Original Article

Awareness and attitude of female undergraduates toward human papillomavirus vaccine in Ibadan

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ABSTRACT

Introduction: The human papillomavirus (HPV) has significant public health importance because of its high prevalence, mode of transmission, major causative role in cervical cancer, and having effective vaccines. The main thrust of this study was to ascertain the level of awareness of HPV and its vaccines among students as well as their attitudes toward receiving the vaccines.

Materials and Methods: A descriptive cross-sectional survey conducted among female undergraduates of the University of Ibadan using structured self-administered questionnaires. The questionnaires sought to obtain information about their awareness of HPV, their sexual behavior, previous vaccination, and willingness to access HPV vaccination.

Results: A total of 489 students, with a mean age of 19.7 ± 3.2 years, satisfactorily responded to the survey. Overall, 411 (84%) had an overall good knowledge about vaccines, 218 (44.6%) recalled that they had been previously vaccinated in childhood, and 147 (30.1%) were aware of HPV. Only 66 (13.5%) were aware of HPV vaccines, and 10 (2%) had ever been vaccinated against HPV. A majority were willing to get vaccinated if the current price is further reduced.

Conclusion: There is a low level of awareness of HPV and its vaccines among female undergraduates. When available, uptake is restricted by cost. There is an urgent need to support public health programs that increase awareness through adequate information dissemination on mechanisms of cancer prevention and also to strengthen policy efforts that address the barriers of HPV vaccination.

Key words: Awareness; cervical cancer; female students; human papillomavirus; vaccines.

Introduction

The relationship between cervical cancer and sexual behavior, though suspected for more than 100 years, was established by epidemiologic studies in the 1960s.[1] However, in the early 1980s, cervical cancer cells were demonstrated to contain the human papillomavirus (HPV) DNA, whereas epidemiologic studies showing a consistent association between HPV and cervical cancer were published in the 1990s.[1] Cervical cancer remains the disease of the developing world as most developed countries have made giant strides in curbing its occurrence.[2]

Infections with low-risk or non-oncogenic types of HPV, such as types 6 and 11, can cause benign or low-grade cervical cell abnormalities, genital warts, and laryngeal papilloma, whereas high-risk or oncogenic types act as carcinogens in the development of cervical cancer and other anogenital cancers.[3] HPV is transmitted through intimate skin-to-skin contact and can be contacted through the vaginal, anal/or oral

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routes of sexual activity with documented higher prevalence among those engaging in risky sexual behaviors.[3,4]

Over the years, vaccines have been employed as preventive measures against several infectious diseases and availability of such an approach to prevention of cervical cancer is of great benefit to the society. Three HPV vaccines are currently marketed internationally and include the bivalent, the quadrivalent, and the nonavalent HPV vaccine types. All the HPV vaccines are highly immunogenic with more than 99% of recipients developing an antibody response to HPV types included in the respective vaccines 1 month after completing the dose series.[3] Moreover, recent evidences are in favor of vaccination regardless of sexual activity or prior exposure to HPV.[5] Awareness of HPV, its vaccines, and cervical cancer screening has been propagated through several media, but studies among the generality of students and market women had been reported to be low[6-16] unlike studies conducted among health workers and medical students, which reported very high levels of awareness.[17,18] The extensive media education about HPV and the vaccines pre- and post-licensure of the quadrivalent vaccine positively affected the knowledge of women about HPV.[19]

The prevalence, mode of transmission, and availability of vaccines make HPV of significant public health interest,[20] necessitating a need to establish the awareness and accessibility of HPV vaccine in our environment. It has been documented that HPV vaccination in adolescence with continued cervical screening could ultimately lead to a 76% lifetime reduction in cervical cancer deaths and a 50% reduction in cervical screening abnormalities if high coverage of vaccination was achieved,[21,22] but accessibility and affordability have remained an important factor to be considered in facilitating uptake of the vaccines.[23,24] In a report by Hopenhayn *et al*., in 2007, having knowledge of risk factors for cervical cancer significantly predicted willingness to accept HPV vaccination.[25] In addition, other studies concluded that partner's approval, history of gynecological disease, and one's mother had experienced cancer, increased acceptance of HPV vaccination.[26,27] The main thrust of this study was to ascertain the level of awareness of HPV and its vaccines among female undergraduates and determine factors affecting their willingness to receive them.

Materials and Methods

This was a descriptive cross-sectional survey conducted among female undergraduates of the University of Ibadan using structured, self-administered questionnaires. The University of Ibadan was the first and is the largest University in Nigeria with catchment areas covering the entire country. The questionnaires, after pretesting and making necessary corrections, were distributed to consenting respondents in all the female undergraduate hostels in the University. The questionnaires were used to obtain information on the respondents' socio-demographic characteristics, awareness of cervical cancer and HPV, history of previous vaccination and their sexual behavior. Additional information was obtained on willingness to get vaccinated and factors affecting such decision.

Ethical approval was obtained from the Oyo State Ethics Committee, whereas informed consent was provided by the respondents. The rights of the participants to self-determination, anonymity, and confidentiality were ensured, and informed consent was obtained before interview. The data obtained were cleaned to ensure correctness and completeness. A statistical analysis was done using Statistical Package for Social Sciences version 23.0 (SPSS, IBM Inc). Frequency tables were generated for socio-demographic characteristics, whereas Chi-square test statistics was used to test for associations among the variables.

Results

A total of 489 students satisfactorily responded to the survey. Their biosocial characteristics and respective faculties were presented in Table 1. The mean age of the respondents was 19.3 ± 2.6 years ranging between 15 and 30 years, and although majority were unmarried, 67 (14.1%) had been sexually exposed. The mean age of sexual debut was 19 years, whereas 44.8% of those who are sexually active had multiple sexual partners. Overall, 147 (30.1%) of the respondents had ever heard about HPV, whereas only 66 (13.5%) were aware of a vaccine for HPV [Table 2]. The various sources of information on HPV were also shown in Table 2. However, 411 (84%) of the respondents had good knowledge about vaccines generally, and 218 (44.6%) had been previously vaccinated against other infectious diseases such as cerebrospinal meningitis whereas only 10 (2.0%) were ever vaccinated against HPV [Table 2].

Although only one-third of the respondents were ever aware of HPV, it was interesting to note that more than half, 269 (55.3%), were willing to receive HPV vaccines. For those not wanting to receive the vaccine, diverse reasons were provided ranging from being sexually inactive to being worried about its safety [Table 3]. Over a third of those who were not interested in getting the vaccines had no reasons. Table 4 demonstrated the relationship between cost and willingness to accept HPV vaccines and showed that more people will be willing to take the vaccine if the costs can be lowered.

Table 1: Socio-demographic characteristics of the participants

Variable	Frequency (*n*)	Percentage
Age group (years)		
<20	290	59.3
20-24	174	35.6
25-29	24	4.9
30 and above	1	0.2
The mean age: 19.3±2.6 years; Mode: 18 years		
Marital Status		
Single	487	99.6
Married	2	0.4
Year of study/Level		
1st/100	242	49.5
2nd/200	77	15.7
3rd/300	49	10.0
4th/400	89	18.2
5th/500	21	4.3
6th/600	11	2.3
Faculty		
Sciences	129	26.4
Agriculture and Fisheries	76	15.5
Art	61	12.5
Social Sciences	53	10.8
Education	49	10.0
Basic Medical Sciences	44	9.0
Law	30	6.1
Pharmacy	15	3.1
Public Health	15	3.1
Technology	11	2.2
Veterinary Medicine	6	1.2
Ever had sex		
Yes	67	14.1
No	422	85.9
Age at sexual debut (years)		
≤15	3	4.5
16-17	17	25.4
18-19	22	32.8
20-21	20	29.8
22 or later	5	7.5
Number of sexual partners		
1	37	55.2
2	18	26.9
3	6	8.9
4	2	3.0
More than 4	4	6.0
Ever had STI		
Yes	7	1.6
No	422	98.4

*STI, Sexually transmitted infection; SD, Standard Deviation

Discussion

This study revealed a low level of awareness of HPV and its vaccines among the female undergraduate students of the University of Ibadan. Studies conducted in Turkey showed a similar trend in which the level of awareness was found to be 24.1% of their study population.[15,28,29] Awareness of HPV, HPV vaccines, and cervical cancer screening has been propagated through mass media, parents, teachers, and visit to health care workers. It has been shown to be influenced by the age, society, and background of the individual; beliefs of parents, and according to Ojiyi *et al*., 28% of their respondents were aware of the vaccines through the mass media (radio, television, and journals).[30] Affecting relatively young women, cervical cancer is the largest single cause of years of life lost to cancer in the developing world.[31] The deaths of women who are in their most productive years have a devastating effect on the well-being of their families, resulting, for example., in decrease in school attendance and nutritional status among their children.[31]

Mass media is the most common source of information for our respondents, which is similar to findings from the Southeastern part of Nigeria.[17] However, there was an increased level of awareness found among 300 and 400 level students, which could be attributed to an impact of the compulsory General Studies course on Reproductive Health and Sexually Transmitted Infections piloted in their batch. In another study, a review done showed that there was a low level of knowledge of both cervical cancer and HPV vaccination among women of low and middle income countries.[32]

The mean age of sexual debut was 19 years that has been shown to be a period of high susceptibility of the transformation zone to colonization and as such a major risk factor in contracting HPV infection.[20] In another study conducted on the awareness and acceptability among 150 female medical students and health workers in a University Teaching Hospital in Eastern Nigeria, it was deduced that the awareness of HPV vaccine was 74%.[17] However, Hsu *et al*., in assessing the knowledge and beliefs about cervical cancer and HPV among Taiwanese undergraduate women, reported limited knowledge about cervical cancer and HPV,[27] whereas Perrotte *et al*., also reported a knowledge deficit about HPV and cervical cancer in some men and women in Grenada.[33]

The awareness of HPV vaccines among respondents of 13.5% is in contrast to 62.7% reported from the Southeastern part of Nigeria[17] in a study conducted among female health workers such that the higher level of awareness can be attributed to the profession and medical education. In a study done by Raika Durusoy *et al*., among 717 students of Ege University, in Izmir, Turkey, it was reported that 75.9% had never heard of HPV, 23.1% had little knowledge, and only 1.0% had good knowledge of HPV, whereas the awareness of HPV vaccines in the study population was equally very low.[34]

Table 2: Awareness of HPV and its vaccines

Variable	Frequency (*n*)	Percentage
Ever heard of HPV		
Yes	147	30.1
No	342	69.9
Sources of information		
Media	43	29.3
Internet	33	22.4
Health talks	18	12.2
Hospital visits	18	12.2
Family and friends	12	8.2
School lectures	22	15.0
Others	1	0.7
Ever had vaccines (any type aside childhood vaccines)		
Yes	218	44.6
No	271	55.4
Awareness of vaccines for HPV		
Yes	66	13.5
No	423	86.5
Ever had HPV vaccines		
Yes	10	2.0
No	479	98.0
Believe vaccines can prevent genital warts and cancer		
Yes	80	18.0
No	401	82.0
Aware HPV vaccines are available in Nigeria		
Yes	52	10.6
No	437	89.4

Table 3: Willingness to accept HPV vaccination and associated factors

Variable	Frequency (*n*)	Percentage
Willing to get vaccinated		
Yes	269	55.3
No	217	44.7
Reasons for not wanting to get the vaccines (217)		
I am not sexually active	51	23.5
I don't know how to get the vaccine	37	17.1
My doctor did not recommend it	16	7.4
I cannot get cervical cancer	12	5.5
I am worried about its safety	11	5.1
It is too expensive	4	1.8
I am too old to get it	3	1.4
No reason	83	38.2

A study conducted among South African female students revealed that although the level of acceptability of HPV vaccines is high, the awareness is low.[6] This study also compared with a Nigerian study that showed a low level of awareness among female undergraduates.[35] In a similar vein, an Indian study had reported that 75% of the study participants were willing to get vaccinated.[16] However, Malaysian university students showed relatively low (48%) acceptability of receiving HPV vaccination[36] probably because of their remarkably low level of awareness of HPV, HPV vaccines, and cervical cancer.[36] Other studies conducted among university students reported between 61% and 84% acceptability of HPV vaccination.[35,37]

Knowing that most students know the benefits of vaccination against many other infectious diseases, extrapolating from that, they feel it is okay to get other vaccines.

This finding is of particular public health significance as it exposes the need for institution of adequate preventive measures against cervical cancer and other HPV related infections. The attitude toward the HPV vaccines could not be adequately assessed as 86.5% of the respondents had never heard about the HPV vaccine. This showed a significant knowledge gap in information about the virus and poor vaccine coverage among other reasons. The cost of the vaccine is relatively high in our environment, being higher than the National minimum wage of the workers, and this positively contributed to the poor attitude toward the HPV vaccination. A similar view on the impact of cost on vaccination has been documented in a study from Canada, which found 91% of the respondents would get the vaccine if it was free, and 72% will get the vaccine if the price was set at 100 US dollars.[24]

The possibility of offering vaccination to young girls up to age 26 years regardless of sexual activity or prior exposure to HPV and even in situations when the patient tested positive for HPV DNA[5] gives a wide window for an adequate catch-up vaccination for this group of respondents. It follows, therefore, that adequate institutional support for public health programs that increase awareness through appropriate information dissemination will yield positive impact. Moreover, educating the populace on mechanisms of cancer prevention and at the same time strengthening efforts that eliminate the barriers to HPV vaccination will ensure reduction in the prevalence of anogenital cancers in our environment. HPV vaccination in adolescents with continued cervical screening could ultimately lead to a 76% lifetime reduction in cervical cancer deaths after many years, and a 50% reduction in cervical screening abnormalities if high coverage of vaccination was achieved.[22]

Conclusion

The awareness of HPV vaccines is low and where available, cost has restricted its uptake. These findings provide additional support to strengthening public health programs that increase awareness and also policy efforts that address the barriers of HPV vaccination.

Table 4: Relationship between cost and willingness to accept HPV vaccines

	With the current price of the vaccine, would you be willing to get it?		Total
Would you be interested in getting the HPV vaccines	YES	NO	
YES	78	230	308
NO	10	171	181
Total	88	401	489
OR=5.8; 95% CI=2.92-11.53			
	If you could get the HPV vaccines free or at a lower cost, would you want to be vaccinated?		**Total**
Would you be interested in getting the HPV vaccines	YES	NO	
YES	257	44	301
NO	56	132	188
Total	313	176	489
OR=13.77; 95% CI=8.80-21.53			

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Conflicts of interest

There are no conflicts of interest.

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