Original Article

Knowledge, Perception and Uptake of Human Papilloma Virus Vaccine Among Secondary School Adolescents in Makurdi, Benue State

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ABSTRACT

Cervical cancer is the second most common malignancy among Nigerian women and is regarded as a major public health concern worldwide. Human papillomavirus (HPV) infection is the cause of cancer in women by generating malignant changes in the cervix. The HPV vaccine is already available to prevent it, but its use is limited. The study aimed to determine the knowledge, perception, and uptake of the human papillomavirus vaccine among adolescent females in selected secondary schools in Makurdi, Benue State. The study was a cross-sectional study done in secondary schools in Makurdi, Benue State, North Central Nigeria. A multistage sampling technique was used to select 363 secondary school girls who participated in the study. Data was collected using interviewer-administered questionnaires, was analyzed using Statistical Package for Social Sciences (SPSS) version 25, and presented in tables. The study revealed that the majority of the girls were between 13 and 16 years. A vast majority (62.3%) had poor knowledge of HPV and its vaccine, more than half also had poor perception of the vaccine (51.5%), and the uptake of the vaccine was significantly low (5.5%).The knowledge, perception, and uptake of the HPV vaccine among secondary school girls is low. The government should make efforts to improve the awareness and uptake of the vaccine to ensure Nigeria reduces the incidence and prevalence of cervical cancer.

Keywords: Adolescence, Cervix, Cervical cancer, Human papillomavirus, Vaccine

INTRODUCTION

Cervical cancer is the second most common malignancy among Nigerian women and is regarded as a major public health concern worldwide.[1] In sub-Saharan Africa, it is the most prevalent gynecological cancer in women, with 95% of the high-burden countries found in sub-Saharan Africa.[2,3] It is estimated that over 700,000 women will be diagnosed with cervical cancer by 2030, with over 57% mortality, the majority in low and middle-income countries (LMICs).[4,5] Human papillomavirus (HPV) infection is the primary cause of cancer in women by generating malignant changes in the cervix.[6,7] Throughout their lives, around 50-80% of sexually active women are exposed to at least one HPV type.[7]

Preventive HPV vaccination and cytology screening for cervical cancer are known to reduce the disease's incidence and mortality.[8] The HPV vaccine is already available to prevent it, but its use is limited.[7] To prevent HPV infection, girls aged 9 to 14 years old should receive the HPV vaccine.[9] Certain countries have also begun vaccination against HPV in males, as the vaccines available are known to be

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successful in preventing anal pre-cancers and genital warts in both sexes.[10] To prevent cervical cancer and other HPV-related diseases, the World Health Organization (WHO) recommends that national vaccination programs include the HPV vaccine by vaccinating 90% of girls before 15 years, to meet the target of elimination of cervical cancer by 2030.[11] HPV types 16 and 18 are identified in approximately 70% of all cervical malignancies, making HPV a risk factor for cervical cancer development. Nigeria just included the HPV vaccination in routine immunization. Before this, there was little awareness of the HPV vaccine, and it was only given to those who could afford it, in high-profile private clinics and pharmacies, as well as some public institutions.[12] Cervarix, Gardasil, and Gardasil 9 are three vaccines available to prevent disease-causing HPV infection. All three vaccines protect against infection with HPV strains 16 and 18. Gardasil also protects against infection with HPV strains 6 and 11, which cause 90% of genital warts. Gardasil 9 prevents infection with the same four HPV types plus five more cancer-causing strains (31, 33, 45, 52, and 58), which cause up to 10%-20% of cervical malignancies.[13]

Immunization indications apply to both young girls and boys; however, female immunization has received greater focus due to the prevalence of cervical cancer.[14] Since there is little information on HPV vaccination acceptance in Nigerian secondary schools, it is crucial to understand how female teenagers feel about it.[5] The study aims to assess female adolescents' perceptions and knowledge of the HPV vaccine in Makurdi, Benue State.

MATERIALS AND METHODS

Study Area

The study was conducted in Makurdi, the capital of Benue State. The majority of the city is situated on the south bank of the Benue River. It is bordered on the West and North by Lafia, Keana, and Doma Local Government Areas of Nassarawa State, on the East by Guma, and on the South, by Gwer West Local Government Area.

The people of Makurdi are mostly farmers, due to the rich and fertile soil, farming mostly cereals such as rice and tubers, among others. The projected population of Makurdi for 2024, based on a total fertility rate of 3.0% is four hundred and ninety thousand (490,000) people[14]

Study Design

A cross-sectional descriptive study design was used for this study.

Study Population

The study participants consisted of adolescent girls (girls between the ages of 10 and 19) in selected secondary schools in Makurdi, Benue State.

Inclusion Criteria

All adolescent girls (girls between the ages of 10 – 19) in selected secondary schools in Makurdi, Benue State.

Exclusion Criteria

Adolescent girls who are sick and unfit to participate in the study.

Sample Size Determination

The minimum sample size was determined using the Cochran's sample size formula.

$n_0 = z^2pq/e^2$

where, n_0 = sample size,

z = selected critical value of desired confidence level i.e 95% which corresponds to 1.96

p = the proportion of the target population estimated to know about the HPV vaccine from a previous study = 0.693.[15]

q = 1-p = 1 – 0.693 = 0.307

e = desired level of precision = 0.05

$n = (1.96)^2 \times 0.693 \times 0.307/(0.05)^2$

$= 3.8416 \times 0.693 \times 0.307/0.0025$

$= 0.8173042416/0.0025$

$= 326.92$

Assuming a non-response rate (nf) of 10%. The minimum sample size was adjusted using the formula nf = n/1-f

Where nf = Adjusted sample size with assumption of 10% non-response rate

n = minimum sample size

f = Assumed non-response rate = 1 – 0.1

nf = 326.92/1-0.1

= 326.92/0.9

=363.24 = 363

Sampling Techniques

The study employed the multistage sampling technique.

First, the study area (Makurdi) was divided into the 11 wards: Agan, Ankpa/Wadata, Bar, Central/South Mission, Clerks/Market, Fiidi, Mbalagh, Modern Market, North Bank I, North Bank II, and Wailomayo wards.

Stage 1

Simple random sampling was used to select 4 wards from the 11 wards in Makurdi via balloting.

Stage 2

Five secondary schools were randomly selected via balloting from the 4 wards selected in stage 1.

Stage 3

Simple random sampling was used for this stage. In the selected schools, 3 classes were randomly selected from each school.

Stage 4

Systematic sampling was used for this stage. Proportionate allocation was used to determine how many respondents to recruit from each class. Thereafter, the total number of adolescent females in the class was divided by the number of respondents allocated to it. The resulting sampling interval was used to select the actual respondents from the register of students in the class until the sample size was filled.

Study Instruments

A structured interviewer-administered questionnaire was used. The questionnaire items were adapted from previous studies.[116,17,18] The information obtained included the sociodemographic status, knowledge, perception, and uptake of the HPV vaccine

Data Collection

Data collection was carried out in the selected secondary schools after obtaining permission from the school heads and informed consent from the respondents.

Data Analysis

Data was entered into Microsoft Excel and was analyzed using Statistical Package for Social Science (SPSS) version 25. Results were presented in tables. Each question was assigned 1 for yes and 0 for no, bringing the total to 10 for the knowledge section. The score was classified as good (score of 8 – 10), fair (score of 5 – 7), or poor (score of <5). The same scoring was used for perception, but classification was into good perception (score of 8-10), or poor perception (score of ≤7).

Ethical Considerations

Ethical clearance was obtained from the Research Ethics Committee of the Benue State University Teaching Hospital, Makurdi. After explaining the study's nature, goal, and methodology to the participants, those who satisfied the inclusion criteria were asked for their verbal informed consent.

RESULTS

The total number of respondents for the study was 363, resulting in a 100% response rate. Table 1 shows that 243(66.9%) of the respondents were between 13 and 16 years old, while 351 (96.7%) identified as Christians, and 269 (74.1%) belonged to the Tiv tribe. One hundred and thirty three (36.6%) confirmed that the main sources of information were school (36.6%) and 126 (34.7%) got their information from family or friends .

Table 2 shows that 247 (70.8%) had never heard of HPV. Only 60 (16.5%) respondents knew it is a virus, and 67 (18.5% knew it could be transmitted through sexual contact. Approximately four-fifths – 267 respondents (73.5%) - had not heard of the HPV vaccine, and only 29 (8%) of them knew that the vaccine could prevent cancer. Data on knowledge regarding the HPV vaccine showed that 137 (37.7%) of respondents had “Good Knowledge," while 226 (62.3%) had “Poor Knowledge", (Table 2). One hundred and thirty-eight (38.0%) perceived HPV as a serious health issue. Similarly, only 131 (36.1%) believed the HPV vaccine was necessary for preventing HPV-related diseases. Just 39 (10.7%) participants thought the vaccine was safe, and only 122 (33.6%) would recommend it to friends.

More than half - 214 (66.3%) respondents - had a good perception of HPV and the HPV vaccine, while the remaining participants held a poor perception (Table 3).

Table 4 shows that n343 (94.5%) respondents had never received the vaccine, citing reasons such as ignorance (198 -54.5%), fear of side effects (45-12.3%), and unavailability (327 - 90%). One hundred and sixty-six (45.7%) and 122 (33.6%) felt awareness campaigns and parental approval respectively will encourage HPV vaccine uptake.

Table 1. Socio-demographic Characteristics of the Respondents

Variables	Frequency (N=363)	Percentages (100.0%)
Age (years)		
10-12	72	19.8
13-16	243	66.9
17-19	48	13.2
Class		
JSS1	47	12.9
JSS2	37	10.2
JSS3	77	21.2
SS1	56	15.4
SS2	83	22.9
SS3	63	17.4
Religion		
Christianity	351	96.7
Islam	5	1.4
Others	7	1.98
Tribe		
Tiv	269	74.1
Idoma	31	8.5
Others	56	15.4
Primary Source of Information		
School	133	36.6
Internet	27	7.5
Healthcare Providers	77	21.2
Family/friends	126	34.7

Table 2. Knowledge of HPV Vaccine

Variables	Frequency, (N =363)	Percent (100.0%)
Ever Heard of Human Papilloma Virus?		
Yes	106	29.2
No	257	70.8
How Did You Hear? (N=106)		
School	54	14.9
Parents/guardians	32	8.8
Friends	4	1.1
Media (TV, Radio, Internet)	7	1.9
Healthcare Professionals	9	2.5
What do you know about HPV?		
It is a virus	60	16.5
It can be prevented	19	5.2
It causes cervical cancer	15	4.1
It is a sexually transmitted infection	19	5.2
It affects only women	32	8.8
I don't know	218	60.1
How is HPV transmitted?		
Sexual contact	67	18.5
Skin-to-skin contact	10	2.8
Sharing of towels	2	0.6
I don't know	284	78.2
What are the diseases caused by HPV?		
Cervical cancer	46	12.7
Genital warts	27	7.4
Malaria	4	1.1
I don't know	286	78.8
Have you heard of the HPV vaccine?		
Yes	96	26.4
No	267	73.5
If yes, how did you hear about HPV vaccine?		
School	42	11.6
Parents/guardians	14	3.9
Friends	2	0.6
Media(TV, Radio, Internet)	28	7.7
Healthcare workers	18	5.0
Others	7	1.9
N/A	250	68.9
What do you know about the vaccine?		
It prevents cervical cancer	29	8.0
It prevents HPV infection	46	12.7
It is for females only	43	11.8
I don't know	237	65.3
At what age is the vaccine typically recommended? (years)		
9-14	63	17.4
15-19	27	7.4
20-25	8	2.2
I don't know	265	73.0
Do you know how many doses of the HPV vaccine are required?		
One	10	2.8
Two	18	5.0
Three	3	0.8
I don't know	332	91.5
Have you received any information or education about the HPV vaccine in your school?		
Yes	47	12.9
No	316	87.1
Knowledge Score		
Good	137	37.7
Poor	226	62.3

Table 3.0: Perception of HPV and HPV Vaccine

Variable	Frequency, (N =363)	Percent (100.0%)
Do you think HPV is a serious health problem?		
Yes	138	38.0
No	20	5.5
Not sure	205	56.5
Do you think the HPV vaccine is necessary for preventing HPV related diseases?		
Yes	131	36.1
No	36	9.9
Not sure	196	54.0
How safe do you think the HPV vaccine is?		
Very safe	39	10.7
Somewhat safe	47	12.9
Not safe	15	4.1
Not sure	262	72.2
Would you recommend the HPV vaccine to your friend?		
Yes	122	33.6
No	66	18.2
Not sure	175	48.2
Do you believe getting vaccinated against HPV will protect you from related diseases?		
Yes	113	31.1
No	65	17.9
Not sure	185	51.0
Does peer influence play a role in your decision about HPV vaccine?		
Yes	111	30.5
No	252	69.4
Are you concerned about any side effects of the HPV vaccine?		
Yes	184	50.7
No	54	14.8
Not sure	125	34.4
Do you think HPV vaccination should be mandatory in schools?		
Yes	195	53.7
No	168	46.3
Do you think religious or cultural beliefs affect your view of the HPV vaccine?		
Yes	96	26.4
No	267	73.6
What is your overall attitude towards the HPV vaccine?		
Positive	301	82.9
Negative	62	17.1
Perception Score		
Good	214	66.3
Poor	149	33.7

Table 4. Uptake of HPV Vaccine

Variable	Frequency, N = (363)	Percent (100.0%)
Have you received the HPV vaccine?		
Yes	20	5.5
No	343	94.5
If yes, how many doses?		
One dose	12	3.3
Two doses	8	2.2
Why have you not received it?		
Lack of awareness	198	54.5
Fear of side effects	45	12.4
High cost	38	10.5
Parental disapproval	16	4.4
Vaccine not available	24	6.6
Others	42	11.5
Are the HPV vaccines generally available in your community?		
Yes	36	9.9
No	327	90.1
What would encourage you to take the HPV vaccine?		
Free vaccination programs	48	13.2
More information and awareness campaigns	166	45.7
Parental approval	122	33.6
School health programs	5	1.4
Peer influence	3	0.8
Others	19	5.2

DISCUSSION

This study revealed that the majority of the girls (62.3%) had poor knowledge of HPV which is similar to other studies done in Lagos, where 45.9% and 54.7% had poor knowledge of HPV and its vaccine, respectively[19] and Jos, Plateau State, where the knowledge of HPV and its vaccine among parents were only 1.60% and 1.62%, respectively.[20] This similarity likely indicates poor knowledge of HPV and its vaccine in both the Northern and Southern parts of the country, which translates to poor perception and uptake of the vaccine. In contrast, studies in China revealed that the majority (76.5%) of the participants had heard of HPV,[21] and similar studies in Poland revealed good knowledge among the university students (95.5%).[22]. This disparity in knowledge may be due to better awareness levels of the vaccine through educational interventions in these countries as compared to Nigeria. Also, the study done in Poland was among university students, who would naturally have more information compared to secondary school students.

About one third of the girls had a poor perception of HPV and its vaccine, which is similar to a study carried out in Oyo State where only 27% had a positive perception of HPV, cervical cancer, and the vaccine.[23] This poor perception of HPV and its vaccine may be due to a lack of awareness and fear of side effects of the vaccine.

The general uptake of the HPV vaccine was low (5.5%). This is similar to a finding of a study in Lagos with vaccine uptake of 4%.[24] This is in contrast to studies conducted in Kenya, which revealed 60.7% having received two doses of the vaccine[25] and Ethiopia, which showed 39.7%.[26] The higher proportion of vaccine uptake as seen in the study from Kenya may be due to better awareness about HPV and its vaccine.

Limitations

The biological age of some of the respondents could have affected the depth and scope of their understanding about HPV being probably too young. Findings from this study should factor in this fact in considering their acceptability.

CONCLUSION

The study revealed that the majority of the girls had poor knowledge of HPV and its vaccine, which was attributed to a lack of awareness and the unavailability of the vaccine. Also, the perception of the vaccine was poor, which was attributed to fear of side effects. Similarly, the uptake of the vaccine was low.

Recommendations

The knowledge and perception of HPV vaccine can be improved by the dissemination of information, education, and communication materials consistently, with secondary schools as the main target. Cultural and religious leaders also have a role to play in improving uptake as they serve as gatekeepers in their communities. The Nigerian government should ensure the availability and accessibility of the vaccines at the state and local government levels.

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