

# KNOWLEDGE ATTITUDE AND PRACTICE OF CERVICAL CANCER SCREENING AND VACCINATION AMONG WOMEN IN GWAGWALADA AREA COUNCIL, ABUJA NIGERIA

Ochem Michael Uzorchukwu<sup>1</sup>, Gandu T.Y. Purity<sup>2</sup>, Chibueze Mercy Asabe<sup>3</sup>, Dennis Kure Yusuf<sup>4</sup>, Efe Okorare<sup>5</sup>, Shuaib Usman Karuma<sup>6</sup>, Muhammed Khaleed<sup>7</sup>, Okpechukwu Chidubem Peter<sup>8</sup>, Akata Grace Amarachi<sup>9</sup>, Abu Agbokhade Gift<sup>10</sup>, Ummulkhair Muhammad<sup>11</sup>

<sup>1</sup>University of Abuja Teaching Hospital, Nigeria.

<sup>2</sup>Tambov State University, Russia.

<sup>3</sup>Gwarinpa general hospital, Nigeria

<sup>4</sup>Dangote oil refinery and petrochemicals, Nigeria

<sup>5</sup>Gloucester Royal Hospital, England

<sup>6</sup>Department of Medical Biochemistry, Faculty of Basic Medical Science, University of Abuja, Nigeria

<sup>7</sup>Medecins Sans Frontieres OCB, Nigeria

<sup>8</sup>Irrua Specialist Teaching Hospital, Nigeria.

<sup>9</sup>Department of Medical Biochemistry, Faculty of Basic Medical Science, University of Abuja, Nigeria.

<sup>10</sup>University of Benin Teaching hospital, Benin city, Nigeria

<sup>11</sup>Symbiosis Institute of Health Science, Symbiosis International (Deemed University), Pune, Maharashtra, India

**Corresponding Author:**

[dennisyusuf0@gmail.com](mailto:dennisyusuf0@gmail.com), [shuaibusmankuram@gmail.com](mailto:shuaibusmankuram@gmail.com)

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## ABSTRACT

**Background:** Cervical cancer remains one of the leading causes of cancer morbidity and mortality among women in low- and middle-income countries, despite being largely preventable through screening and vaccination against human papillomavirus (HPV). Knowledge, attitude, and practice (KAP) studies provide valuable insights for designing effective preventive interventions. This study assessed the KAP of cervical cancer screening and HPV vaccination among women in Gwagwalada Area Council, Abuja, Nigeria.

**Methods:** A descriptive cross-sectional survey was conducted among 244 women aged 15–49 years. The participants were recruited through systematic random and cluster sampling. Data were collected using structured interviewer-administered and self-administered questionnaires. Statistical analysis was performed using SPSS version 21. Associations between socio-demographic characteristics, knowledge, attitude, and vaccination practice were evaluated using chi-square tests at a significance level of  $p < 0.05$ .

**Results:** More than half of the participants (54.5%) demonstrated good knowledge of HPV vaccination, while 45.5% had poor knowledge. Despite this high knowledge, uptake of HPV vaccination was very low (6.1%). Vaccination was highest among students (10.3%) and women with secondary education (11.1%). Knowledge ( $p = 0.041$ ) and positive attitude ( $p = 0.018$ ) were significantly associated with vaccination uptake. However, socio-demographic variables such as age and marital status were not significantly associated.

**Conclusion:** The study revealed a wide gap between knowledge and practice of cervical cancer prevention in the study population. While awareness of HPV vaccination was relatively high, uptake was alarmingly low. Positive attitudes were strongly linked to vaccination practice, highlighting the need for interventions that address both structural and behavioral barriers.

**Keywords:** Cervical cancer screening, HPV vaccination uptake, Knowledge, Attitudes, Practice

## 1.0 INTRODUCTION

Cervical cancer is the fourth most common cancer affecting women worldwide after breast, colorectal and lung cancer with about 500,000 new cases discovered every year and has been shown to cause 266,000 deaths annually (International Agency for Research on Cancer [IARC], 2013) and is the third leading cause of cancer death worldwide. It is a malignant tumour of the cervix, which is the lowermost part of the uterus. The occurrence of cervical cancer has been closely associated with the presence of a virus, the Human Papilloma Virus (HPV) (Elkharashy et al., 2013).

Human Papilloma Virus is a virus that affects the skin and mucosa of cells (Kumar et al., 2007). It is the most common sexually transmitted infection and most sexually active men and women are exposed to it at some point in their life. There are various types of HPV associated with various forms of genital diseases and types of cancers (Kasperson et al., 2011). It can be spread via oral, vagina or anal sex. It can also be sometimes spread during birth to an infant causing infection. There is currently no cure for the infection but various vaccines have been produced and effective vaccination is recommended (Cutts et al., 2007).

Diseases caused by HPV include all cervical cancers, most anal cancers, some vaginal, penile, vulva and oropharyngeal cancer. It can be obtained from having unprotected vaginal, anal or oral sex and can sometimes be transferred from mother to baby during pregnancy, labour or nursing (Zeferino et al., 2011).

There are more than 100 known HPV genotypes which cause cervical cancer and cancer of other sites of the body (Kasperson et al., 2011). HPV 16 and 18 are the two most common oncogenic types and they have been implicated in the occurrence of about 70% of all cervical cancers while genotype 6 and 11 are the commonest cause of genital warts. About 80% of all women infected with the virus are usually negative to colposcopy for a period of time (Bosch et al., 2002). Regular cervical screening has been shown to be able to detect and remove abnormal cells and tissues in the cervix before cervical cancer develops. This procedure is also known as Conventional cytology or Papanicolaou test and the recommendation for the test varies from one country to another depending on the number of available resources for instance in the united states the test is done for women ranging from 21 – 65 years of age but in most developing countries it is done based on request (Bosch et al., 2002; Crosbie et al., 2013; Schiffman et al., 2010 ). Methods for screening for cervical cancer include Papanicolaou smear (which involves collection of cells from the cervix and analysing them for abnormalities. It has a good specificity but a relatively poor sensitivity), Visual Inspection (It is used in low resource areas since it is inexpensive but it has relatively non specificity and low sensitivity), Liquid – based Cytology, HPV DNA Testing (it is the most recent screening method and it is more effective at detecting early cervical disease than traditional Pap test)

This assessed the knowledge, attitude and practice of cervical cancer screening and HPV vaccination among females in Gwagwalada Area Council and females of University of Abuja.

## 2.0 METHODOLOGY

### 2.1 STUDY DESIGN AND SETTING

A descriptive cross-sectional study was conducted among 244 women aged 15–49 years in Gwagwalada. Systematic random and cluster sampling techniques were applied. Data were collected using structured interviewer-administered and self-administered questionnaires. Data analysis was carried out using SPSS version 21 with descriptive statistics and chi-square tests. A p-value of <0.05 was considered statistically significant. Ethical approval was obtained from the University of Abuja Teaching Hospital ethics board. A summary of the methodology is given below:

#### Study Area

Gwagwalada Area Council, Federal Capital Territory (FCT), Nigeria, with mixed urban–rural settlements, predominantly farming occupations, motorcycle transportation, and diverse educational attainment (as detailed in the source document). The study targeted all practicing healthcare professionals (HCPs) at NECC. All consenting HCPs were eligible, including medical doctors, pharmacists, nurses, laboratory scientists, pharmacy technicians, and laboratory technicians. The criteria for inclusion were adults (18 years of age and older) working at NECC who willingly consented to participate. HCPs who did not consent were excluded. A total of 87 HCPs participated, and 120 questionnaires were distributed as hard copies during working hours to the respondents

### 2.2 STUDY POPULATION AND PARTICIPANT RECRUITMENT

The study targeted all female residents at the University of Abuja Teaching Hospital and females in Gwagwalada Area Council. All consenting participants were eligible for the study. A total of 244 participated, and questionnaires were distributed as hard copies during working hours to the respondents.

**Inclusion:** Females between the age of 15–49, and residents of Gwagwalada, who consented were included in the study.

**Exclusion:** Participants below the age of 15 and above 49 years of age and non-consenting participants were excluded from the study.

#### Sample Size

**Sample Size Formula:**  $n = (Z\alpha^2 \times p \times q) / d^2$  Where:

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

$$p = 0.177 \text{ (prevalence of HPV-related outcome)}$$

$$q = 1 - p = 0.823$$

$d = 0.05$  (margin of error) **Substitution:**

$$n = (1.96^2 \times 0.177 \times 0.823) / (0.05^2)$$

$$n = (3.8416 \times 0.177 \times 0.823) / 0.0025$$

$$n = 221.4$$

**Adjustment for Non-response (10%):**

$$N = n + (n \times 0.10)$$

$$N = 221.4 + 22.1 \approx 244$$

## 2.3 SURVEY INSTRUMENT

The questionnaire was designed by the researchers and reviewed from similar studies in English. It began with an introduction outlining the study's aims and objectives, emphasizing voluntary participation and confidentiality. The questionnaire comprised three sections:

Sections A: Sociodemographic Data: Collected information on age, education, religion, marital status and occupation.

Section B: Knowledge: Assessed knowledge of cervical screening, familiarity with cervical cancer, and Human Papilloma Virus (HPV) using dichotomous answers and a 5-point Likert scale (ranging from 'strongly disagree' to 'strongly agree').

Section C: Attitudes, and Practices: Assessed the attitude and Practice of the participant on vaccination, Cervical cancer and HPV Screening, using a 5-point Likert scale.

## 2.4 PROCEDURE FOR DATA COLLECTION

Participants were briefed on the study's aims and objectives, emphasizing voluntary participation and confidentiality. Questionnaires were administered to consenting participants who met the inclusion criteria, ensuring anonymity to prevent accidental identification of participants.

## 2.5 DATA ANALYSIS

Data were cleaned and coded, then summarized (frequencies, percentages). Group differences assessed with **chi-square tests** ( $\alpha=0.05$ ) for associations between socio-demographics and KAP, and between knowledge/attitude and practice.

## 2.6 ETHICAL CONCERNS

Ethical approval was obtained from the Health Research Ethics Committee of the **University of Abuja Teaching Hospital (UATH)**, Nigeria, before the study commenced. voluntary participation with the right to withdraw at any time and confidentiality was maintained.

## 3.0 RESULTS

### 3.1 SOCIO-DEMOGRAPHIC CHARACTERISTICS OF STUDY PARTICIPANTS

A total of 244 participants consented to participate in the survey and completed the questionnaire. The socio-demographic results showed that the majority of respondents were young women between 20–24 years (40.6%), followed by those aged 15–19 years (21.3%). Only a small proportion were older women above 40 years (Table 1). This suggests that the study population was predominantly within the youthful reproductive age group.

Most respondents identified as Christians (86.9%), reflecting the religious distribution in the Gwagwalada area, while Muslims accounted for 12.7% (Table 2).

In terms of education, the majority had attained tertiary education (66.8%), followed by secondary education (25.8%), while only 1.2% had no formal education. This indicates a relatively literate population (Table 3).

Regarding occupation, more than half were engaged in skilled work (60.7%), while 25.4% were unskilled workers, and 11.9% were students. Very few were unemployed (Table 4).

Marital status distribution showed that the majority of respondents were single (70.5%), while 28.7% were married, and less than 1% were separated (Table 5).

**Table 1:** Age Distribution of Respondents

Age (years)	15–19	20–24	25–29	30–34	35–39	40–44	45–49
Frequency (n)	52	99	21	27	14	13	18
Percentage (%)	21.3	40.6	8.6	11.1	5.7	5.3	7.4

**Table 2:** Religious Affiliation of Respondents

Religion	Christianity	Islam	Others
Frequency (n)	212	31	1
Percentage (%)	86.9	12.7	0.4

**Table 3:** Educational Status of Respondents

Education Level	No Education	Primary	Secondary	Tertiary
Frequency (n)	3	15	63	163
Percentage (%)	1.2	6.1	25.8	66.8

**Table 4:** Occupational Status of Respondents

Occupation	Unemployed	Student	Unskilled	Skilled
Frequency (n)	5	29	62	148
Percentage (%)	2.0	11.9	25.4	60.7

**Table 5:** Marital Status of Respondents

Marital Status	Single	Married	Separated
Frequency (n)	172	70	2
Percentage (%)	70.5	28.7	0.8

### 3.2 KNOWLEDGE OF THE PARTICIPANT ON HPV VACCINE AND VACCINATION STATUS

The study indicates a high level of awareness and perceived importance of the HPV vaccine among the participants (Table 6). Out of 244 respondents, 133 (54.5%) of them had good knowledge of the vaccine while 111 (45.5%) of them had poor knowledge.

Out of the total 244 respondents, only 15 (6.1%) reported being vaccinated against HPV, while the overwhelming majority, 229 (93.9%), had not been vaccinated (Table 7). This highlights a very low uptake of vaccination in the study population. When broken down by age, adolescents (15–19 years) had the highest vaccination rate at 9.6%, compared to 20–24 years (6.1%) and older age groups. Notably, no respondents in the 25–29 and 40–44 years groups were vaccinated, while minimal uptake was seen among 30–34 years (7.4%), 35–39 years (7.1%), and 45–49 years (5.6%) (Table 7). This suggests that vaccination is concentrated among the younger respondents, possibly reflecting recent health campaigns targeting school-aged or younger women.

Educational status showed marked differences: respondents with secondary education had the highest vaccination uptake (11.1%) compared to those with tertiary education (4.9%), while none of the women with primary or no education had been vaccinated (Table 7). This indicates that secondary school settings may have provided opportunities for HPV awareness and access, while higher education levels did not translate into better vaccination uptake.

Occupational status also showed disparities. Students recorded the highest vaccination rate (10.3%), followed by skilled workers (6.8%), whereas uptake was very low among unskilled workers (3.2%), and no unemployed respondents were

vaccinated (Table 7). This finding suggests that access and awareness may be greater among students, possibly due to school health programs, while disadvantaged groups (unskilled and unemployed) remain least covered.

**Table 6:** Knowledge of HPV Vaccine Among Participants

Knowledge Level	Frequency (n)	Percentage (%)
Good	133	54.5
Poor	111	45.5
<b>Total</b>	<b>244</b>	<b>100.0</b>

**Table 7:** Vaccination Status Against HPV Among Participants

Variable	Vaccinated (n, %)	Not Vaccinated (n, %)
Total (N = 244)	15 (6.1%)	229 (93.9%)
Age 15–19	9.6%	90.4%
Age 20–24	6.1%	93.9%
Age 25–29	0%	100%
Age 30–34	7.4%	92.6%
Age 35–39	7.1%	92.9%
Age 40–44	0%	100%
Age 45–49	5.6%	94.4%
Education Secondary	11.1%	88.9%
Education Tertiary	4.9%	95.1%
Education Primary/None	0%	100%
Students	10.3%	89.7%
Skilled	6.8%	93.2%
Unskilled	3.2%	96.8%
Unemployed	0%	100%

*(Vaccination significantly associated with occupation,  $p < 0.05$ .)*

### 3.3 PARTICIPANTS' ATTITUDE TOWARDS VACCINATION

The findings demonstrate that both knowledge and attitude were significantly associated with HPV vaccination uptake. Women with good knowledge of cervical cancer were more likely to be vaccinated ( $p = 0.041$ ), while those with poor knowledge rarely took the vaccine. Similarly, respondents with a positive attitude toward cervical cancer prevention all reported being vaccinated, whereas none with negative attitudes had received the vaccine ( $p = 0.018$ ).

**Table 8: Relationship Between Knowledge, Attitude, and Practice**

Variable	Vaccinated (n)	Not Vaccinated (n)	p-value
Knowledge – Good	12	121	0.041
Knowledge – Poor	3	108	
Attitude – Positive	15	0	0.018
Attitude – Negative	26	203	

Attitude showed a statistically significant association with vaccination practice ( $p = 0.018$ ).

## 4.0 DISCUSSION

This present study assessed the knowledge, attitude, and practice (KAP) of cervical cancer screening and HPV vaccination among women of reproductive age in Gwagwalada, Abuja. The result of the study showed that awareness and knowledge of the HPV vaccine were relatively high (54.5%) among the women, but actual uptake of the vaccine was very low (6.1%). This variation suggests a significant knowledge–practice gap that has been documented in similar studies across sub-Saharan Africa.

This corresponds with a similar study conducted in Ibadan, Nigeria, where 67% of women had heard of cervical cancer and less than 10% had undergone screening, indicating low preventive practices despite awareness (Odetola, 2011). Likewise, in Ghana, Ebu et al. (2015) observed high knowledge levels but vaccination uptake below 5%.

The low HPV vaccination uptake observed in this study may be associated with barriers such as vaccination cost, lack of government-supported vaccination programs, misinformation, and sociocultural beliefs. Previous research in Northern Nigeria has reported that stigma, myths about infertility, and poor male partner support contribute to low levels of HPV vaccines acceptance among women (Abdullahi et al., 2016). In contrast, a high vaccination rate above 90% has been reported in countries with strong national immunization programs such as Rwanda, demonstrating the impact of policy commitment and free vaccine access (Binagwaho et al., 2012).

Attitude was found to have a significant association with vaccination practice ( $p = 0.018$ ). Women with positive attitudes were more likely to be vaccinated, supporting findings from similar studies in Kenya and Uganda, which emphasized that personal health beliefs and perception of susceptibility strongly influence preventive behavior (Musa et al., 2017; Mutyaba et al., 2006).

Furthermore, the highest vaccination rate was observed among students (10.3%) and those with secondary education (11.1%), indicating exposure to school health campaigns and peer influence as a major driver. However, the fact that women with tertiary education had lower uptake (4.9%) suggests that higher educational attainment does not automatically translate into better preventive practices. This finding contrasts with similar studies in Lagos and Enugu where higher education was strongly correlated with screening and vaccination (Asogun et al., 2024). The difference may be as a result of local differences in health campaigns and service availability.

Overall, this study revealed that while knowledge levels are improving, vaccination uptake remains considerably low. This corroborates a systematic review by Cunningham et al. (2015), which reported that uptake of HPV vaccines is below 10% due to systemic barriers, even when awareness exists in most low- and middle-income countries.

## 5.0 RECOMMENDATIONS

Based on the findings of this study, several strategies can be implemented to enlighten the masses on cervical cancer and improve the practice of cervical cancer screening and vaccination amongst women.

The following recommendations are proposed:

### 1- Recommendations To the Government

A possible solution to increasing the knowledge level in our society is for the government to incorporate health education as a curriculum in various institutions.

Health agencies and non-governmental organizations should intensify educational campaigns about cervical cancer through the use of mass media, social media, community health talks, and school-based programs to disseminate accurate information on cervical cancer emphasizing its preventable nature through early screening and vaccination.

### 2-Recommendation To the Health Workers

Free vaccination programs can be organized as a method of encouraging vaccination. The cost of the vaccine should be heavily subsidized if not made freely available by the government.

Continuous training and retraining should be encouraged in healthcare professionals on cervical cancer prevention, counseling, and vaccination.

Providers should be encouraged to routinely educate women during clinic visits about the importance of early screening and vaccination.

### 3-Recommendations To the Community

Community leaders, religious groups, and women's associations should be engaged to address misconceptions and cultural barriers surrounding cervical cancer screening and HPV vaccination.

Peer education programs can be effective in increasing acceptance and participation.

More studies should be conducted to explore barriers and facilitators influencing women's knowledge, attitudes, and practices across different demographic and cultural settings.

Qualitative research is encouraged to gain deeper insights into perceptions and behavioral determinants.

## 6.0 CONCLUSION

This study revealed that although more than half of women in Gwagwalada demonstrated good knowledge of cervical cancer and HPV vaccination. However, the actual uptake of the HPV vaccine was very low. The attitude of the women towards prevention significantly influenced their vaccination practice, with those expressing positive attitudes more likely to be vaccinated. Education and occupation also played roles, with students and women with secondary education showing slightly better uptake.



## REFERENCES

- [1] Abdullahi, A., Copping, J., Kessel, A., Luck, M., & Bonell, C. (2009). Cervical screening: Perceptions and barriers to uptake among Somali women in Camden. *Public Health*, 123(10), 680–685. <https://doi.org/10.1016/j.puhe.2009.09.011>
- [2] Asogun, D., Alenoghena, I., & Egbefer, H. (2024). Knowledge, attitude and practice of cervical cancer screening among reproductive age group women in Ekpoma, South-South Nigeria. *The Nigerian Health Journal*, 24(3), 1566–1576. <https://doi.org/10.60787/tnhj.v24i3.881>
- [3] Binagwaho, A., Wagner, C. M., Gatera, M., Karema, C., Nutt, C. T., & Ngabo, F. (2012). Achieving high coverage in Rwanda's national human papillomavirus vaccination programme. *Bulletin of the World Health Organization*, 90(8), 623–628. <https://doi.org/10.2471/BLT.11.097253>
- [4] Bosch, F. X., & de Sanjosé, S. (2002). Human papillomavirus in cervical cancer. *Current Oncology Reports*, 4(2), 175–184. <https://doi.org/10.1007/s11912-002-0020-3>
- [5] Bosch, F. X., & Muñoz, N. (2002). The viral etiology of cervical cancer. *Virus Research*, 89(2), 183–190. [https://doi.org/10.1016/S0168-1702\(02\)00187-9](https://doi.org/10.1016/S0168-1702(02)00187-9)
- [6] Crosbie, E. J., Einstein, M. H., Franceschi, S., & Kitchener, H. C. (2013). Human papillomavirus and cervical cancer. *The Lancet*, 382(9895), 889–899. [https://doi.org/10.1016/S0140-6736\(13\)60022-7](https://doi.org/10.1016/S0140-6736(13)60022-7)
- [7] Cunningham, M. S., Skrastins, E., Fitzpatrick, R., Jindal, P., Onoko, O., Yeates, K., & Ginsburg, O. (2015). Cervical cancer screening and HPV vaccine acceptability among rural and urban women in Kilimanjaro Region, Tanzania. *BMJ Open*, 5(3), e005828. <https://doi.org/10.1136/bmjopen-2014-005828>
- [8] Cutts, F. T., Franceschi, S., Goldie, S., Castellsagué, X., de Sanjosé, S., & Garnett, G. (2007). Human papillomavirus and HPV vaccines: A review. *Bulletin of the World Health Organization*, 85(9), 719–726. <https://doi.org/10.2471/BLT.06.038414>
- [9] Ebu, N. I., Mupepi, S. C., Siakwa, M. P., & Sampselle, C. M. (2014). Knowledge, practice, and barriers toward cervical cancer screening in Elmina, Southern Ghana. *International Journal of Women's Health*, 7, 31–39. <https://doi.org/10.2147/IJWH.S71797>
- [10] Elkharrashy, S. M., Mohammed, N. G. R., & Yasser, H. (2013). Prevalence of high-risk human papillomavirus types 16/18 in cytologically abnormal cervical smears in Alexandria, Egypt: A cytological and molecular study. *Middle East Fertility Society Journal*, 18(4), 253–267. <https://doi.org/10.1016/j.mefs.2013.03.004>
- [11] International Agency for Research on Cancer (IARC), & World Health Organization. (2013). *Latest world cancer statistics: Global cancer burden rises to 14.1 million cases in 2012 – Marked increase in breast cancers must be addressed* [Press release]. <https://www.iarc.who.int/news-events/latest-world-cancer-statistics-global-cancer-burden-rises-to-14-1-million-cases-in-2012>
- [12] Kaspersen, M. D., Larsen, P. B., Ingerslev, H. J., Fedder, J., & Bonde, J. (2011). Identification of multiple HPV types on spermatozoa from human sperm donors. *PLOS ONE*, 6(3), e18095. <https://doi.org/10.1371/journal.pone.0018095>
- [13] Kumar, V., Abbas, A. K., Fausto, N., & Mitchell, R. N. (2007). *Robbins basic pathology* (8th ed.). Elsevier Saunders.
- [14] Musa, J., Achenbach, C. J., O'Dwyer, L. C., Evans, C. T., McHugh, M., Hou, L., & Simon, M. A. (2017). Effect of cervical cancer education and provider recommendation for screening on screening rates: A systematic review and meta-analysis. *PLOS ONE*, 12(9), e0183924. <https://doi.org/10.1371/journal.pone.0183924>
- [15] Mutyaba, T., Mmro, F. A., & Weiderpass, E. (2006). Knowledge, attitudes and practices on cervical cancer screening among the medical workers of Mulago Hospital, Uganda. *BMC Medical Education*, 6, 13. <https://doi.org/10.1186/1472-6920-6-13>
- [16] Odetola, T. D. (2011). Knowledge, attitude and utilization of cervical cancer screening among women in Ibadan, Nigeria. *African Journal of Reproductive Health*, 15(4), 47–52.
- [17] Schiffman, M., & Wentzensen, N. (2010). From human papillomavirus to cervical cancer. *Obstetrics & Gynecology*, 116(1), 177–185. <https://doi.org/10.1097/AOG.0b013e3181e4629f>
- [18] Zeferino, L. C., Rabelo-Santos, S. H., Villa, L. L., & Syrjänen, K. J. (2011). Value of HPV-DNA testing in women with cytological diagnosis of atypical glandular cells (AGC). *European Journal of Obstetrics & Gynecology and Reproductive Biology*, 159(1), 160–164. <https://doi.org/10.1016/j.ejogrb.2011.07.009>