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Willingness to Continue Human Papilloma Vaccination by Self, Following a Free First Dose Vaccination Program in Low Resource Community

Authors

**Uzoma Maryrose Agwu¹, Johnson Akuma Obuna², Paul Olisaemeka Ezeonu³
Chinonyelum Thecla Ezeonu⁴, Nnamdi Benson Onyire⁵
Robinson Chukwudi Onoh⁶, Chuma Conrad Egbuji⁷**

^{1,2,3,6,7} Obstetrics and Gynaecology Department, Federal Teaching Hospital, Abakaliki, Ebonyi State

^{4,5} Paediatrics Department, Federal Teaching Hospital, Abakaliki, Ebonyi State

E-mail: olisaemekapaulo@yahoo.com; dnohrc@gmail.com,

chuma57@yahoo.com; obuna2003@yahoo.com, nnamdionyeri@yahoo.com; ctezeonu@yahoo.com

Corresponding Author

Dr Uzoma Maryrose Agwu

Obstetrics and Gynaecology Department, Federal Teaching Hospital, Abakaliki, Ebonyi State

E-mail: vehgorsafeway@yahoo.com. Phone number +2348033037685

Abstract

Vaccination against the Human Papillomavirus has resulted in reduction in the incidence among those who have received the vaccine. The Vaccines is however expensive and may be an impediment to inclusion in immunization schedule. This will necessitate an off pocket purchase if girls are to receive the vaccine. This study assesses the willingness to pay and complete the remaining doses following a free first dose HPV vaccination programme. A questionnaire was distributed to all the mothers, father, relatives who brought their girls for vaccination during a free vaccination of one thousand Young girls at the Federal Teaching Hospital on the 22nd to the 25th of May 2012. Data was analyzed using Epi-info 2008 version 3.5.3 (Atlanta Georgia USA). A total of 299 adults participated. Of this, 29/299 (9.7%) were Fathers, 125/299 (41.8%) were Mother, 59/299(19.7%) were other relatives. The rest were teachers, neighbours or chairperson of local Government areas. A total of 230/299(76.9%) participants indicated the willingness to pay for the next dose of the HPV vaccine if the Federal government was unable to provide the remaining doses free of charge. There is remarkable willingness to pay for the next doses of Human Papillomavirus vaccine despite the cost.

Key words: Human Papilloma Virus, Willingness to Pay, Vaccines

INTRODUCTION

Human Papillomavirus (HPV) has been proven to be an aetiological agent of cervical cancer[1] and

its prevalence has been estimated to be 24% in Sub-Saharan Africa across all ages[2]. An

epidemiological study of HPV prevalence in South Africa, Ghana and Nigeria shows the combined incidence of HPV 16 and 18 infections in invasive cervical cancer cases to be 68.4% [3]. HPV virus is transmitted by sexual intercourse or coming in skin to skin with those who are infected. Therefore completely avoiding contact of the areas of the body that can become infected with HPV (like the mouth, anus, and genitals) with those of another person may be the only way to keep from becoming infected with HPV. This means not having vaginal, oral, or anal sex, but it also means not allowing those areas to come in contact with someone else's skin. For those who are young or haven't started having sexual intercourse or have not yet been infected with HPV, getting the three doses of HPV vaccine can prevent some types of HPV infection. Vaccination against this virus has resulted in reduction in the incidence among those who have received the vaccine [4-6]. Widespread uptake of Human Papillomavirus (HPV) vaccine has the potential to prevent the majority of cervical cancer cases [1]. Recent trials demonstrated that prophylactic vaccination also protects against anogenital HPV infection, ano-genital intraepithelial lesions and warts associated with vaccine types, in males; and anal HPV infection and anal intraepithelial neoplasia in men sex men (MSM) [6].

As cervical cancer disproportionately affects minority, rural, and low income women [7], vaccination is particularly important for these groups. Presently there are 2 vaccines available

Gardasil® (approved in 2006) [8] and Cervarix® (approved in 2009) [9], These vaccines prevent the 2 types of HPV (HPV-16 and HPV-18) that cause more than $\frac{3}{4}$ of all cervical cancers. Gardasil also prevents the 2 types of HPV (HPV-6 and HPV-11) that cause 90% of all genital warts. Both vaccines may also provide some protection against some high-risk types of HPV besides 16 and 18. These vaccines are already in use in many places especially in developed countries and technology for their production is known [7]. In Nigeria, even though hospital based data, cervical cancer has recently emerged as the most common type of cancer in women [10], and there are few screening programs for cervical cancer despite the availability of National guidelines. Studies have shown that HPV vaccination may be cost-effective in cervical cancer prevention depending on vaccination costs [11]. Given that current HPV vaccines are expensive and public health funding for supporting this is limited, a rapid introduction of the vaccine, commencing, expanding and sustaining access to the HPV vaccine may require alternative financing mechanisms, such as fee-based immunization services [11]. Any country that wishes to introduce the HPV Vaccine into its cervical cancer preventive strategies, must take into consideration the cost of the vaccine, willingness to pay, budgetary impact and program implications [12]. This study assesses the willingness to pay and complete the remaining doses following a free first HPV vaccination programme that took place in Abakaliki, Ebonyi

State, Nigeria between May 2012 and October 2012.

MATERIALS AND METHOD

Study Setting

The study is a cross-sectional study carried out in Federal Teaching Hospital, Ebonyi State, Nigeria. The Federal Teaching Hospital came into existence in December 23, 2011 following a merging of the former Ebonyi State University Teaching Hospital and Federal Medical Centre, Abakaliki by the Federal Government. Ebonyi State is a mainland south-eastern state of Nigeria, inhabited and populated primarily by the Igbo of south-eastern Nigeria. Its capital and largest city is Abakaliki. Ebonyi was created from the old Abakaliki division of Enugu State and old Afikpo division of Abia State. It has Area 5,533km²(2,136sq miles). It has a total population (2006 Census) of 2,176,947 out of which females are 77,165[13].

Data Collection

A questionnaire was distributed to all the mothers, father, relatives who brought their girls for vaccination during a free vaccination of one thousand Young girls at the Federal Teaching Hospital on the 22nd to the 25th of May 2012. The vaccination programme was organized by the Federal Teaching Hospital's Cancer screening Unit (now Well Women Centre) in collaboration with Medical Women's Association of Nigeria, Ebonyi State Chapter. The programme was well

advertized using the communication media (radio and television) and announced in churches. Two banners were put up at the entrance of the host hospital. Text messages (SMS) were also sent to phone numbers of women who participated in church outreach programmes organized by the medical Women association of Nigeria. During the outreach programmes, information about the cost of the vaccines were included in the presentations. But this was not included in the radio and Television programmes. The Institutional Review Board at the Federal Teaching Hospital approved the study. Approval Number is:FETHA/REC/VOL1/2012/090.

All participants were provided with a pamphlet detailing information on cervical cancer and its relationship to Human Papillomavirus. They were also given pamphlets containing information of the Human Papillomavirus and information on the vaccines available for its prevention. The potential benefits and side effects and cost of completing three doses, which was about N18, 000 (\$112.5 US Dollars) at the time of the study. The accompanying person was also made to sign informed consent form on behalf of the child/children after health information was given and assent was also obtained from the children. The Vaccine use for the programme was Cervarix, It was provided by the Federal Ministry of Health, Nigeria free of any charges. At the time of the study the first dose was released with a promise that the rest of the vaccine will be released in batches. Bearing in mind that this programme

could be interrupted by bureaucracy, room was made to accommodate the possibility of inability of Government to provide the remaining vaccine since the vaccination is given in three specific stages. This informed this study.

The questionnaire consists of both open and closed questions and administered by well-trained interviewers. The questionnaire was designed to include: demographic data of participants which includes age, number of children and religion. Other questions include whether they have heard of the Human Papillomavirus; from where the information was gotten; if they have heard of Human Papillomavirus Vaccine and the source of the information; where they heard of the vaccination programme and why they wanted their child/children vaccinated. They were asked if the vaccine was no more free, if they were willing to complete the doses by themselves, given that the vaccine cost about N6000 (\$37.5) per dose. They were asked to write down how they feel on the day of the vaccination. After the vaccination programme, another group of research assistants enquired from the participants what they feel about the vaccination programme, how we can improve vaccine delivery and what they like about the vaccination programme.

Data analysis

Data was analyzed using Epiinfo 2008 version 3.5.3 (Atlanta Georgia USA). The questionnaire was created in the Make-view component of the statistical package and data entered into the Enter

date section and analysis under taken in the Analyze section. Descriptive statistics were used to evaluate participants' response and represented in simple frequency table. Chi square was used to analysis relationship to child and willingness to pay for the vaccine.

RESULTS

A total of 299 adults participated. They were relatives to young girls aged 9 to 18 years. The median age for the respondents was 37.15 years (range, 32–72 years). Of this, 29/299 (9.7%) were Fathers, 125/299 (41.8%) were Mothers, 59/299(19.7%) were other relatives. The rest (84/299; 28.1%) were teachers, neighbours or chairpersons of local government areas. Two of the respondents did not indicate relationship with child. The average number of children had by the respondents was 3.8 (SD 1.9). Parity ranged 1 to 12 and Median being 4.

A total of 292(292/299; 97.7% CI: 95.2%;99.1%) were Christian and the rest 7 (7/299; 2.3% CI: 0.9;4.8) were muslims. A total of 65.1% (195/299) have heard of HPV while 31.1% (93/299) never heard of the Human Papillomavirus. Eleven (11) of the respondents did not provide information about their knowledge of the HPV.

A total of 230/299(76.9%) participants indicated the willingness to pay for the next dose of the HPV vaccine if the federal government was unable to provide the remaining doses free of charge. This increased to 86% when the price was

halved. There was statistically difference between the willing to pay for the remaining doses and relationship to child.

Majority of those who were not willing to pay for the vaccine said that it is the responsibility of the Government to vaccinate their children and quite a number said it was too costly.

Some of the reasons given for wanting to vaccinate their daughter include but not limited to eagerness to protect their daughters from cervical cancer, because they were told the vaccines were free, anything health workers say is good for

health is important, that it is received. Quite a number have no idea why they were vaccinating their daughters. Majority, about ninety one percent (91.3% 273/299) were willing to pass the information acquired during the programme to others.

The highest source of the knowledge of Human Papillomavirus was through Radio (table 2) followed by The Television programme. The Radio was the highest source of information about the vaccination programme (table 3) followed by others (majority indicated banners and phone text messages).

Table 1 Characteristics and responses of Participants

	N	%	Conf Limit
Relationship to Child			
Father	29	13.5%	9.2%-18.8%
Mother	125	58.1%	51.3%-64.8%
Relation	59	27.4%	21.6%-33.9%
Not indicated	2	0.09%	0.1%-3.3%
RELIGION			
Christianity	292	97.7%	95.2%-99.1%
Muslim	7	2.3%	0.9%-4.8%
Will you Pay for HPV vaccine for the remaining doses			
YES	230	76.9%	82.8%-91.2%
No	69	23.1%	8.8%-17.2%

Table 2: Sources of Knowledge about HumanpapillomaVirus (there were more than one sources)

Source	N	% (N/195)
Radio	106	35.1
TV	68	22.7
Church	33	11.0
Market Place	34	11.4
Neighbour	44	14.7
Friend	44	14.7
*Others	36	12.0

*= text messages (SMS)

Table 3: First Source of Knowledge about the Programme and Willingness to pay for vaccination

Source of Information	Willingness to pay		Total (%)
	Yes	No	
Radio	70	20	90 (30.1%)
Television	32	19	51(17.1%)
Churches	2	3	5(1.7%)
Market Place	6	3	9(3.0%)
Neighbours	25	2	27(9.0%)
Friends	36	6	42(14.1%)
Others	69	16	85(28.4%)
Total	230	69	299(100.0%)

Chi Square for linear trend (Estended Mantel –Haenszel 2.32994 P.Value 0.12696

DISCUSSION

Few years ago, little was known about HPV and its association with genital cancers and, in a short while, the awareness about its contribution to

cervical cancer increased significantly [14]. The discovery of the vaccine against the virus was celebrated and awareness soared. This

tremendously increased the awareness of this virus and the vaccine. Vaccination was rapidly accepted in developed countries and included in the immunization schedule in some of these countries [15]. With continuous awareness by both governmental and nongovernmental organization as well as the recommendation by the World health organization,¹⁶ the desire to lay hands on this vaccine increased in many regions of the world especially in developing countries. However there is always this fear on the issue of acceptability and affordability of vaccine in this region of the world. This was attributed to perception of vaccines like the Polio vaccines, in which there is high aversion in certain part of the countries like in the Northern part of Nigeria where it is believed to have some fertility reduction effect [17].

In this study there was high willingness to pay for the vaccine (76.9 %). This is higher than 61.8% recorded by a study by Kim among Korean women [19]. The main reason given for the willingness was that it can prevent cancer of the cervix. We cannot say for sure if they are really willing to pay for subsequent vaccination after receiving the first doses or was the affirmative opinion just to get their children into the vaccination program. However it is possible the willingness came from strong conviction of the need to protect their girls from cervical cancer as were gotten from responses from the participants.

The total number of respondents that were unwilling to pay for the vaccines was 69 (23.1%

69/299). Their reason ranged from the vaccine being expensive to the fact that it is the responsibility of Government to vaccinate the children. If there is high willingness to pay despite the cost, it is believed that a huge percentage from the remaining unwilling participants, whose main reason for not being willing is the cost of the vaccine, will become willing if the cost of the vaccine was lower. This has been reported by a study done among women of girls 9-17 years of age in Vinh Long Province in Vietnam [11]. The predicted probability of respondents buying an HPV vaccine that was 70% effective for 10 years varied by the price, ranging from 30% when the vaccine price was \$353 per course, to 68% when the vaccine cost \$6 per course [11]. That reduction of the prize of the vaccine can go a long way to not only enhance the vaccination cost effectiveness [12,20,21], but will increase the willingness to pay. A study on willingness to pay for HPV in Metropolitan Santiago Chile document laid credence to this assumption [21]. The authors found that twenty five percent of parents were not willing to pay for HPV vaccine at vaccine cost of US\$.758 but only four percent would not pay for it when this price is reduced by 50% [21]. A study by Becker-Dreps among 147 Kenya women from two different centers shows 15% to 55% not willing to pay for vaccine costing more than 100 Kenyan Shillings (2009 US\$1.32) for complete dose [22].

The high record of willingness to pay for the vaccination of their children is a clear indication

that people are willing to access health care. It is, therefore, good, for all drugs or medications to be made available equally to all region and not kept away for an unproven reason of inability to afford the care or cost. It is necessary to make available all care, drugs and vaccines and create massive awareness at all times about the availability of the care and facility and let the individuals be given opportunity to make informed choice. According to Rawl's Principle, it is injustice to provide healthcare to one group and withholding same from another for reasons of age, race, gender, socio economic standing, religion or other factors [23]. It is a human right for every individual to have the opportunity to live a healthier and fuller life. Therefore it is a moral obligation for all stake holders at both the local, national and international [4] levels to reduce global women mortality by facilitating universal access to safe vaccines of proven efficacy like HPV [4].

In 2008, GAVI Alliance Board prioritized support for HPV [24]. However this support is with the condition that GAVI secures acceptable price commitment from industry and countries that demonstrate ability to deliver HPV vaccines nationally. This is assessed by the DPT3 coverage of 70 %. Not long after this commitment, it was announced that the poorest countries will now have access to a sustainable supply of HPV vaccines for as low as US\$ 4.50 per dose [25]. This is to ensure girls in low resource setting (developing countries) could be vaccinated without much financial constraints. This is a

heartwarming development considering the fact that the vaccine can be purchased for as high as N18, 000 (UD\$112.5) to N30,000 (US\$187.5) for a complete dose in few centres in Nigeria. It will be very beneficial if strict condition for eligibility to partake of GAVI support is reduced. The Authors agrees completely with Dr Richard Seziera (Secretary General of the East African Community) who said. "Developing countries bear an increasing burden of cervical cancer and it is only right that our girls should have the same protection as girls in other countries. In Africa, where facilities to diagnose and treat cervical cancer are few and far between, HPV vaccines will mean the difference between life and death for so many women in the prime of their lives"[25].

This level of willingness recorded in this study may have been influenced by the adequacy of information of benefits of the vaccination through aggressive campaign by the programme implementer long before the request for the vaccine was approved. This campaign was done using the media mostly through radio programmes. In this study 35.1% and 22.7% got the information about the HPV from Radio and Television respectively. It is very important for adequate Health information to be provided at all times to the public. It is good to observe that a significant number that have never heard of the Human Papillomavirus in the past was still willing to pay for the vaccine. Information may have been augmented by the pamphlets and Health education

provided at the beginning of the programme. The Importance of health education can never be overestimated.

One short fall of this study was the convenience sampling of participants. The information for the vaccination came from use of the media. It means that selected component of the population of people who have financial standing that enabled them access to the media. The poorer masses who do not have access to the telecommunication media may not have participated in the vaccination programme. Therefore their opinion may not reflect the opinion of the Ebonyi state populace. We also did not do intensive literature search before the drafting of the questionnaire that made the authors not to look at several features which are likely to be significantly associated with stated choices and uptake like age of mother, race/ethnicity, household income and educational status [26] and this will be a good area for focus by other researchers.

This study however, highlights the fact that while Government makes effort to established a National immunization programme for HPV, that may or may not be actualized, there are a portion of the population that are willing to pay for this vaccines. It is therefore recommended that Health institution should consider stocking the vaccine at reduced price from what is being sold for now, in the interest of the public; Nongovernmental organizations concerned with encouraging immunization against infectious diseases to reconsider strict stands on eligibility criteria

before providing help or support; Active, continuous provision of reliable and unbiased information to the public and to health care providers about the benefit of the vaccines.

CONCLUSION

There is remarkable willingness to pay for the next doses of Human Papillomavirus vaccine despite the cost.

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AUTHORS CONTRIBUTION

Concept and design(UMA,POE,CCE), Acquisition of Data(UMA,) analysis and interpretation of data(UMA,CTE) drafting of the

manuscript (UMA,JOA,RCO) critical revision of the manuscript for important intellectual content (UMA,RCO,CCE,NBO)provision of study materials or patients (UMA,RCO) obtaining funding(UMA) administrative, technical or logistic support (UMA, POE, CTE, CCE) supervision (UMA,POE).

CONFLICT OF INTEREST

The authors declare no conflict of interest.

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