

Risk Perception and Uptake of Human Papilloma Virus Vaccine among University Students in Jos, Plateau State.

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Abstract

Background: Human papilloma virus is the most common sexually transmitted viral infection globally. It is a well-established cause of cervical cancer and about 75% of sexually active women and men will acquire this infection at some time in life. This study assessed the risk perception of human papilloma virus infection and its vaccine uptake among university students in Jos, Plateau State Nigeria.

Methods: This was a cross-sectional survey conducted among 300 university students who were selected using a multistage sampling technique. A semi-structured interviewer administered questionnaire was used to assess risk perception and vaccine uptake. Data was analysed using Statistical Package for Social Sciences version 23. Associations between independent and dependent variables were determined using χ^2 test while binary logistic regression was used to determine factors associated with risk perception, with significant value set at < 0.05 .

Results: Respondents' awareness of human papilloma virus infection and the vaccine was 148 (49.3%) and 62(20.7%) respectively. Ninety four (31.3%) students had good risk perception of the infection while 206 (68.7%) had poor perception. Three (1.0%) students had taken the vaccine with no statistically significant difference between health and social science students ($p = 0.05$). Health science students had 3 times better risk perception than social science students (OR = 3.42, 95% CI = 2.03 - 5.77; $P < 0.001$).

Conclusion: Human papilloma virus infection risk perception and vaccine uptake were poor among Jos University students. There is a need to improve the vaccine uptake through awareness creation and advocacy in Nigeria.

Keywords

Human papilloma virus infection; Risk perception; Vaccination; University students

Introduction

The Human papilloma virus (HPV) is the most common sexually transmitted virus worldwide and it is estimated that about

75% of sexually active women and men will acquire a genital HPV infection at some point in their lifetime.¹This infection is now a well-established cause of cervical

cancer and many other cancers.² Human papilloma virus high risk types 16 and 18 are responsible for 70% of all cervical cancer cases worldwide.^{1,2}

An HPV vaccination uptake of 80% globally, would prevent an estimated two-thirds of new cases of cervical cancer.³ It has been shown through modelling studies, that complete implementation of vaccination can lead to a 31% reduction in precancerous lesions, which translates to an approximated 68% decline in cervical cancer cases.⁴ Globally, HPV vaccine uptake stands at 15%.⁵ Many women from high-income and upper-middle-income countries have been vaccinated against HPV. However, populations with the highest incidence and mortality of disease remain largely unprotected. Rapid roll-out of the vaccine in low-income and middle-income countries might be the only feasible way to narrow present inequalities in cervical cancer burden and prevention activities.⁶ Vaccine uptake in Africa has been as low as 1–2% among girls and women aged 10–20 years,⁷ with that of Nigeria being as low as 8%.¹ Human papilloma virus vaccination has not yet been included in Nigeria's National Immunization Program and, therefore, the HPV vaccines are not readily available in the hospitals. Where it is available, it is not affordable to an average Nigerian.¹ In spite of the high prevalence of HPV in the country ($\geq 15\%$) at all ages according to a study conducted in urban Ibadan,⁸ awareness and risk perception is still low,⁹ and vaccine uptake is poor.

University students are a high-risk group for HPV infection because they have a higher tendency as young adults to be involved in unprotected sexual intercourse with multiple sexual partners. These students are the population to be considered for a successful public health

intervention as they are a high-risk group for HPV infection.¹ Inadequate knowledge of HPV infection among university students is reflected in their behavioural pattern of low vaccine uptake and irrational safety measures in sexual activities. This study was carried out to assess the perception of risk and the uptake of HPV vaccine among students of the University of Jos, Plateau State.

Methods

Study setting and design

This was a descriptive cross-sectional study conducted among students of the University of Jos. University of Jos is one of the Federal Universities in Nigeria, located in Jos, Plateau State. The University has 12 faculties which offer courses in law, medicine, pharmacy, natural sciences, social sciences, environment sciences, as well as arts and humanities. It has a health services centre, a youth friendly centre, an open air theatre, and a football field for recreation with a total students population of over 22,000.¹⁰ The study population comprised students from four selected departments who were in their 2nd, 3rd and 4th years at the time of the study who gave informed consent for the study. Sample size was determined using the formula for sample size for cross sectional study $n = Z^2 PQ / d^{15}$ and a minimum sample size of 272 was obtained. This was rounded up to 300 participants to take care of poorly filled questionnaires which could not be analysed and those that were not returned. Seventy-five participants were selected per selected department.

Sampling, data collection and analysis

A multistage sampling technique was used to select participants in the study. In the first stage, Health Sciences and Technology, and Social Sciences Faculties were selected via purposive sampling

technique. In the second stage, the Departments of Education and Management (Social Sciences), and Medical Laboratory Sciences and Nursing Sciences (Health Sciences and Technology) were selected through a simple random sampling technique. In these Departments, the 200, 300, and 400 level classes who met the inclusion criteria were selected.

A semi-structured, self-administered questionnaire from the US Centre for Disease Control and Prevention's risk assessment tool was adopted for data collection.¹⁵ It had three sections and sought information on respondents' socio-demographic characteristics, awareness of HPV, risk perception of HPV and HPV vaccination history. Collected information was entered, collated and cleaned in a Microsoft Excel Spreadsheet. The data was then exported into IBM Statistical Package for Social Sciences (SPSS) version 23 (Students version for Universities) for analysis.

Students in the Faculty of Social Sciences were compared with those in the Faculty of Health Sciences and Technology.¹¹⁻¹⁴ Quantitative variables were described using mean and standard deviation. Chi-square was used to test the significance of association between proportions and to compare qualitative variables and a $p < 0.05$ was considered statistically significant.

Ethical consideration

Ethical clearance was obtained from the Jos University Teaching Hospital Health and Research Ethics Committee. Permission was then obtained from the deans of selected faculties and the heads of the four departments. The objective of the study was explained and an informed verbal consent obtained from the participants before the administration of the questionnaire.

Results

The socio-demographic characteristics of the participants are shown in Table 1. The mean age of the participants was 24.6 ± 7.2 years, with an age range of 16-47 years. Majority of the participants were females; 167 (55.7%) and most were single; 259 (86.3%). The overall respondents' awareness of HPV infection was below half (49.3%) among the students who participated. It was high among students in the Health Sciences and Technology departments; 54(72.0%) and 61 (81.3%) for Nursing and Medical Laboratory Science students respectively. It was poor among Social Sciences departments; 15 (20.0%) and 18 (24.0%) in the Management and Education departments respectively. This difference in awareness of HPV infection between health-related and non-health related-students was statistically significant ($P = 0.001$). Table 2.

Overall awareness on HPV vaccination was poor; 62(20.7%) among the studied participants. It was about the same among nursing and medical laboratory science students; 25 (33.3%) and 24(32.0%) respectively, but comparatively lower among the management; 8 (10.7%) and education students; 5 (6.7%). Table 3. The risk perception of HPV infection was found to be poor among the students studied. Of the 300 students studied, 94 (31.3%) were found to have a good risk perception of HPV. Thirty-four (45.3%) medical laboratory science students and 32 (42.7%) nursing students had a good risk perception of HPV infection. However, the risk perception of HPV infection was found to be 15 (20.0%) among education students which is comparatively lower. The difference in risk perception was found to be statistically significant ($P = 0.001$). Table 4.

Overall, the uptake of HPV vaccine among the respondents was 3(1.0%) of which the

Faculty of Health Sciences and Technology constitutes 2(1.3%) while the Faculty of Social Sciences had 1(0.7%), with no statistically significant difference in vaccine uptake between the two Faculties. (Table 5). Risk perception was also found to be three times higher among students in Health Sciences and Technology compared to Social Science students (odds ratio [OR] =3.42, 95% confidence interval [CI] =2.03–5.77; $P < 0.001$). Table 6.

Tables

Table 1: Socio-demographic characteristics of respondents (n = 300)

Variables	Frequency	(%)
Age group (Years)		
16-20	63	21.0
21-25	139	46.3
26-30	75	25.0
31-35	10	3.3
>35	13	4.3
Mean age	24.6 ± 7.2	
Sex		
Male	133	44.3
Female	167	55.7
Marital Status		
Single	259	86.3
Married	39	13.0
Separated	1	0.3
Widowed	1	0.3
Religion		
Christian	282	94.0
Islam	18	6.0

Table 2: Awareness of HPV infection among respondents (n= 300)

Department	HPV infection awareness		X ²	P-value
	Yes (%)	No (%)		
Nursing	54(72.0)	21(28.0)	91.22	0.001
MLS	61(81.3)	14(18.7)		
Management	15(20.0)	60(80.0)		
Education	18(24.0)	57(76.0)		
Total	148(49.3)	152(50.7)		

MLS = Medical Laboratory Science

Table 3: Awareness of HPV vaccine among respondents (n= 300)

Department	HPV vaccine awareness		X ²	P-value
	Yes (%)	No (%)		
Nursing	25(33.3)	50(66.7)	26.76	0.001
MLS	24(32.0)	51(68.0)		
Management	8(10.7)	67(89.3)		
Education	5(6.7)	70(93.3)		
Total	62(20.7)	238(79.3)		

Table 5: Relationship between respondents faculties and HPV vaccine uptake (n= 300)

Faculties	HPV vaccine		X ²	P-value
	Yes (%)	No (%)		
Health sciences and Technology	2(1.3)	148(98.7)	0.343	0.500
Social Sciences	1(0.7)	149(99.3)		
Total	3(1.0)	297(99.0)		

Table 4: Comparison of risk perception of HPV infection among respondents (n= 300)

Department	HPV infection risk perception		X ²	P-value
	Good (%)	Poor (%)		
Nursing	32(42.7)	43(57.3)	22.62	0.001
MLS	34(45.3)	41(54.7)		
Management	13(17.3)	62(82.7)		
Education	15(20.0)	60(80.0)		
Total	94(31.3)	206(68.7)		

Table 6: Logistic regression analysis of the association between students' faculties good risk perception

Faculties	Risk perception			
	Frequency (%)	OR	95% CI	P-value
Health Sciences and Technology	66(70.2)	3.42	2.03-5.77	< 0.001
Social Sciences	28(29.8)			

Discussion

In this study it was observed that awareness and risk perception of HPV infection amongst the participants were low. This finding is similar to that from a community-based pilot survey in Gwagwalada Area Council in the Federal Capital Territory, Abuja, where awareness of the disease was reported to be low.¹⁵

Another study done among high school students also reported low awareness of HPV vaccine. However, slightly over half of the participants in that study were educated up to primary school level, whereas all the respondents in this study had tertiary levels of education. One would have thought that awareness of this infection should have been higher amongst

them, but that was not the case. This may indicate a very poor awareness of HPV infection even among the general population. This was also corroborated in a community-based study done in Lagos state that reported very low awareness. This is in contrast to findings from community-based studies carried out in Ibadan, where it was discovered that awareness of HPV infection was very high.¹⁶ In a similar study in Kuala Lumpur, Malaysia, over 50% of mothers were aware of HPV infection.¹⁷

In our study, we found that the awareness of HPV infection varies among the different departments studied. Awareness was higher among students of MLS and nursing, compared to students in the management and education departments. The difference in awareness can be attributed to the exposure to lectures in virology which is a part of the MLS and nursing curricula and its absence in the social science curriculum. This could also be because HPV is a microbiological term, and could be difficult for people without medical training to recall, compared to those with medical training.

The overall risk perception among the students studied was low with MLS and nursing students having a relatively fair risk perception, and lower for education and management students. The perception of risk was three times better for students of the College of Health Sciences compared to students of social sciences. The risk perception among respondents in our study was found to be higher than that in a study among nursing and medical students in Hyderabad, India.¹⁸ This difference could be attributed to the study population chosen which included preclinical students whose exposure to virology lecture is limited unlike the Hyderabad study which included only clinical students who had more expansive lectures in applied virology.

We also found from our study that the uptake of the HPV vaccine among the study population was very low. This was corroborated in a study done in Abuja, Nigeria, which also revealed low HPV infection and vaccination among antenatal women.⁹ This may be due to low awareness, high cost and non-availability of the vaccine in health facilities. Even though these vaccines were licensed and introduced into this country in 2009,¹⁶ they were only launched by the Federal Government in 2011 and only 6 pilot centres are currently commissioned to give HPV vaccines, apart from that offered by some private facilities at very high cost.⁹ Low awareness about this preventive measure will lead to low uptake of vaccination among teenage boys and girls. There is a need to scale up awareness on HPV vaccination through national campaign and effective awareness creation amongst the parents especially mothers. This study was done among university students with a relatively small sample size and therefore it cannot be generalized to the general population. However, the findings can serve as a baseline for further research and a large national survey of the prevalence of HPV infection and vaccine uptake.

Conclusion

There is an urgent need to increase awareness of HPV infection through educating the general public on HPV, emphasizing their susceptibility and the severity of the consequences to convince them about the vaccine's effectiveness in preventing cervical cancer. It is also necessary to make the HPV vaccine available in the public health facilities so that it will be accessible to a greater number of clients, thereby improving HPV vaccine uptake.

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Conflict of interest

The authors declare no conflict of interest

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