

Awareness and uptake of human papilloma virus vaccines among female secondary school students in Benin City, Nigeria

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Abstract

Background: There is no Government endorsed HPV vaccine immunisation program in Nigeria. The Vaccine has been available at the University of Benin Teaching Hospital (UBTH) in Benin City for more than 7 years.

Objectives: The aim was to evaluate awareness about HPV, the prevalence of HPV immunisation and its associated factors among the study population.

Methods: A cross-sectional study using interviewer-administered questionnaires among 215 females attending secondary schools in Benin city, Nigeria. Participants were selected using multi-stage stratified sampling. The primary outcome measure was HPV immunisation of the girls.

Results: The majority of the participants were between 14 to 18 years (58.6%). Almost all the participants (>97%) had not heard of HPV, HPV Vaccines and Cervical cancer. In addition, 2 (0.9%) persons correctly identified that the virus can be transmitted sexually while only 1 person (0.5%) had received the HPV vaccine. The respondents all agreed that they needed to be enlightened about HPV, HPV vaccines and Cervical cancer. Majority (49.3%) of the girls suggested that this could be done through the mass media (49.3%) or their parents (32.1%).

Conclusion: HPV immunisation, knowledge of HPV vaccines and Cervical cancer among the study population was very low. We recommend interventions in Schools to increase knowledge about cervical cancer and HPV vaccines.

Keywords: Human papilloma virus, vaccines, cervical cancer, Nigeria.

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Introduction

Cervical cancer is the most common HPV- associated cancers^{1,2}. Worldwide, there are about 500,000 new cases and 273,000 deaths from Cervical cancer yearly². Of the new cases, 80% occur in the developing countries like Nigeria and this proportion is expected to increase without any effective intervention. Previously, organised population based screening for premalignant disease of the cervix resulted in an 80% reduction in the incidence of cervical cancer in many developed countries where it was properly implemented³. However, this success could not be reproduced in many developing countries constrained by limited resources and other competing health needs.

Vaccines targeted against HPV types which cause Cervical cancer have recently become available in the last 10 years^{4,5}. The target population for immunisation with the vaccines are teenage girls from age 9 to 14 years, although it can be offered to young people up to the age of 26 years. The World Health Organisation in 2016 identified the HPV Vaccine as a public health priority which should be included into national immunisation programs⁶. A recent systematic review reported a 90% reduction in the prevalence of HPV infections after 10 years of administration of the HPV vaccines in an organised immunisation program⁷. However many developing countries where majority of cervical cancer cases still occur have not yet commenced population based mass immunisation programs against HPV infections. The high cost of the vaccines, weak health systems and absence of political will have been identified as barriers for implementing such programs^{5,8,9}.

Although HPV vaccines are licensed for use in Nigeria, there is no organised Government endorsed immunisation program. In our unit at the University of Benin

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Teaching Hospital in Edo state of Nigeria, the bivalent and quadrivalent HPV vaccines have been available for the last 7 years and are administered on request. Sensitisation workshops and demand generating advocacy activities for the vaccines are occasionally carried out by the public health unit of the Hospital. It has been estimated that while the average HPV vaccine coverage in developed countries was 33.6% of females aged 10–20 years, by contrast, only 2.7% of teenage females had been covered in less developed regions¹⁰.

An earlier published data from our unit reported a favourable 70% acceptance rate of the HPV vaccines for teenage daughters among women sampled in Benin city¹¹. This present study was therefore designed to evaluate the current level of awareness and the uptake of HPV vaccines and its associated factors among school age female children (the target population) in the immediate vicinity of UBTH 7 years after the vaccine became available. It is expected that the data from this study will provide relevant evidence that will facilitate the incorporation of the HPV vaccine into the National immunisation program in Nigeria.

Method

This was a cross-sectional study using multi-stage stratified random sampling technique that was conducted among Secondary Schools in Egor Local Government Area (LGA) Benin City, Edo state, Nigeria. The study was conducted from January to March 2016 at the Department of Obstetrics and Gynaecology UBTH which is located in Egor LGA. Ethical approval for the study was obtained from the ethics committee of the University of Benin Teaching Hospital and approval obtained from participating Schools.

Out of the 10 wards electoral wards in Egor LGA, 2 wards were picked by simple random sampling using a table of random numbers. In each of the selected wards, 2 secondary schools were also selected using a table of random numbers. A total of four schools were selected for the study. In each selected school, the sample population was evenly distributed in each of the classes from Junior Secondary School 1 to Senior Secondary School³. Using the class attendance register on the day of sampling, participants in each class were selected by

systemic sampling of every fourth child. Trained interviewers administered the questionnaire to the students.

Only participants whose parents gave consent to participate in the study and were present in school on the day of the interview were recruited. Students whose parents didn't provide consent or were absent in school on the day of sampling were excluded. The primary outcome measure was uptake (receipt) of HPV vaccination by the girls. Other variables of interest included their knowledge of cervical cancer, how HPV is transmitted, and awareness about HPV vaccines. Their socio-demographic characteristics and sources of their information about HPV vaccine were also explored. Social class stratification was done as previously described in a previous study by Olusanya et al¹².

Using the formula for calculating sample size in a cross sectional study¹³, a minimum sample size of 160 participants was calculated for this study at 95% confidence interval and a 10% projected uptake of the HPV vaccine. 220 questionnaires were subsequently administered to respondents for this study with 55 students from each school and 9 from each class.

Statistical analysis was performed with the Statistical Package for the Social Sciences (IBM SPSS Statistics for Windows, Version 20.0. Armonk, NY: IBM Corp). Results were aggregated and presented as whole numbers with frequencies and percentages. Categorical variables were compared using Chi-square test or Fisher's exact test where appropriate while continuous variables was compared using the t test. Observational variables were considered significant if the P-value is less than 0.05.

Results

Out 1490 eligible students in the selected secondary schools, 10 were excluded because their parents did not provide consent for the interview. Of the 220 questionnaires administered (55 in each school), 215 (97.7%) were considered sufficiently completed for analysis. The socio-demographic characteristics of the respondents are presented in Table 1. The mean age was 14.3 years and it ranged from 9 to 20 years. Majority of the participants were between 14 to 18 years (58.6%) and in Social class 2 (53%).

Table 1: Socio-demographic characteristics of the sample population

Variable	Frequency (N=215)	Percentage (%)
Mean age ($\bar{x} \pm SD$)	14.3 \pm 2.69	
Age group (years)		
9 – 13	86	40.0
14 – 18	126	58.6
=19	3	1.4
Class in school		
JSS1	29	13.5
JSS2	31	14.4
JSS3	47	21.9
SSS1	29	13.5
SSS2	42	19.5
SSS3	37	17.2
Social Class		
1	30	14.9
2	114	53.0
3	55	25.6
4	11	5.1
5	5	2.3

*JSS- Junior Secondary School, **SSS- Senior Secondary School

In Table 2, questions evaluating awareness of the respondents about HPV, HPV vaccines and Cervical cancer is presented. Almost all the participants had neither heard of HPV, HPV Vaccines and Cervical cancer before. In addition, out of 215 respondents, 2 (0.9%)

persons correctly identified that the virus is transmitted sexually while only 1 person (0.5%) had received the vaccine at the time of the interview. Among those who have heard of HPV and its vaccine before, their parents were identified as the source of information.

Table 2: Awareness about HPV, HPV vaccine and cervical cancer

Variable	Frequency (N=215)	Percentage (%)
Ever heard of HPV before		
Yes	2	0.9
No	213	99.1
Is HPV infection transmitted		
Sexually? Yes	2	0.9
No	213	99.1
Ever heard of HPV vaccine		
Yes	2	0.9
No	213	99.1
Aware of cervical cancer?		
Yes	5	2.33
No	210	97.67
Received HPV vaccine?		
Yes	1	0.5
No	214	99.5
Source of Information on Vaccine		
Parent	2	0.9

A comparison of participants who had received the HPV vaccine and those who had not is presented in Table 3. There was no significant difference between both sub-groups in terms of age, class in school and social class.

The respondents all agreed that they needed to be en-

lightened about HPV, HPV vaccines and Cervical cancer. Most of the girls 106 (49.3%) suggested that this should be done through the mass media, 69 (32.1%) would want their parents to be their source of information, 13 (6%) suggested non-governmental agencies while 10 (4.7%) wanted the information provided as part of their school curriculum.

Table 3: Correlates of HPV vaccine uptake

Variable	Received HPV		P. value
	Yes N (%)	No N (%)	
Mean age	16.5 ± 0	14.07 ± 2.57	0.754
Age group			
9 – 13	0 (0.0)	86 (40.2)	1.000
14 – 18	1 (100.0)	125 (58.4)	
>19	0 (0.0)	3 (1.4)	
Class in school			
JSS1	0 (0.0)	29 (13.6)	0.781
JSS2	0 (0.0)	31 (14.5)	
JSS3	0 (0.0)	47 (22.0)	
SSS1	0 (0.0)	29 (13.6)	
SSS2	1 (100.0)	41 (19.2)	
SSS3	0 (0.0)	37 (17.3)	
Social Class			
1	0 (0.0)	30 (14.0)	1.000
2	1 (100.0)	113 (52.8)	
3	0 (0.0)	55 (25.7)	
4	0 (0.0)	11 (5.1)	
5	0 (0.0)	5 (2.3)	

Discussion

The purpose of this study was to evaluate the current level of awareness about HPV, Cervical cancer, assess the uptake of HPV vaccines and its associated factors among school age female children in the immediate vicinity of UBTH. The results indicate that there is a low level of awareness about HPV, Cervical cancer and HPV vaccines. In addition, the number of female teenage school children who had received the vaccines was also very low. This suggests that additional interventions may be required to improve HPV vaccine coverage beyond making it available in Health facilities with occasional sensitisation workshops.

The HPV vaccine uptake in this study was 0.5%. This rather low level of uptake is comparable to a recent report that estimated the coverage of the vaccines among

teenagers in developing countries to be 2.7% compared to 33.6% in developed countries¹⁰. Also, data from Qlikview Total Private Market, IMS units data (Nov 2014) on HPV vaccine sales in the first 5 years of its introduction into South Africa (December 2009 to November 2014) reported a coverage of 0.2%. Published data, including a recent systematic review of HPV vaccine acceptability in Africa reported that low coverage may be explained by poor awareness about the vaccines, knowledge and attitude of health workers, lack of political will by the Government and issues related to the cost of the vaccines^{14,15}.

Therefore, a high level of parental acceptability of HPV vaccines as reported from many parts of Africa may not necessarily translate to high vaccine uptake for their teenage daughters^{11,15}. In 2014, South Africa

launched a school based HPV immunisation program, initial reports suggest the program coverage target of 70% has been exceeded¹⁶. Furthermore, in Rwanda, Australia and the United Kingdom, school-based HPV immunisation program have achieved coverage rates of more than 70% in contrast to the less than 35% coverage recorded in primary health care facility-based programmes in the US^{14,15,17}.

Since the HPV vaccines primarily target females (9 to 26 years) who are still likely to be in school, a school based immunisation program instead of health facility based programs may be more effective. This is not yet available in Nigeria. Clearly, from our results, vaccine provision in UBTH with opportunistic sensitisation programs has not translated into a high uptake of the vaccine in the Hospital's immediate community. This is despite previous studies reporting that majority of mothers were willing to accept the vaccines for their children in order to prevent cervical cancer. HPV immunisation programs for cervical cancer control should include knowledge and awareness 'demand generating' interventions among stakeholders along with vaccine provision. The low level of knowledge on HPV, Cervical cancer and HPV vaccines in study may represent an important impediment to high vaccine uptake.

Our study has some limitations. It was based on the ability of the students to accurately recall if they had received the HPV vaccines. This may be prone to recall bias, particularly for the younger students in Junior Secondary Schools. To limit its effect, the study made use of trained interviewers to explore this information from the students. In the absence of an organised population based screening program with verifiable database for monitoring, obtaining HPV immunisation status of children remains a challenge. Future studies may involve parental interviews as a means of validating the responses of the students.

Conclusion

This population had very low HPV immunisation rates. In addition, knowledge about HPV, HPV Vaccines and Cervical cancer was also poor. This represents a challenge to the control of cervical cancer. We recommend that targeted programs in Secondary Schools are necessary to increase knowledge on cervical cancer, HPV and HPV vaccines.

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