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PARENTAL ACCEPTANCE OF HUMAN PAPILLOMA VIRUS VACCINE FOR THEIR PRE-PUBERTAL AND TEENAGE DAUGHTERS

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## PARENTAL ACCEPTANCE OF HUMAN PAPILLOMA VIRUS VACCINE FOR THEIR PRE-PUBERTAL AND TEENAGE DAUGHTERS

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### ABSTRACT

**Objective:** To determine the factors influencing parental acceptance of the HPV vaccine for their pre-pubertal (age group 9-14 years) daughters.

**Design:** Cross sectional study.

**Setting:** Four primary schools within Langata constituency in Nairobi County in June 2010.

**Subject:** Girls in Standard five to eight were selected for the study. A self explanatory one page questionnaire was given out to take to their mothers/guardian and returned in one week. Fifty mothers were then randomly selected from the returned questionnaires and an in depth telephone interview was conducted. The data entry and coding was done and analysed using SPSS version 15.

**Results:** In this study 68% of parents/guardians accepted that vaccination should be done but only 58% agreed that their daughters should be vaccinated, majority of the respondents were females, (women 82% and men 18 %). This observed difference across the genders was not statistically significant  $p=0.078$ . The level of education of the respondent (nil 2.7%, primary 6.6%, college /university 47.7% secondary 45.7%) the observed difference across the educational levels of agreeing to vaccination was not statistically significant  $p=0.898$ . The knowledge/awareness on cervical cancer and its relationship to HPV infection correlated with the level of education was found to have been statistically significant. The parents recommended age of vaccination was 11-13 year (58%). Parent/guardians suggested age of vaccination and HPV vaccine acceptance was significant correlated with the vaccination acceptance by the parents  $p=0.009$ . This study has shown that the recommended age of vaccination by parents is 11-13years age group which was similar to findings done in many countries.

**Conclusion:** There was poor knowledge on the relationship between HPV infection and cervical cancer. The acceptable age of vaccine administration was 11-13 years.

### INTRODUCTION

The burden of the disease of cancer of the cervix is increasing at an alarming rate worldwide. In the sub Saharan countries it is now the leading cause of cancer related deaths among women. This trend if not checked will lead to increased strain in the health sector resources (2). Cervical cancer deaths are now estimated at 1350 annually in Kenya and the figure may be much higher since these are only hospital based data and many are dying in the rural areas whose cause of death is never documented. Use of the Pap smear has significantly reduced the incidence and mortality of cervical cancer in women who have regular screening and follow-up in the developed countries (5). However, the Pap smear test has been

inadequate in universally preventing cervical cancer. Pap smear sensitivity is poor, ranging from 50 to 74%, depending on the methodology (6).

In addition to other known cervical preventive interventions like Pap smear, visual inspection with acetic acid (VIA), visual inspection with Lugols iodine (VILI) and Colposcopy. There is now hope of reducing the incidence of cervical cancer by the use of vaccines (8,12). Normally vaccines are generally given for two reasons. One is to provide a public health benefit and the other is to provide benefit to specific individuals. The public health benefits of vaccination are obvious to everyone. The decision to include a specific vaccine in a national vaccination programme and the target population for vaccination is generally made by government advisory panels

following technical advice.

It has now been conclusively shown that the Human papilloma virus (HPV) types 16 and 18, have a causal relationship in the development of invasive cervical cancer in 70-80% of patients who develop the disease. The cervical changes usually start as dysplasia and may take up to fifteen years to invasion (12).

HPV vaccine has been with us in the country for more than five years now. Yet there is limited information on the parental acceptability of the vaccine use in this country. This study addresses this gap. Some of the cervical cancer prevention strategies have involved the advocacy on Pap smear as a screening tool, but this has failed in many ways since very few are able to access it and also it need trained personnel to realise it. This then would make the vaccination programme if acceptable more effective.

This study sought to answer the following question: What would be the rates of HPV vaccine acceptance, by the parents/guardians and the age at which parents/guardians would accept to have the HPV vaccine administered to their daughters?

## MATERIALS AND METHODS

*Study design:* This was a cross sectional study to determine the parental acceptance of the HPV vaccine.

*Study population:* Primary schools girls between age 9 to 14 years were chosen since they were considered as a good entry point into the community and since they are the likely target in the vaccine introduction in the country. It gives an opportunity for the community to participate in the decision making process.

*Sampling method:* Structured questionnaires were sent to the mothers (parent/guardian) through their daughters in standard five to eight classes. The questionnaires were given to the girls in their respective schools after the Principal investigator had explained to them about the study. They had the opportunity to ask questions about the study and cervical cancer in general. All the questionnaires were distributed to the pupils by their class teachers at the end of the class in the afternoon before leaving school for home, and asked to take to their mothers/guardians to fill in the questionnaires and return them within one week. There was no coercion or inducement given to the school girls by the Head teacher, Class teacher or the principal investigator. The Head teacher received the filled questionnaires on return, for collection by the principal investigator.

Limitation of the study was that since the study was involving a relatively low socio-economic group the understanding of the study may have been limited.

*Sample size:* The p-value was taken as 70% from the study done in the United Kingdom, which had an acceptance rate of 70% (15). This gave a calculated sample size of 332.

*Study site:* The study was carried out in four mid and lower levels Nairobi city council primary schools located in the Langata area of Nairobi County. The schools had five streams each with approximately 50 pupils half of whom were girls, and this made the sample size achievable. The choice of the four schools was determined by the large pupil population whose parents/guardians were from both the middle and low socio-economic levels. A convenience sampling was used till the sample size was attained.

*Data management:* Data entry and coding was carried out after data cleaning, a trained biostatistician supervised the process. The data analysis was done using Statistical Package for Social Science no 15 (SPSS). The accepted age of vaccination was determined. The correlation between sex and acceptance of HPV vaccine administration was also determined.

*Ethical considerations:* This study was approved by the Kenyatta National hospital/University of Nairobi Research and ethics committee, it was a questionnaire based study which targeted the parents and guardians of the girls using the girl pupils as the link. This approach has been used before in other studies (14). The parents/guardians were able to fill in the questionnaires without contact with the research team.

## RESULTS

*Profile of participants:* Questionnaires were received from 332 participants. Data from the demographic part of the questionnaires yielded the information about respondents' demographic profile variables shown on Table 1. This personal information includes respondent's age, gender and education. Three hundred and thirty two (n=332) respondents returned their questionnaires. However, as Table 1 shows, all demographic questions were not answered by all the respondents; therefore frequencies indicated in Table 1 were often less than the total number (N=332) of respondents.

**Table 1**  
*Demographic profile of respondents*

Demographic of Subjects	N	Percentage
<b>Respondent</b>		
Father	51	15.8
Not indicated	40	12.4
Guardian	13	4.0
Mother	231	71.8
Total	322	100
<b>Gender</b>		
Female	231	81.9
Male	51	18.1
Total	282	100
<b>Guardian's Education</b>		
College/University	123	47.7
Primary	17	6.6
Secondary	118	45.7
Total	258	100
<b>Daughter's Age</b>		
<1038	11.8	
11-15	282	87.3
>153	0.9	
Total	322	100
<b>Guardian's Age</b>		
<204	1.3	
21-30	30	9.9
31-40	172	57
41-50	82	27.2
>5014	4.6	
Total	302	100

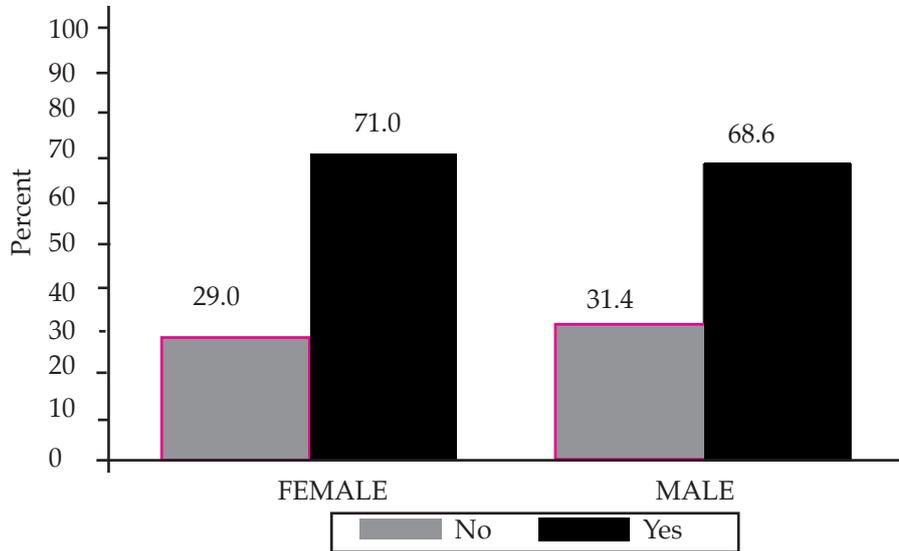
Majority of the respondents by gender 82% were females. When all had attained a primary level of education and above. Eighty eight percent of the girls were in the 11-15 year age bracket which would be expected in the primary school picked for the study. There were 12.4% of the respondents who did not indicate their gender on the questionnaires and it

was not possible to determine who they were since the questionnaires were anonymous with no contact with the respondents.

Majority of the respondents (47.7%) had College/University education, 45.7% of them had only secondary education, and 6.6% had University education and while only 2.7% had no education at all.

**Figure 3**  
*Acceptance to HPV vaccination*

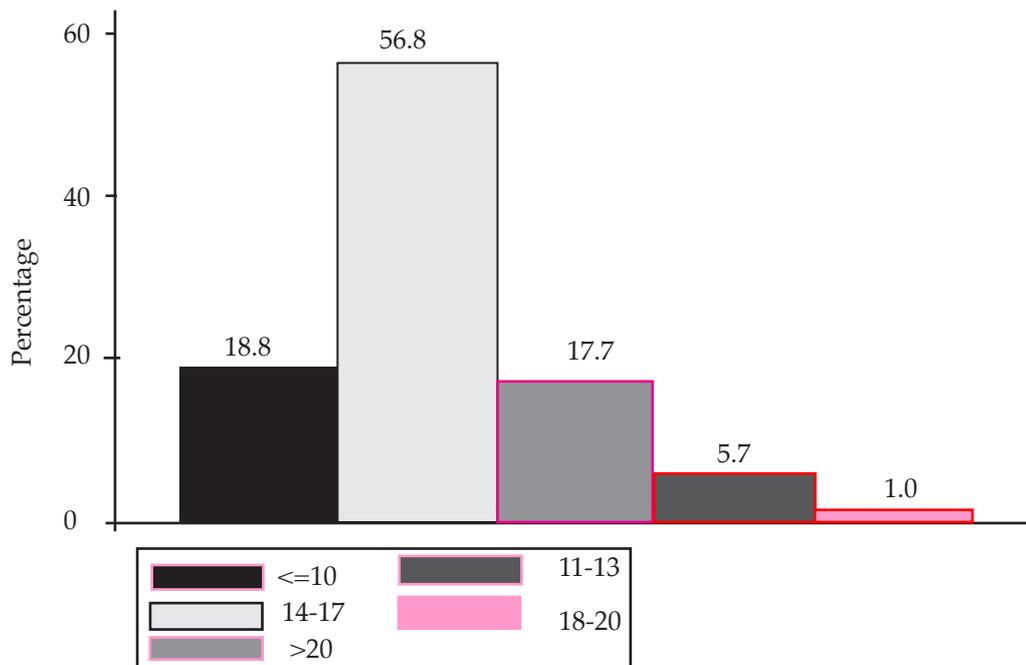
Percentage of those who would agree to cervical cancer vaccination by Gender of Respondent



A higher percentage of female respondents (71%) than males (68.9%) reported they would agree to cervical cancer vaccination. However, this difference in the proportion of those who would agree to

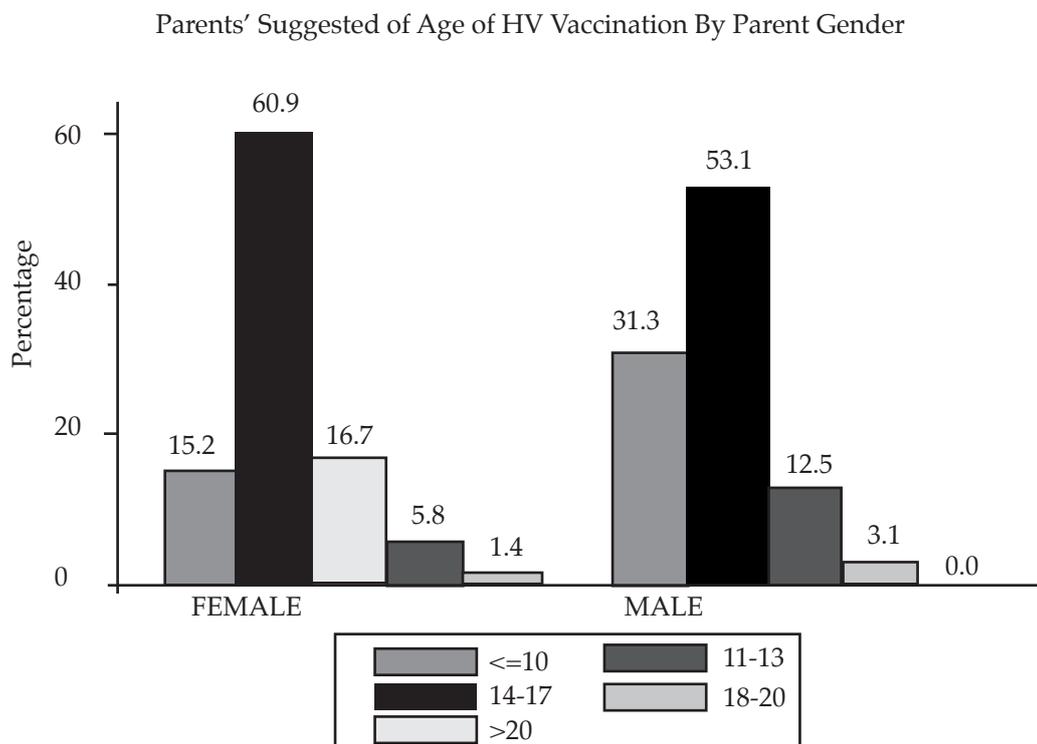
cervical cancer vaccination was not statistically significant across gender based on a chi-square test of independence ( $\chi^2(1) = .11, p = .737$ ).

**Figure 4**  
*Parents' Suggested Age for HPV Vaccination*  
Parents' Suggestion of Age of HPV Vaccination



56.8% of the respondents recommended age of vaccination was in the age group of 11-13 years, 18% recommended below 10 years and 17.7% recommended 14-17 years age group.

**Figure 5**  
*Parents suggested age of HPV vaccination by gender*



Both the male and female respondents agreed to the age group of 11-13 to have been the acceptable age of vaccination.

**Table 2**  
*Various correlates and HPV vaccine acceptance*  
Associations between Various correlates and Acceptance of Vaccine

	Accept HVP Vaccine			p-value
	Total	No	Yes	
Level of education				
Primary	17	8(47.1)	9(52.9)	0.418
Secondary	118	39(33.1)	79(66.9)	
College/University	123	48(39.0)	75(61)	
Knowledge of Cancer of Cervix,				
Ever heard of cancer of the cervix				
No	71	35(25.7)	36(18.4)	0.107
Yes	261	101(74.3)	160(81.6)	
Do you know of what may cause cancer of cervix				
No	237	105(77.2)	132(67.3)	0.051
Yes	95	31(22.8)	64(32.7)	
Do you know what a pap test is used for				
No	173	69(50.7)	104(53.1)	0.677
Yes	159	67(49.3)	92(46.9)	
Have you heard of human papilloma virus(HPV)				
No	246	97(71.3)	149(76)	0.337
Yes	86	39(28.7)	47(24)	

(continuation)

Knowledge of HPV relationship with cervical cancer				
No	285	111(81.6)	174(88.8)	
Yes	47	25(18.4)	22(11.2)	0.066
Gender of respondent				
Female	232	67(80.7)	164((82.4)	
Male	51	16(19.3)	35(17.6)	0.737
Suggested Age of Vaccination				
<=10y	36	0(0)	36(20.7)	
11-13y	109	4(22.2)	105(60.3)	
14-17y	34	7(38.9)	27(15.5)	0.001
18-20y	11	6(33.3)	5(2.9)	
>20y	2	1(5.6)	1(.57)	

The suggested age of vaccination was found to have been a significant correlation with the HPV vaccine use  $p=0.001$ . The gender  $p=0.737$ , knowledge of HPV  $p=0.066$ , level of education  $p=0.418$  were not statistically significant.

## DISCUSSION

One of the recommendations in achieving primary prevention is the use of HPV vaccine. The recommendation is to vaccinate pre-pubertal young girls, where the parental consent is mandatory. In this study the parental acceptance for vaccination was 68% and those who indicated that they agreed to have their daughter vaccinated was only 59%. This finding is at variance with the finding of Becker *et al* who in their study on the HPV vaccine acceptance among Kenyan woman reported acceptance 95% (23). In their study the mothers were being interviewed directly while in this study the questionnaire was filled by the responded without contact with the investigator, therefore, this may be more objective than the direct interview. In Manchester, United Kingdom, the acceptance was at 70% while in the Netherland the acceptance was at 88% (8,9,15,16). The low acceptance rate finding (59%) in this study could be explained by the study population who were from the low income setting in the Nairobi County and had low awareness of HPV infection (25.9%) and only 14.2% knew of the relationship between HPV infection and the development of cervical cancer.

Studies done on acceptance of HPV vaccination in many countries have yielded a universal verdict that it is acceptable. In a study carried out in Canada to assess, among other factors, the target groups for vaccination (N-157) the findings were that both the boys and girls should be included in the vaccination programme (20). The study only looked at the parental acceptance of the vaccination of girls.

It is known that the cheapest way to screen for cancer of the cervix is to have routine regular pap smears. This study looked into the awareness of pap smear as a screening procedure for cervical cancer almost an equal number indicated either knowledge

of (48%) or none (52%) on the importance of pap smear in cervical cancer screening. The knowledge of pap smear use, gender of the respondent, age of the respondent, and level of education and HPV vaccine acceptance was found not to have been statistically significant. The suggested age of vaccination was found to have been statistically significant  $p=0.001$

The prevention of HPV infection is achievable if vaccination is carried out early before sexual debut, and this is the reasoning behind the recommendation of early vaccination. In many countries the recommended age is between 9-12 years of age. In this study 57% of the parents/guardians recommended age of vaccination against HPV was in the age group of 11-13 years. This study found that even in a low socio-economic setting the awareness of HPV vaccination for protection against HPV was high (71%) female and 69% males. And of interest the acceptance of vaccination against HPV was higher in the males (72.5%) against (59.3%) of the females. It would be of interest to carry out further studies to determine the reasons behind this finding.

The level of education would be expected to be related to increased knowledge on cervical cancer. In this study the findings were that there was a corresponding increase in the awareness of cancer of the cervix by the level of education (Primary-64.7%, Secondary-76.3%, College/University-88.6%). These findings were statistically significant ( $\chi^2$ ) 9.41  $p=0.009$ . This is the expected trend since education should relate to more awareness.

Many studies looking at the parental attitudes have now been carried out in many countries especially in the countries where the programme has been accepted. In this study looking at Parental attitudes and information needs in an adolescent HPV vaccination programme in Manchester UK, Smith *et al* found that 20% of the parents were not satisfied with

the programme although the state had introduced a vaccination programme in the age groups of 12-13 years (21).

In this study some of the parental responses were very interesting, some believed that the daughters were too young and that vaccination would bring in serious side effects. Many of those interviewed reported that they needed more information on the vaccine. Some believed that God will protect their daughters from the infection. While some of the respondents said they could not trust doctors with their daughters and, therefore, did not see the need for vaccination. Few reported that they believed the vaccination may lead to promiscuity. Allen *et al* in their study looking into factors influencing parental acceptance of vaccine, found that suboptimal information is a key factor influencing the uptake and any intervention must address the parental concerns (22). This study showed that there is this information gap.

This study has demonstrated that while HPV infection vaccine uptake (68%) is acceptable only 59% would agree to actually have the vaccine administered to their prepubertal and teenage daughters. Most parents reported the need for more information, which is the trend shown in many studies done world-wide. The use of schools as an entry point to the community should be encouraged and this can be achieved by addressing the Parents Teachers Association meetings and disseminating the findings of this study. Hopefully it would influence the parental acceptance of vaccine uptake.

In conclusion, there was poor knowledge on the relationship between HPV infection and cervical cancer. The acceptable age of vaccine administration was the 11-13-year age bracket. This was found to have been significantly related to HPV vaccine acceptance, the level of education had an influence on the knowledge of HPV infection and cervical cancer. More information on HPV vaccine should be disseminated to parents especially through the schools so as to bridge the knowledge gap which is evident among the parents.

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