** This study utilized a cross-sectional study design. The sample consisted of 223 undergraduate respondents. Data were collected using a well-structured questionnaire administered face-to-face. Results were presented as frequencies and percentages.

**Results:** The findings revealed that knowledge of cervical cancer and the HPV vaccine among participants was suboptimal. Only 37.2% of participants had heard of cervical cancer, and just 31.4% were aware of the HPV vaccine. Among those who had heard of it, the majority (46.99%) obtained their information from the internet. Only 23.8% and 22.42% knew that the HPV vaccine can prevent genital warts and cervical cancer, respectively.

**Conclusion:** This study was conducted among female undergraduate students who are at risk for cervical cancer, yet they demonstrated poor knowledge of the disease and the vaccine. This situation is concerning. Governments and non-governmental organizations should collaborate to improve education and awareness about cervical cancer and HPV vaccination among young women.

**Keywords:** Cervical cancer, HBV vaccine

## I. INTRODUCTION

Cervical cancer is typically a slow-growing malignancy that may remain asymptomatic but can be detected early through Pap smear and Visual Inspection of the Cervix with Acetic Acid (VIA)<sup>1</sup>. It is the fourth most common cancer among women, with approximately 570,000 new cases reported in

2018, accounting for 6.6% of all female cancers<sup>2</sup>. Cervical cancer represents the leading cause of mortality from gynecologic malignancies. About 60-80% of cases are seen in advanced clinical stage with poor prognosis in developing countries<sup>3</sup>. The burden of the disease is increasing in developing countries day by day due to the ascending trend of transmissible diseases such as HIV and Human Papilloma Virus (HPV)<sup>4</sup>. According to the World Health Organization (WHO) and United Nations Population Fund (UNPF), around 500,000 women are diagnosed with cervical cancer annually, with nearly 274,000 deaths each year<sup>5</sup>.

There are over 140 HPV serotypes, of which 40 are sexually transmitted<sup>6</sup>. HPV serotypes 16 and 18 are associated with the highest oncogenic risk, while serotypes 6 and 11 are considered low risk<sup>7</sup>. In Sub-Saharan Africa, cervical cancer remains a major contributor to morbidity and mortality among women<sup>8, 9</sup>. Vaccines targeting HPV 16 and 18 have been approved for use in young populations worldwide, with the primary objective of preventing HPV infection.

The expansion of vaccination programs aims to reduce HPV transmission by immunizing females before sexual debut and to facilitate screening for precancerous lesions among sexually active women, with referral for further diagnostic care and treatment when abnormalities are detected<sup>10, 11</sup>. Women aged 15 to 44 years bear the highest burden of this malignancy. Currently, three prophylactic HPV vaccines are available globally: the bivalent vaccine (Cervarix) targeting HPV types 16 and 18, the quadrivalent vaccine (Gardasil) targeting types 6, 11, 16, and 18, and the nonavalent vaccine (Gardasil 9) covering nine HPV types, including 6, 11, 16, 18, 31, 33, 45, 52, and 58<sup>12</sup>. These vaccines have demonstrated high efficacy in preventing HPV infections and related cervical lesions when administered prior to viral exposure, and are typically

recommended for preadolescents and young adults<sup>13</sup>. Research indicates that stigma, limited awareness, and cultural factors significantly affect individuals' willingness to adopt preventive measures and accept vaccination<sup>14</sup>. All HPV vaccines have been shown to be safe and effective, with minimal serious adverse effects<sup>15</sup>. In Nigeria, approximately 40.43 million women are at risk for cervical cancer, and 23.7% are infected with HPV<sup>16</sup>. Although HPV vaccines are among the most effective available<sup>17</sup> and have been introduced in over 80 countries, evidence suggests that knowledge and attitudes toward HPV infection and vaccination remain suboptimal among female adolescents, particularly in developing countries such as Nigeria<sup>18</sup>. This situation underscores the need for further investigation and serves as a key motivation for the present study, which assesses knowledge of

the cervical cancer vaccine among female undergraduate students of Polytechnic Nekede in Imo State, Nigeria.

## II. METHODOLOGY

A descriptive survey was conducted to assess the knowledge of cervical cancer vaccine amongst female undergraduates in Federal Polytechnic Nekede, Owerri.

### Study Population:

The population comprised of female undergraduate students of Federal University Nekede, Owerri. The population sizes of the various schools are given in Table 1 below:

TABLE 1: POPULATION SIZES OF FUTO AND FPNO 2024/2025

| School | Population | Male | Female |
|--------|------------|------|--------|
| FPNO   | 19400      | 7760 | 11640  |

**Sample Size:** The sample size is determined using the Taro Yamane formula (1967) given by:

$$n = \frac{N}{1 + Ne^2}$$

Where: n is the desired sample size, N is the population size, e is margin of error (0.05)

Using the above formula, sample size is calculated as follows:

$$n = \frac{19076}{1 + 19076 * (.05)^2} = 392$$

Again, using the formula for proportional allocation given as:

$$n_h = \left( \frac{N_h}{N} \right) * n$$

Where:

$N_h$  = The population size of stratum h (where h = FPNO)

$n_h$  = The sample size of stratum h.

$$n_{POLY} = \left( \frac{11640}{19076} \right) * 392 = 240$$

i.e. the total sample size for the study is 240.

**Sampling Method:** Stratified random sampling technique was employed to distribute questionnaires

to the institution under study. Then, the multi-stage simple random sampling procedure was employed to distribute the questionnaires as follows:

Every faculty was represented in the institution. Simple random sampling was used to select 2 departments from each faculty that was selected in the study area. This was done via balloting without replacement to give every department an equal chance of being selected. The respondents were selected from each department respondents via simple random sampling method/ technique.

### Instrument for Data Collection

A well-structured questionnaire was administered to the student sample population. The instrument, entitled "Knowledge and Level of Acceptance of Cervical Cancer Vaccine in Federal Polytechnic Nekede Owerri," was developed by the researchers for data collection in this study. The questionnaire consisted of two sections: one addressing socio-demographic characteristics and the other assessing knowledge about the HPV vaccine among respondents.

### Validity of Instrument:

Face and content validity were employed to validate the questionnaire. Experts in the field reviewed the instrument and provided feedback, which informed the development of the final version.

### 2.7 Reliability of Instrument

The test-retest method was employed to assess the reliability of the instruments. The questionnaire was administered to 30 undergraduate students at Imo State University and re-administered to them after two weeks to evaluate the consistency of their responses. Additionally, the Cronbach's Alpha method was utilized to determine the reliability of the questionnaire. Identified gaps and necessary modifications were implemented to enhance the clarity and reliability of the instrument.

### Method of Data Collection:

Written informed consent was obtained from all respondents. The printed questionnaire, which included comprehensive information about the research, was administered to female undergraduate students at FPNO following a clear explanation of the study's purpose. Completed questionnaires were

collected from the participants. Confidentiality was maintained by not collecting identifying information, and participation was entirely voluntary. Data collection was conducted in person during students' lecture-free periods, breaks, seminars, and project defences. Additionally, some students requested to receive the questionnaire electronically as a Google Form, which was accommodated by the researchers.

### 2.9 Method of Data Analysis

Data entry was done using Microsoft Excel and subsequently exported to STATA 15.0 for analysis. The data was analysed using both descriptive and inferential statistics. The descriptive statistics will comprise of the frequency distribution of the items of the questionnaire while the inferential statistics was based on the hypothesis of the study. The statistical tools used for the test of hypotheses were tests of proportion and logic regression analysis.

## III. RESULTS

### Socio demographic characteristics of the respondents

|                                                             |     |       |
|-------------------------------------------------------------|-----|-------|
| Demographic information                                     |     |       |
| AGE                                                         |     |       |
| 17-19                                                       | 47  | 21.08 |
| 20-22                                                       | 99  | 44.39 |
| 23-25                                                       | 74  | 33.18 |
| 26-28                                                       | 3   | 1.35  |
| Total                                                       | 223 | 100   |
| Place of residence                                          |     |       |
| Rural                                                       | 76  | 34    |
| Urban                                                       | 147 | 66    |
| Total                                                       | 223 | 100   |
| Martal status                                               |     |       |
| Single                                                      | 205 | 91.9  |
| Married                                                     | 17  | 7.6   |
| Divorced                                                    | 1   | 0.5   |
| Total                                                       | 223 | 100   |
| Religion                                                    |     |       |
| Orthodox                                                    | 2   | 0.9   |
| Muslim                                                      | 6   | 2.7   |
| Christain                                                   | 215 | 96.4  |
| Total                                                       | 223 | 100   |
| Level of study                                              |     |       |
| 100L – 200L                                                 | 112 | 50.22 |
| 300L – 500L                                                 | 111 | 49.78 |
|                                                             | 223 | 100   |
| In which institution did you complete your secondary school |     |       |
| Public School                                               | 131 | 58.7  |

|                |     |      |
|----------------|-----|------|
| Private School | 92  | 41.3 |
| Total          | 223 | 100  |
|                |     |      |

#### Information About Human Papilloma Virus

|                                                                       |     |       |
|-----------------------------------------------------------------------|-----|-------|
| Have you heard of human Papilloma Virus?                              |     |       |
| YES                                                                   | 83  | 37.2  |
| NO                                                                    | 140 | 62.8  |
| Total                                                                 | 223 | 100   |
| If YES to the above question, what was the source of your information |     |       |
| Radio/TV                                                              | 2   | 2.41  |
| Internet                                                              | 39  | 46.99 |
| Health provider                                                       | 10  | 12.05 |
| School                                                                | 27  | 32.53 |
| Others (Specify)                                                      | 5   | 6.02  |
| Total                                                                 | 83  | 100   |

#### Knowledge of Human Papilloma Vaccine

|                                                                       |     |       |
|-----------------------------------------------------------------------|-----|-------|
| Have you heard of Human Papilloma Vaccine?                            |     |       |
| YES                                                                   | 70  | 31.4  |
| NO                                                                    | 153 | 68.6  |
|                                                                       | 223 | 100   |
| If YES to the above question, what was the source of your information |     |       |
| Newspaper                                                             | 2   | 2.86  |
| Radio/TV                                                              | 7   | 10.00 |
| Internet                                                              | 33  | 47.14 |
| Health provider                                                       | 6   | 8.57  |
| School                                                                | 18  | 25.71 |
| Others (Specify)                                                      | 4   | 5.71  |
| Total                                                                 |     |       |
| Does Human Papilloma Vaccine prevent Human Papilloma infection?       |     |       |
| Yes                                                                   | 59  | 26.5  |
| No                                                                    | 78  | 35    |
| I don't know                                                          | 86  | 38.5  |
| Total                                                                 | 223 | 100   |
| Does Human Papilloma Vaccine prevent cervical cancer?                 |     |       |
| Yes                                                                   | 50  | 22.42 |
| No                                                                    | 71  | 31.8  |
| I don't know                                                          | 102 | 45.7  |
| Total                                                                 | 223 | 100   |
| Does Human Papilloma Vaccine prevent Human genital warts              |     |       |
| Yes                                                                   | 53  | 23.8  |
| No                                                                    | 86  | 38.6  |
| I don't know                                                          | 84  | 37.6  |
| Total                                                                 | 223 | 100   |
| Can Human Papilloma Vaccine be given to woman who have had sex        |     |       |
| Yes                                                                   | 59  | 26.5  |
| No                                                                    | 69  | 30.9  |
| I don't know                                                          | 95  | 42.6  |
| Total                                                                 | 223 | 100   |

|                                                                        |     |      |
|------------------------------------------------------------------------|-----|------|
| Can Human Papilloma Vaccine be given to woman who have cervical cancer |     |      |
| Yes                                                                    | 38  | 17   |
| No                                                                     | 87  | 39   |
| I don't know                                                           | 98  | 44   |
| Total                                                                  | 223 | 100  |
| Do you know the schedule for human papilloma vaccine uptake?           |     |      |
| Yes                                                                    | 3   | 1.3  |
| No                                                                     | 220 | 98.7 |
| Total                                                                  | 223 | 100  |

#### IV. DISCUSSION

This study evaluated the knowledge of female undergraduate students at Federal Polytechnic Nekede regarding the human papillomavirus (HPV) vaccine. The results indicated that 37.2% of participants had heard of HPV, while only 31.4% were aware of the HPV vaccine. These proportions are notably low, suggesting that information about HPV has not yet reached the general public, which remains a significant barrier to vaccine uptake. These findings align with previous research. For example, a study among female undergraduate students in North-Central Nigeria reported that 68.2% had low knowledge of HPV<sup>19</sup>. Similarly, research conducted in Kano, Nigeria, found that only 38% of students demonstrated good knowledge of HPV<sup>20</sup>. At IBB University in Niger State, only 34.8% of the population was aware of HPV infection, and just 25.0% were familiar with HPV vaccination<sup>21</sup>. In Lagos State, only 27.6% of female undergraduates had heard of the HPV vaccine, and 53.8% exhibited poor overall knowledge of cervical cancer<sup>22</sup>. Among female undergraduates at a private mission university in Southwestern Nigeria, 25.4% were aware of the HPV vaccine, and only 14.2% had received vaccination<sup>23</sup>. Another study among women in a Nigerian tertiary institution found that only 26.3% of participants had a good level of knowledge about HPV infection and its associated diseases<sup>24</sup>. Research among female undergraduate students at Ambrose

Alli University showed that only 5.2% were knowledgeable about HPV, and 17.0% were aware of the existence of HPV vaccines<sup>25</sup>.

This persistent lack of awareness is concerning and requires urgent intervention, as undergraduate students are expected to possess knowledge of HPV and the available vaccine. Furthermore, this population is at an age where sexual experimentation is common, increasing their risk of HPV infection.

#### V. CONCLUSION

Prevention strategies aimed at reducing the incidence of cervical cancer depend on well-informed populations, especially those at highest risk. The majority of cervical cancer cases are diagnosed at advanced stages, resulting in poor outcomes which is an issue particularly pronounced in Sub-Saharan Africa and other low- and middle-income countries. In this study, participants demonstrated suboptimal knowledge of cervical cancer and the HBV vaccine, highlighting the urgent need for intervention. It is essential to implement awareness campaigns and health education programmes among undergraduate students to enhance their understanding, as improved knowledge may facilitate greater vaccine uptake and prevention of infection.

#### REFERENCES

- [1] Most. Luthfa Begum. Knowledge on Cervical Cancer among Undergraduate University Students. © 2020 . Saudi Journal of Nursing and Health Care. 346-358.
- [2] Most. Luthfa Begum. Knowledge on Cervical Cancer among Undergraduate University Students. © 2020 . Saudi Journal of Nursing and Health Care. 346-358.
- [3] Feyi-WobosoAP, Kamanu C, Aluka C. Awareness and risk factors for cervical cancer among women in Aba, South-Eastern Nigeria. Trop. J. Obstet Gynaecol. 2005; 22: 25-26.
- [4] WHO/ICO Information Centre on HPV and Cervical Cancer (HPV Information Centre). (2009). Human Papillomavirus and Related Cancers in Africa. Summary Report.

- [5] Parkin, D.M., Bray, F., Ferlay, J., Pisani, P. (2005). Global cancer statistics. *CA Cancer J Clin.*
- [6] Khatiwada M., Kartasasmita C., Mediani H. S., Delprat C., Van Hal G., Dochez C., 2021. Knowledge, Attitude and Acceptability of the Human Papilloma Virus Vaccine and Vaccination Among University Students in Indonesia, *Front Public Health*, 14;9:616456. doi: 10.3389/fpubh.2021.616456.
- [7] Zizza A., Banchelli F., Guido M., Marotta C., Di Gennaro F., Mazzucco W., Pistotti V., D'Amico R., 2021, Efficacy and safety of human papillomavirus vaccination in HIV-infected patients: a systematic review and meta-analysis, *Sci Rep*, 2;11(1):4954. doi: 10.1038/s41598-021-83727-7.
- [8] World Health Organization . Global strategy to accelerate the elimination of cervical cancer as a public health problem [homepage on the Internet]. 2020.
- [9] Bruni L, Albero G, Serrano B, et al. ICO/IARC Information Centre on HPV and Cancer (HPV Information Centre). Human papillomavirus and related diseases South Africa. Summary report 2021 [homepage on the Internet].
- [10] Delany-Moretlwe S, Kelley KF, James S, et al. Human papillomavirus vaccine introduction in South Africa: Implementation lessons from an evaluation of the national school-based vaccination campaign. *Glob Health Sci Pract.* 2018;6(3):425–438. 10.9745/GHSP-D-18-00090
- [11] Dhokotera T, Asangbeh S, Bohlius J, et al. Cervical cancer in women living in South Africa: A record linkage study of the National Health Laboratory Service and the National Cancer Registry. *E-Cancer.* 2022;16:1348. 10.3332/ecancer.2022.1348
- [12] Alghalyini, B., Zaidi, A. R. Z., Meo, S. A., Faroog, Z., Rashid, M., Alyousef, S. S., Al-Bargi, Y. Y., Albader, S. A., Alharthi, S. A. A., & Almuhanha, H. A. (2024). Awareness and knowledge of human papillomavirus, vaccine acceptability and cervical cancer among college students in Saudi Arabia. *Human vaccines & immunotherapeutics*, 20(1), 2403844. <https://doi.org/10.1080/21645515.2024.2403844>
- [13] Jradi H, Bawazir A. Knowledge, attitudes, and practices among Saudi women regarding cervical cancer, human papillomavirus (HPV) and corresponding vaccine. *Vaccine.* 2019 Jan;37(3):530–537. doi:10.1016/j.vaccine.2018.11.065.
- [14] Falcaro M, Castañon A, Ndlela B, Checchi M, Soldan K, Lopez-Bernal J, Elliss-Brookes L, Sasieni P. The effects of the national HPV vaccination programme in England, UK, on cervical cancer and grade 3 cervical intraepithelial neoplasia incidence: a register-based observational study. *Lancet.* 2021 Dec;398(10316):2084–2092. doi:10.1016/S0140-6736(21)02178-4.
- [15] Gonçalves A. K., Cobucci R. N., Rodrigues H. M., de Melo A. G., Giraldo P. C., 2014, Safety, tolerability and side effects of human papillomavirus vaccines: a systematic quantitative review, *Braz J Infect Dis*, 18(6):651-9. doi: 10.1016/j.bjid.2014.02.005.
- [16] Oluwole E. O., Idowu O. M., Adejimi A. A., Balogun M. R., Osanyin G. E., 2019, Knowledge, attitude and uptake of human papillomavirus vaccination among female undergraduates in Lagos State, Nigeria, *J Family Med Prim Care*, 15;8(11):3627-3633. doi: 10.4103/jfmpe.jfmpe\_520\_19.
- [17] Markowitz L. E., Schiller J. T., 2021, Human Papillomavirus Vaccines. *J Infect Dis*, 224(12 Suppl 2):S367-S378. doi: 10.1093/infdis/jiaa621.
- [18] Iliyasu Z., Galadanci H. S., Muhammad A., Iliyasu B. Z., Umar A. A., Aliyu M. H., 2022. Correlates of human papillomavirus vaccine knowledge and acceptability among medical and allied health students in Northern Nigeria, *J Obstet Gynaecol*, 42(3):452-460. doi: 10.1080/01443615.2021.1910639
- [19] Onasoga, Olayinka A., Taiwo O. Dosumu, Aghata O. Folarin, and Baqir M. Shittu. "Knowledge and Uptake of Human Papilloma Virus Vaccine among Female Undergraduate Students in North-Central, Nigeria: A Cross-Sectional Study." *International Journal of Community Based Nursing and Midwifery* 13, no. 2 (2025): 126. Accessed February 10, 2026. <https://doi.org/10.30476/ijcbnm.2025.102762.2509>.
- [20] Rabiah Muhammad Attah, Jamilu Aliyu Bawa, Abba Ahmed Danzomo, Abdullahi Sadiq Uba, Tukur Ismail, Faruk Abdullahi Namadi, Usman Muhammad Ibrahim, Auwal Umar Gajida. Knowledge and Attitude towards Human

- Papilloma Virus Vaccine among Female Undergraduate Students in Kano, Nigeria. *Texila International Journal of Public Health*.
- [21] Ogbolu, Melvin O., and Miklós Kozlovsky. "Assessment of HPV Knowledge and Awareness among Students and Staff at IBB University, Niger State, Nigeria: Implications for Health Education and Prevention." *Healthcare* 12, no. 6 665. Accessed February 10, 2026. <https://doi.org/10.3390/healthcare12060665>.
- [22] Okoka, E. M., Odeyemi, J. O., & Olu-Ajayi, M. A. (2023). Knowledge, Attitude, And Factors Affecting Human Papilloma Virus Vaccine Uptake Among Female Undergraduate Students In Public Tertiary Institutions In Lagos State Nigeria . *International Journal of Medical Students*, 11, S51. <https://doi.org/10.5195/ijms.2023.2286>.
- [23] Elikwu, C. , Ajani, T. , Shonekan, O. , Nwadike, V. , Tayo, B. , Okangba, C. , Idakari, C. , Onyekachi, O. , Ene, B. , Omeonu, A. , Faluyi, B. , Ajide, J. , Braimoh, G. , Ezech, V. , Ogunbowale, I. , Omotayo, E. , Ukpai, C. and Etoh, F. (2022) Evaluation of Awareness of Human Papillomavirus and Cervical Cancer among Female Undergraduates of a Private Mission University in Southwestern Nigeria. *Advances in Microbiology*, 12, 621-633. doi: 10.4236/aim.2022.1211043.
- [24] Adeyemi A. O., Fadekemi O. G., Salimat A. Y., Rukayat O. S., Oluwaseun E. F. Predictors of Knowledge of Human Papillomavirus Infection and Its Related Diseases: A Study of Women in a Nigerian Tertiary Institution. *Asian Pacific Journal of Cancer Care*. Vol 7 No 2 (2022). DOI 10.31557/apjcc.2022.7.2.219-230.
- [25] Study concuded among among Female Undergraduate Students of Ambrose slao showed that only 12 (5.2%) students were knowledgeable about HPV and 39 (17.0%) were aware of the existence of HPV vaccines.