Tehran University of Medical Sciences

Journal of Nursing Practice Today

Nurs Pract Today. 2019; 6(1):34-40.

Original Article

Knowledge and acceptance of human papilloma virus vaccine among secondary school students in Queens Model Secondary School, Enugu, Nigeria

Chidinma-Egbichi Israel[1]*, Nkechi-Nnenna Ogbu[2], Justin-Agorye Ingwu[1], Arinze-Joyce Chinenye[1], Pauline-Chigwara Chikeme[1]

[1] Department of Nursing Sciences, Faculty of Health Sciences and Technology, University of Nigeria, Nsukka, Nigeria
[2] University of Nigeria Teaching Hospital, Ituku Ozalla, Enugu State, Nigeria

ARTICLE INFO

Received 26 September 2018
Revised 30 November 2018
Accepted 07 December 2018
ePublished 13 January 2019
Published 07 March 2019

Available online at:
http://npt.tums.ac.ir

Key words:
human papilloma virus;
knowledge and acceptance;
HPV vaccine;
cervical cancer

ABSTRACT

Background & Aim: Human Papilloma Virus (HPV) is a common sexually transmitted infection with high mortality rate though its prevention is now possible through vaccination. The study determined the knowledge and acceptance of HPV Vaccine among Secondary School students in Queens Model secondary school Enugu
Methods & Material: The study utilized a quantitative descriptive survey method. Sample size of 368 students was determined using the power analysis at 95% confidence interval and 5% error margin. Stratified sampling method including proportionate sampling was used to select respondents from different classes to ensure representativeness. Data was collected using questionnaire developed by the researchers with a reliability of 0.79 Cronbach alpha after pre-test and data was analyzed with the aid of SPSS version 20 using descriptive statistics of frequencies and percentages.
Results: Only 51(13.86%) of the respondents have heard of HPV vaccine. Majority 97.3% were willing to receive a vaccine that can prevent cervical cancer and 98.1% respondents agreed to recommend a vaccine that can prevent cervical cancer for others for fear of death and concern for their safety.
Conclusion: Health education on HPV vaccine should be made available to young girls to enable them take advantage of this service before the resumption of sexual activities.

Introduction

Human Papilloma Virus (HPV) is one of the commonest viral sexually transmitted infections in the world and is the leading cause of cervical cancer; which has a very high mortality rate. (1) Half of all women who die of cervical cancer live in just five countries – India, China, Brazil, Bangladesh and Nigeria, and Africa has been identified as the most dangerous place to be a woman with cervical cancer (2). HPV infection is a major health problem globally and in Nigeria (3). Cancer of the cervix uteri is the 4th most common cancer among women worldwide and (HPV) infection is now a well-established cause of cervical cancer with a growing evidence of HPV being a relevant factor in other anogenital cancers (anus, vulva, vagina and penis) as well as head and neck cancers (4).

Cancer of the cervix is a global public health issue and is the most common gynecological cancer worldwide (3). In view of the high burden of cervical cancer, prevention is a necessity. One way of prevention is through vaccination against oncogenic HPV, which are highly effective in adolescent girls and women especially if administered to them before they engage in sexual activity (1).

*Corresponding Author: Chidinma-Egbichi Israel, Postal Address: Department of Nursing Sciences, Faculy of Health Sciences and Technology, University of Nigeria, Nsukka, Nigeria. Email: chidinma.ogbonnaya@unn.edu.ng

Please cite this article as: Israel C.E, Ogbu N.N, Ingwu J.A, Chinenye A.J, Chikeme P.C. Knowledge and acceptance of human papilloma virus vaccine among secondary school students in Queens Model Secondary School, Enugu, Nigeria. Nurs Pract Today. 2019; 6(1):34-40

Thus women will benefit more if they are exposed to this vaccine at the adolescent age before the resumption of sexual activities.

Vaccines to prevent infection by high-risk oncogenic HPV types (16 and 18) and HPV types that cause anogenital warts (6 and 11) have been in use since 2006 and are most effective when administered before the onset of sexual activity (5). Adolescents 14 years or younger according to (1) now require just 2 doses for full protection, with an interval of at least 6 months and up to 12 or 15 months between doses. The centers for disease control and prevention further opined that HPV vaccine prevent most genital warts and most cases of cervical cancer, although it does not protect against all types that cause cervical cancer (6).

For the effectiveness of this preventive measure to be achieved, the intended recipients need to be knowledgeable about the vaccine and accept it as an important prevention strategy. The vaccine also needs to be available to the target group. Also, knowledge acquired via formal education may have a strong potential of influencing behavior, by either promoting or hindering acceptance, attitude and utilization (6). Some women become aware of the role of HPV in causing cervical cancer only after they are diagnosed with cervical cancer. This situation may have contributed to rising incidence of cervical cancer as (3), noted that incidence of cervical cancer has not decreased proportionate to its awareness campaign in the study. Hence, current guidelines prioritize adolescent girls as primary target group for HPV vaccination. In most sub-Saharan regions like Nigeria where cost is a main link to most deplorable health situation or problem, a single dose of HPV vaccine is worth twenty thousand and eight hundred naira (N20,800.00) about US 60 dollars and a girl child would need 2 doses over a period of 6 months according to WHO current guideline (7). British company- Glaxo Smithkline (GSK) through the Global Alliance for vaccines and Immunizations (GAVI) has made effort to ensure that the vaccines are available at subsidized costs to mitigate the challenge of non-affordability.

Furthermore, in a study carried out by (8) among Medical students in Southwest Nigeria, it was revealed that most respondents were aware of cervical cancer (95.4%), HPV (85.4%) and HPV vaccination (69.3%) and the most common source of information was school teaching. Good knowledge of cervical cancer, HPV and HPV vaccination was demonstrated by 51.8%, 67.1% and 21.1% respectively; only 39.6% fully accepted HPV vaccination. Inadequate information and high costs were the obstacles identified to receiving vaccine and recommending it to others. Older age and higher levels of study were significantly associated with good knowledge of HPV. Good knowledge of HPV and HPV vaccination respectively were significantly associated with full acceptance of vaccination (3).

Study investigated the knowledge and perception of human papilloma virus vaccine among antenatal women at the University of Abuja Teaching Hospital. The findings showed that only 23 (9.0%) out of the total respondents had heard about HPV infection. In the same vein, 20 (7.8%) had knowledge about HPV vaccine and among the respondents who had the knowledge of HPV and vaccination, 18.2% and 23. 4% of the respondents had secondary and tertiary levels of education respectively. Majority, 160 (62.8%) accepted that the vaccines could be administered to their teenage girls. From the findings the awareness of cervical cancer, HPV infections and HPV vaccines is low among antenatal clinic attendees in Gwagwalada, Abuja, although majority of them would want their girls to be vaccinated against HPV infection.

Although there have been studies to determine the knowledge and acceptance of HPV Vaccine globally and in Nigeria, it is worthy of note that there are variations in findings across different localities and with respect to the population of study. In addition, previously some of the studies focused on either on undergraduates or antenatal clinic attendees. Considering the

fact that administration of the vaccine in the adolescent years is a step towards reducing the menace of cervical cancer, more health education and public awareness campaigns are continuously being recommended among adolescents.

As a result, different groups have inculcated outreaches in secondary schools in order to reach the adolescents. In addition, following the subsidization in the cost of vaccines to ensure accessibility, it therefore becomes necessary to determine the knowledge and acceptability of HPV virus vaccine among secondary school students of Queens secondary school Enugu. Specifically, the study sought to determine knowledge of HPV vaccine, its acceptance and willingness to recommend the vaccine to others.

Methods

A cross sectional descriptive survey method was used for the study. The area of study was the Queen's Secondary School, Enugu; a model Secondary School founded by missionaries in the early 1960's. The target population was 1803 secondary students enrolled in the school at the time of the study. A sample size of 384 was determined using the power analysis at 95% confidence interval and 5% error margin. Proportionate sampling was used to select respondents from different classes (JS1-SS3) to ensure representativeness. Instrument for data collection was a structured questionnaire developed by the researchers based on extensive literature search on knowledge and acceptance of HPV vaccines. The questionnaire has 2 sections with "Section A" containing bio data and Section B containing questions on knowledge of HPV vaccine, acceptance of HPV vaccine. Face and content validity were carried out after which appropriate corrections were effected.

A pretest study was conducted using 38 copies of questionnaire which was 10% of the sample size. These were distributed among secondary students in new layout secondary school. The data collected were subjected to reliability analysis and it yielded a Cronbach alpha coefficient value of 0.79 indicating that the instrument is reliable. Ethical clearance was obtained from health research ethics committee of University of Nigeria Teaching Hospital, Ituku Ozalla Enugu State. A formal approval to carry out the study was obtained and informed consent was gotten from the respondents before administering the instrument. The purpose of the study was explained to the respondents and their consent and cooperation was solicited in filling questionnaire. The respondents were assured that information given will be treated with utmost confidentiality and areas that were not clear were explained to the respondent.

The questionnaire was administered by the researchers and two assistants after being trained on how to administer the questionnaire. The questionnaire was administered in the classes and school premises for two days. Item by item analysis using simple descriptive analysis was carried out and frequency and percentages of various categories of data generated from the research instrument. The result of the data analysis was presented in tables. All analysis was done with the aid of Microsoft Excel version 2016 and SPSS version 20.

Results

Of the 384 questionnaires administered 368 were returned and completed filled.

The result on table 1 shows the demographic distribution of the respondents. Majority (43.5%) of the respondents were between the age ranges of 10-14, mean age of respondents was 15.9 years and a standard deviation of 3.9 and students in J S-2 and JS 3 represented the majority of respondents (46.4%). Most of the respondents belonged to families with sizes of 6 and above (59.5%) and Christians (98.9%) and Civil servants (59%). Educational status of most of the respondents' parents is secondary (81.1%).

Table 1. Demographic distribution of the respondents (N=368)

Demographic variable	Category	N	%
Age(in years) **Mean =15.93** **S.D. =3.9**	10-14 15-19 20-24	160 127 81	43.5 34.5 22.0
Class	J.S.1 J.S-2 J.S. 3 S.S.1 S.S.2 S.S. 3	40 85 86 30 59 68	10.9 23.1 23.3 8.2 16.0 18.5
Family size	2-4 4-6 6 and above	75 76 219	20 21.5 59.5
Educational status of parents	None Primary Secondary tertiary	2 8 300 59	0.5 2.1 81.1 16.3
Religion	Christianity Muslim	364 4	98.9 1.1
Parent's occupation	Civil servant Self employed	218 149	59.5 40.5

Table 2. Knowledge of HPV vaccine among young girls in Queen's secondary school, Enugu

Variable	Category	N	%
Have heard of HPV vaccine (N= 368)	Yes No	51 317	13.86 97.8
Have heard of cancer	Yes No	368 -	100 -
Knowledge of what HPV vaccine is used for (multiple choice) (N= 51)	Prevention of HPV infection Prevention of cervical cancer Prevention of genital warts Treatment of AIDS	45 12 50 31	88.2 23.5 98.0 60.8
Knowledge of the Age group that can receive the HPV vaccine (N= 51)	1-8years 9–26 years 26-44 years 44 and above	6 40 2 3	11.8 78.4 3.9 5.9
Knowledge of side effects of HPV vaccination (multiple choice) (N= 51)	Abnormal vaginal bleeding Fever Abdominal pain Weakness Headache Weight loss	49 37 39 51 36 22	96.0 72.5 76.4 100 70.5 43.1
Friend received HPV vaccination (N=368)	Yes No	43 325	11.7 88.3

Table 2 showed the knowledge of the respondents toward HPV vaccine. Majority (97.8%) of the respondents had no knowledge of what HPV vaccine is. Only 2.2% are aware. All the respondents have heard about cancer. Even the few (2.2%) that are aware of HPV vaccine did not demonstrate in depth knowledge of HPV vaccine as only 12 (23.5%) identified its use in prevention of cervical cancer. Most of the respondents that claimed knowledge of HPV vaccine identified 9-26 years (10.9%) as the age group that could receive the vaccine. Abdominal pain (100%) and Abnormal vaginal discharge (96%) was identified as the leading side effect of HPV vaccination by the respondents, further showing poor knowledge of the vaccine. 43 (11.7%) of the respondents have had a friend/relative receive the vaccine.

Table 3 shows the acceptance of the respondents toward HPV vaccine. Data collected showed that most of the girls (97.3%) agreed to accept fully a vaccine that could prevent cervical cancer. It is noteworthy that all respondents have heard of cervical cancer (100%). Majority cited fear of cervical cancer and HPV infection as the main reason (95.1% and 95.4% respectively). However, most of the respondents that rejected the vaccine expressed doubt for the safety of the vaccine. Majority of the girls supported vaccination for other girls (95%).

Table 3. The acceptance of HPV vaccine among young girls (N= 368)

Category	Variable	N	%
Accept to receive a vaccine that can prevent cervical cancer	Yes	358	97.3
	No	10	2.7
Grade of acceptance	Full acceptance	357	97
	Partial	11	3
Why accept to be vaccinated	Self-benefit	321	87.2
	Fear of cervical cancer/genital warts	350	95.1
	Fear of future potential HPV infection	351	95.4
	Fear of being infected	357	97
Why reject HPV vaccination (N=10)	Believe in low self-risk of cervical cancer	10	2.7
	Doubt of the safety of vaccine	10	100
	Doubt of efficacy of vaccine	5	50
	Doubt of manufacturer of vaccine	9	90
	High price of vaccine	1	10
Support vaccination of other adolescent girls (N=368)	Yes	350	95.1
	No	18	4.9

Table 4. Telling others about HPV vaccine (N= 368)

Variable	Category	N	%
Telling friends and others about this vaccine	Yes	361	98.1
	No	7	1.9
Why they will recommend the vaccine for others	Concern for their safety	328	89.1
	Fear of their death	350	95.1
	Indifference	17	4.6
Why they will not recommend the vaccine for others	Cost	2	0.5
	No reason	1	1.9
	Doubt of manufacturer/efficacy	5	1.4
	Lack of information	7	1.9

Table 4, show whether the respondents will recommend HPV vaccine to others. Majority of the respondents (98.1%) agreed to tell others about the vaccine. Fear of death and concern for safety were the main reasons they presented (95.1% and 89.1% respectively as the motivation for recommending the vaccine. Conversely, Lack of information was the main reason pointed out for not recommending the vaccine to others. Cost (0.5%) and doubt of manufacturer efficacy (1.4%) were other reasons for unwillingness to recommend the vaccine for others.

Discussion

Majority (97.8%) of the respondents had no knowledge of what HPV vaccine is. Only 2.2% had knowledge of HPV vaccine among the respondents. However, most of the respondents that are aware of what HPV vaccine is also are aware that it is used for the prevention of HPV infection (12.2%) and genital warts (14.4%). Only 3.3% are aware that it is used in preventing cervical cancer. These findings correspond with the findings in (9) where college students aged 18-22 years in china were found to have low knowledge of the illness which resulted in poor attitude towards HPV vaccine uptake. In the studies by Akanbi et al (10) and Hussain et al (11), only 27.1% were aware that there is an HPV vaccine and 18.5% knew that HPV causes cervical cancer and that vaccines were for the prevention of cervical cancer. Similarly, the general low level of knowledge of this vaccine in these settings could be related to the similar socio-economic situations in these areas. None of the studies carried out in western countries showed this level of lack of knowledge. This could be as a result of better Medical insurance companies to cover the cost of most vaccines that are not available in most third worlds, Nigeria inclusive. Challenges pertaining to introduction of the vaccine also exist especially for young people within the valid age for HPV vaccination. Corresponding proactive education and governmental subsidy to do so are urgently needed by this age-group population.

Most of the girls (97.3%) agreed to accept fully a vaccine that could prevent cervical cancer. This may mean that once they are knowledgeable about the vaccine they will accept to be vaccinated. Majority cited fear of cervical cancer and HPV infection as their main reason (95.1% and 95.4% respectively). Majority of the girls supported vaccination for other girls (95%). Most of the respondents that rejected the vaccine in the current study expressed doubt for the safety of the vaccine and belief of low self-risk of cervical cancer. This corresponds with the findings of Wang et al (9) and Haesebaert et al (12) who found out that undergraduates with vaccination experience outside the National expanded programme on Immunization or with fear of HPV-related diseases were more willing to accept HPV vaccination. The main barrier to acceptance was concern about possible side effects (54.9%). Side effects and safety were the major concerns (71.05%) for college students aged 18-22 years to wider acceptance of the HPV vaccine.

Majority of the respondents (98.1%) were willing to tell others about the vaccine. Fear of death (95.1%) and concern for safety (89.1%) were the main reasons they presented. Conversely, cost (0.5%) and Doubt of manufacturer efficacy (1.4%) were pointed out also as reasons for unwillingness to recommend the vaccine for others. In the study by Haesebaert et al (12), despite the poor knowledge of their respondents, those who expressed a willingness to be vaccinated were more likely to recommend HPV vaccination for preadolescent girls. Lack of information was the main reason for not recommending the vaccines by their respondents and the study suggested an urgent need to bridge this information gap.

The descriptive results of major findings on knowledge and acceptance of HPV vaccination among secondary students in Enugu presented above indicated that secondary students, who hold the promise for effectively stemming the tide of cervical cancer menace, have poor knowledge of the vaccine despite their willingness to accept the vaccine. However, early vaccine exposure is preferred and including this knowledge in their curricula is advocated for. Based on the findings, it was recommended that the federal government should include this vaccine in the regular immunization schedule which will increase its availability and lessen its cost. Young and adolescent girls should be properly educated on HPV, its vaccination and cervical cancer at every available means, reproductive health (Healthy living) education should be integrated in primary and secondary institutions curriculum to

propagate well informed issues on abortion and human sexuality, proper and adequate education on vaccines, cervical cancer and its prevention as deaths from cervical cancer should be increased. Nurses and other stakeholders in health should carry out periodic outreach programs in order to curb the menace of ignorance and lack of access to the vaccine. There is also a need to improve family health education services at the grass root.

Acknowledgement

Authors will want to appreciate the statistician for his support in the data analysis.

Conflicts of Interest

The authors declare that there are no conflicts of interest regarding the publication of this paper.

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