

## Prevalence of Cervical Human Papillomavirus Infection among Women of Childbearing Age in FMC ASABA, Nigeria

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### Abstract

**Background:** Cervical Human Papillomavirus infection prevalence varies with different environments. Knowledge of this will help in some cervical cancer interventions such as early and continuous screening. This study is aimed at determining the prevalence of cervical HPV infection among women of childbearing age attending Federal Medical Center Asaba, Nigeria.

**Materials and methods:** A total of 99 consenting women aged between (20 -45) years were randomly recruited and screened for HPV infection using virtual inspection by acetic acid (VIA) method. Semi-structured questionnaire was used to obtain the demographic characteristics, bio data and reproductive history of the participants. Statistical analysis was done using IBM SPSS statistics version 21.

**Results:** The result shows that 21(21.21%) out of 99 women that participated in the study were VIA positive. 16(76.19%) out of the 21 HPV infected women showed cervicitis, 4(19.05%) had cervical polyps, 1 (4.16%) had invasive cervical cancer while, 1(4.16%) of the participants had HPV only. Age-specific prevalence was highest among the age group 36 - 40 years with age groups 20 - 25 and 41-45 having the same value. **Conclusions:** HPV prevalence rate is high among the study population especially in women of aged between (36-40) years. Early commencement of sexual intercourse among others was associated with HPV positive. Advanced and effective method of screening is highly recommended in low income settings. Urgent and adequate interventions

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is recommended for regular HPV screening among women of reproductive age to reduce the spread of cervical cancer.

**Keywords:** Prevalence, HPV infection, Cervical Cancer, reproductive age, VIA, Nigeria

## Introduction

Human papillomavirus (HPV) is the most sexually transmitted virus<sup>1</sup>. Majority of the sexually active population contact with HPV at least once in a lifetime<sup>2</sup>. But most of these viruses will clear on their own. When the host can't clear the infection on their own, it leads to several human cancers, mainly cervical cancer<sup>3,4</sup>. Although all age groups can be affected, there appears to be a higher prevalence in young women<sup>5,6,7</sup>. The prevalence of HPV ranged from 1.5% in Spain to 38.8% in Kenya<sup>8,9</sup>. In Nigeria, different figures have been documented in the different zones of the country. In Ibadan, South-West Nigeria, cervical HPV was identified in 26.3% of sexually active women above 15 years and 14.7% among 1282 women in Irun<sup>6,10</sup>. In Okene, North-Central Nigeria, a prevalence of 21.6% among 231 women was documented<sup>11</sup>.

There is a paucity of data on the prevalence of HPV and serotypes in this region hence, the present study is designed to assess the prevalence and factors associated with cervical HPV infection especially in women of childbearing age in FMC Asaba, Nigeria.

## Materials and Methods

This was a cross-sectional study carried out between June, 2021 and December, 2021. The study determined the prevalence of HPV positivity in women of reproductive age visiting various clinics at Federal Medical Center, Asaba, Delta State, Nigeria using standard VIA inspection methods. Ninety-nine consenting women were randomly recruited into the study.

### Inclusion and Exclusion criteria

Only women within their reproductive age (20-45) years were included in the study.

Women below 20 years and above 45 years old were excluded from the study. Women that are pregnant, menstruating, and had undergone a hysterectomy at the time of this study were excluded.

## Participant recruitment

The participants were randomly selected. Social-demographic details and reproductive history of the participants were obtained using a semi-structured questionnaire.

## Laboratory investigation

Diagnostic investigations were carried out by a pathologist and nurses according to world health organization guidelines<sup>12</sup> for VIA screening method. Routine quality assurance was strictly employed during the screening exercise. After the insertion of a sterile vaginal speculum, the VIA testing was done by applying freshly prepared 4% acetic acid in the cervix. The results are taken after 1 minute using a halogen lamp to provide good illumination. The test screening is recorded as positive if a well-defined dense aceto- white area with regular margins appeared attached to the squamo-columnar junction (SCJ) or if the entire cervix or cervical growth turned white and negative if there is no observed changes or ulcerative growth in the cervix<sup>13</sup>. Colposcopy was done to grade the precancerous and cancerous lesions and were biopsies taken from areas which were suspiciously as abnormal. Colposcopic findings were reported as normal, cervicitis, probable low- or high-grade precancerous lesions, or suspected invasive cancer. The findings were properly explained to all the HPV positive participants and all were immediately referred to gynecological unit at FMC Asaba for further investigations, biopsies and proper treatments and follow ups according to stipulated guidelines by Health<sup>14</sup>, on cervical cancers management.

## Results

The mean age of the 99 women that participated in the study was 39.88 years. HPV was detected in 21 out of the 99 participants, giving a prevalence rate of 21.21%. 22 (22.22%) of 99 subjects had cervicitis while 7 (7.07%) out of the 99 subjects has cervical polyps. (%). The highest HPV prevalence rate of 6(28.5%) was observed among women aged between

36-40 years, while the lowest was among the age group 26-30, 2(9.52%). 16 (76.19%) out of 21 positive HPV participants have both HPV and cervicitis while 4(19.04%) of the had HPV and cervical polyps. Only 1 (4.16%) of the participant had HPV only.

The prevalence of HPV infection in relation to other variables were early sexual intercourse before the age of 18 years were 19(52.38%), 18-20 years were

6(28.5%) while 21-23 years were 4(19.05%), singles were 2(9.52%), married 8(38.10%), and widow 11 (52.35%) (Table 1).

Using bivariate analysis, significant factors associated with HPV infection were age less than 40 ( $P = 0.0164$ ), marital status ( $P = 0.0490$ ), number of pregnancy ( $P = 0.1830$ ), sexual intercourse before age 20 ( $P = 0.0046$ ), abnormal cervix ( $P=0.001$ ). (Table 2)

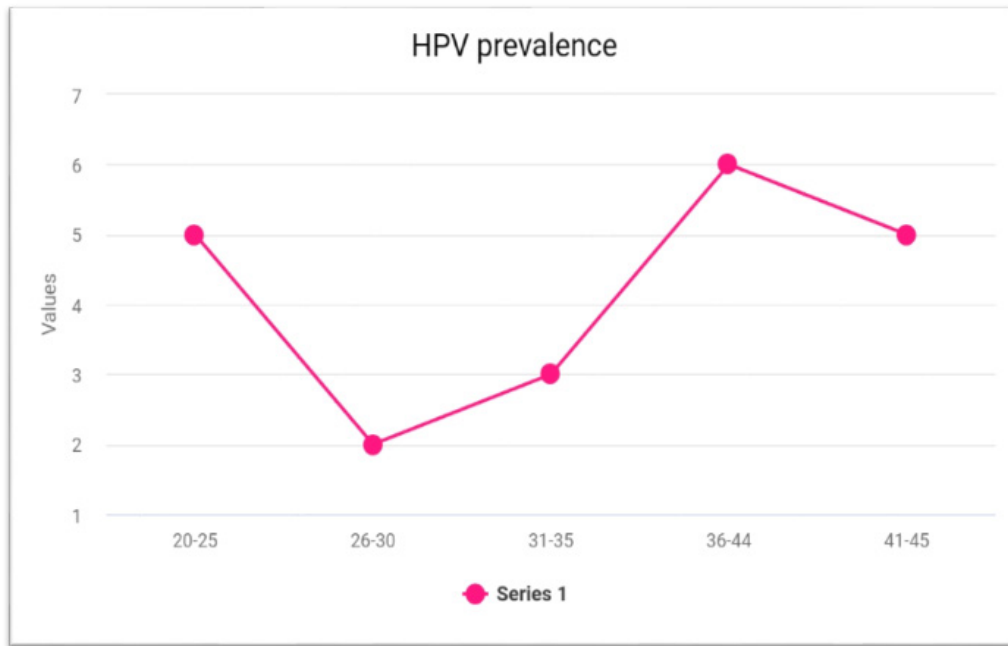


Figure 1. Shows the graphic representation of the age-specific prevalence of HPV in these women showing three different peaks.

Table 1. Social-demographic characteristics of the respondents

Variables	Frequency	Percentage (%)
Age		
20-25	5	23.81
26-30	2	9.52
31-35	3	14.28
36-40	6	28.5
41-45	5	23.81
Marital status		
Single	2	9.52
Married	8	38.10
Widow	11	52.38
No of kids		
5-10	13	61.9
1-4	5	23.81
None	3	14.29

Variables	Frequency	Percentage (%)
HPV and others		
Cervicitis	16	6.16
Cervical polyp	4	19.05
HPV only	1	4.16
Age at the first sexual intercourse		
15-17	11	52.38
18-20	6	28.5
20-22	4	19.05

**Table 2. Association between HPV infection and other variables.**

Variables	N	HPV % positive	Chi-square	P-value	degree of freedom
Age			5.62	0.0164	1
>40	16	76.19			
<40	5	23.81			
Marital status			6.000	0.0498	2
Single	2	9.52			
Married	8	38.10			
Widow	11	52.38			
No of pregnancy			8.000	0.1830	2
5-10	13	61.9			
1-4	5	23.81			
None	3	14.29			
HPV and others			18	0.0001	2
Cervicitis	16	76.16			
Cervical polyps	4	19.05			
HPV only	1	4.16			
Age at the first sexual intercourse			8.048	0.0046	1
>20	17	80.95			
<20	4	19.08			

## Discussion

There was a prevalence rate of 21(21.21%) HPV infection in women who participated in the present study. Similar reports have been obtained in different parts of the country. A prevalence rate of 21.6% was obtained from Okene, 19.6% in western Nigeria<sup>2, 11</sup>, 19.5% in Awka<sup>15</sup> and 26.3% among cytologically normal women in Ibadan, the lowest being 14% in Irun, Nigeria<sup>6, 16</sup>. The little differences may be influenced by the age group of the individuals studied, the environment, and variations in methods used.

Age-specific prevalence in this study was highest in the age group 36 - 40 (28.5%) and a slight peak

in the age groups 20-25 (23.81%) and 41-45(23.81). In Irun Nigeria, it was documented that HPV prevalence did not decline with age but with slight peaks in women between 15 - 29 and 60 - 69 years old while, in Awka (Nigeria), the highest prevalence was recorded among women aged between 30-39 years with a slight peak among women aged between 60-69 years<sup>6, 15, 17</sup>. Previous report showed that women of very young age have the highest prevalence, middle age group and a second peak in the old age has been consistent<sup>6</sup>. This study though not having ages below 20 and above 45 equally witnessed the same pattern. The high prevalence in the middle group may be due to the fact that the study was one among women

of childbearing age. The two other peaks could be attributed to possible exposure to new sexual partners later in life, especially among the widows and multiple partners by the singles.

The study has shown that there is a relationship between HPV infection and sexual behavior. Early commencement of the sexual activity, number of pregnancies, and cervical state which could result from sexually transmitted infection (STI) were significantly related to HPV infection. These factors may be considered an indicator of early age at first exposure to HPV. In this study, HPV infection was found to be higher among the participants that had their first sexual intercourse before the age of 17 and this is consistent with findings from other studies<sup>18,19</sup>.

### Conclusion

HPV prevalence rate is high among the study population especially in women of aged between (36-40) years. Early commencement of sexual intercourse among others was associated with HPV positive. Advanced and effective method of screening is highly recommended in low income settings. Urgent and adequate interventions is recommended for regular HPV screening among women of reproductive age to reduce the spread of cervical cancer.

**Ethical clearance and informed consent:** Ethical clearance was granted by the board of ethics of Federal Medical centre Asaba, Delta state, Nigeria with Ref: FMC/ASB/AS/VOL.XIII/181. Prospective participants were approached and the study was explained to them and only consenting women were enrolled. Informed consent was obtained.

**Conflict of Interest – NIL, Source of Funding-** Tertiary Education Trust Fund (TETFUND), Nigeria

### References

1. Centre for Disease Control and Prevention. Human Papilloma virus: HPV Information for Clinicians. 2007. <https://www.cdc.gov/std/hpv2>.
2. Akarolo Anthony SN, Famooto AO, Dareng BO, Olaniyan OB, Offiong R, Wheeler CM. and Adebamowo CA. Age Specific Prevalence of Human Papilloma virus Infection among Nigerian Women. BMC Public Health. 2014; 14:656-662. <https://doi.org/10.1186/1471-2458-14-656>.
3. Bosch FX, Lorincz A, Munoz N, Meijer CJ and Shah KV. The Causal Relation between Human Papilloma virus and Cervical Cancer. J Clin Pathol. 2002; 55:244-265. <https://doi.org/10.1136/jcp.55.4.244>
4. Hang D, Jia M, MaH, Zhou J, Fang X, Lyu Z. Independent Prognostic Role of Human Papilloma virus Genotype in Cervical Cancer. BMC. Infect. Dis. 2017; 17:391.
5. Hammer A, Rositch A, Qeadan F, Gravit PE. and Blaskaer, J. Age Specific Prevalence of HPV 16/18 Genotypes in Cervical Cancer; A Systematic Review and Meta-analysis. Int. J. Cancer. 2016; 138(12): 2795-803.
6. Gage JC, Ajenifuja KO, Wentzensen NA, Adepiti AC, Eklund C, Reilly M, Hutchinson M, Wacholder S, Harford J, Soliman AS, Burk RD, Schiffman M. The Age-Specific Prevalence of Human Papilloma virus and Risk of Cytologic Abnormalities in Rural Nigeria: Implications for Screen-and-treat Strategies. Int J Cancer. 2012; 130: 2111-2117. <https://doi.org/10.1002/ijc.26211>
7. Watson JD, Baisley K, Brown J, Kavishe JB, Andreasen A, Changalucha J, Mayaud P, Kapiga S, Gumodoka B, Hayes RJ, deSanjosé S. High Prevalence and Incidence of Human Papilloma virus in a Cohort of Healthy Young African Female Subjects. Sexually Transmitted Infect. 2013; 89:358-365. <https://doi.org/10.1136/sextrans-2012-050685>
8. DeSanjose S, Diaz M, Castel Isague X, Clifford G, Bruni L, Munoz N, Bosch XF. Worldwide Prevalence and Genotype Distribution of Cervical Human Papilloma virus DNA in Women with Normal Cytology: A Meta-Analysis. The Lancet Infect Diseases. 2007; 7:453-459. [https://doi.org/10.1016/S1473-3099\(07\)70158-5](https://doi.org/10.1016/S1473-3099(07)70158-5)
9. DeVuyst H, Steyaert S, van Retergherm L, Claeys P, Muchiril L, Sitati S, Vansteel S, Quint W, Kleeter B, Van Marck E, Temmerman M. Distribution of Human Papilloma virus in a Family Planning Population in Nairobi Kenya. Sexually Transmitted Diseases. 2003; 30:137-142. <https://doi.org/10.1097/00007435-200302000-00009>
10. Heywood W, Patrick K, Smith AMA and Pitts MK. Associations between Early First Sexual Intercourse and Later Sexual and Reproductive Outcomes: A Systematic Review of Population-Based Data. Archives of Sexual Behaviour. 2015; 44: 531-569. <https://doi.org/10.1007/s10508-014-0374-3>

11. Schnatz PF, Markelova NV, Holmes D, Mandavilli SR and O'Sullivan DM. The Prevalence of Cervical HPV and Cytological Abnormalities in Association with Reproductive Factors of Rural Nigerian Women. *J Women's Health*. 2008; 17:279-285. <https://doi.org/10.1089/jwh.2006.0295>
12. Organization WH. WHO guidelines for screening and treatment of precancerous lesions for cervical cancer prevention: WHO, 2013.
13. Organization WH. Prevention of cervical cancer through screening using visual inspection with acetic acid (VIA) and treatment with cryotherapy. A demonstration project in six African countries: Malawi, Madagascar, Nigeria, Uganda, the United Republic of Tanzania, and Zambia. WHO, 2012.
14. Health MO. Strategic Plan for Cervical Cancer Prevention and Control in Uganda -2014
15. Ezebialu C, Ezebialu I, Ezeifeke G, Nwobu R, Okani C and Chukwubuike C. Prevalence of Cervical Human Papilloma virus Infection in Awka, Nigeria. *J Biosci Med*. 2010; 8: 37-47. doi: 10.1236/jbm.2020.83005.
16. Thomas JO, Herrero R, Omigbodun AA, Ojemakinde K, Ajayi IO, Fawole A, Oladepo O, Smith S, Arslan A, Munoz N, Snijders PJF, Meijer CJLM, Franceschi S. Prevalence of Papilloma virus Infection in Women in Ibadan, Nigeria: A Population Based Study. *British J Cancer*. 2004; 90: 638-645. <https://doi.org/10.1038/sj.bjc.6601515>
17. Okolo C, Franceschi S, Adewole I, Thomas JO, Follen M, Snijders, PJF, Meijer CJLM and Clifford GM. Human Papilloma virus Infection in Women with and without Cervical Cancer in Ibadan, Nigeria. *Infect Agents Cancer*. 2010; 5. Article No. 24. <https://doi.org/10.1186/1750-9378-5-24>
18. Kahn JA, Rosenthal SL, Succop PA, Ho GFY and Burk RD. Mediators of the Association between Age of First Sexual Intercourse and Subsequent Human Papilloma virus Infection. *Paediatr*. 2002; 109: e5-e12. <https://doi.org/10.1542/peds.109.1.e5>
19. Schnatz PF, Markelova NV, Holmes D, Mandavilli SR and O'Sullivan DM. The Prevalence of Cervical HPV and Cytological Abnormalities in Association with Reproductive Factors of Rural Nigerian Women. *J Women's Health*. 2008; 17:279-285. <https://doi.org/10.1089/jwh.2006.0295>