

## RESEARCH COMMUNICATION

# Knowledge, Attitude and Practice of Malaysian Medical and Pharmacy Students Towards Human Papillomavirus Vaccination

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## Abstract

Human Papillomavirus (HPV) infection is one of the most common sexually transmitted infections and oncogenic HPV is the main cause of cervical cancer. However, HPV vaccination is already available as the primary preventive method against cervical cancer. The objective of this study was to determine the level of knowledge, attitude and practice of HPV vaccination among Universiti Kebangsaan Malaysia (UKM) and Universiti Malaya (UM) students. This study was conducted from March until August 2009. Pre-tested and validated questionnaires were filled by the third year UKM (n=156) and UM (n=149) students from medical, dentistry and pharmacy faculties. The results showed that the overall level of knowledge on HPV infection, cervical cancer and its prevention among respondents was high and the majority of them had positive attitude towards HPV vaccination. Medical students had the highest level of knowledge ( $p < 0.05$ ). Very few students (3.6%) had already taken the vaccine with no significant difference between the two Universities ( $p = 0.399$ ). In conclusion, the knowledge and attitude of the respondents were high and positive, respectively. Only few students took HPV vaccination. Thus, more awareness campaigns and HPV vaccination services should be provided at universities' campuses with the price of the HPV vaccine reduced for the students.

**Keywords:** Cervical cancer - students - knowledge - attitude - HPV vaccines

*Asian Pacific J Cancer Prev*, 13, 2279-2283

## Introduction

Vaccination against oncogenic types of Human Papillomavirus (HPV) is effective in preventing cervical cancer among adolescents if the vaccine was taken before the exposure to HPV (Villa et al., 2005; Pedersen et al., 2007). HPV infection is the most common infection among young and sexually active individuals (Weaver, 2006). Rates of HPV infection are highest in adolescent females with a cumulative prevalence rate higher than 80% (Brown et al., 2005). Thus, it is necessary for young women to get protection against HPV infection at an early age.

Malaysian government introduced an HPV vaccination program for all 13-year-old girls whether they are from public or private schools (The Star online, 2009). The 3 doses of HPV vaccine are offered to these students free of charge. However no free vaccination is offered to older school students or University students.

University students in medical and related fields are future healthcare professionals who can help raise the awareness of the public about cervical cancer and its prevention especially with the availability of effective and safe HPV vaccines. It is important to assess their knowledge in order to develop educational and awareness programs to increase their knowledge and improve their

attitude towards prevention of cervical cancer. Hence the aims of this study were to assess the knowledge of HPV infection, cervical cancer and HPV vaccination among medical, dentistry and pharmacy students and to assess their attitude and practice towards HPV vaccination.

## Materials and Methods

### Study design

This cross-sectional study was conducted from March until August 2009 at Universiti Kebangsaan Malaysia (UKM) and Universiti Malaya (UM). Data was collected from the respondents using pre-tested, validated and self administered questionnaires.

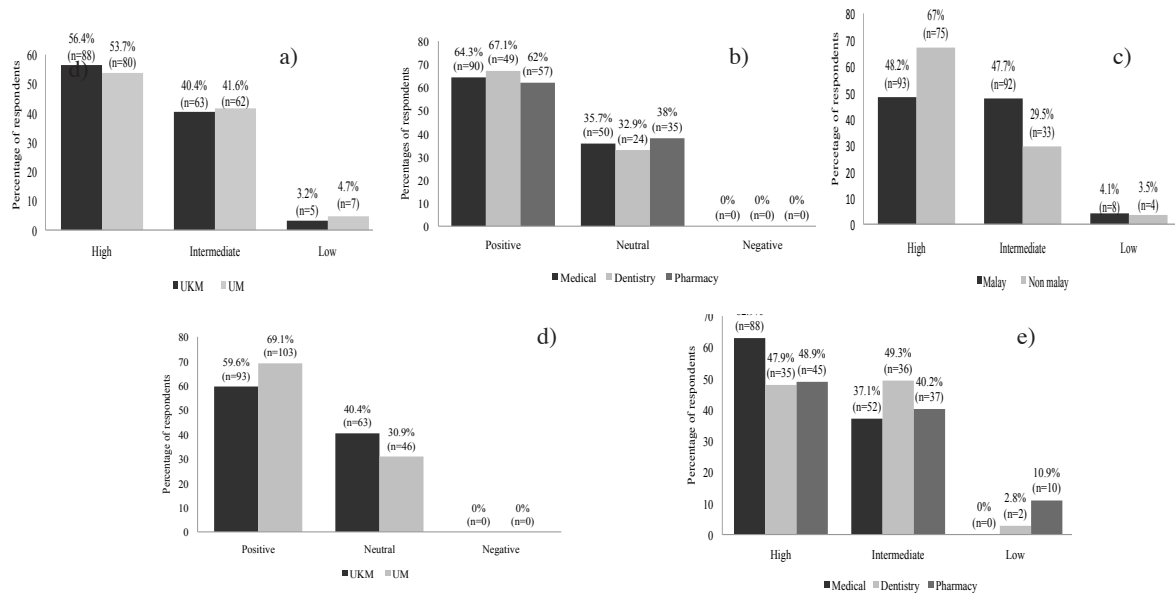
### Study population

The study population was made up from third year UKM and UM female students from the faculties of medicine, dentistry and pharmacy.

### Questionnaires

Participants were given a questionnaire and explanation was provided to assist them in completing the questionnaire. The information obtained from questionnaires included: demographic data, knowledge of HPV infection, cervical cancer and preventive methods against cervical cancer

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**Figure 1. Category of Knowledge.** a) According to Universities, b) Based on Faculties, c) Based on Race, d) Category of Attitude Based on Universities and e) Category of Attitude According to Faculties

**Table 1. Level of Knowledge and Attitude**

Category	Percentage	Mark
<b>Level of knowledge</b>		
High	68% - 100%	6-8
Intermediate	34% - 067%	3-5
Low	0 - 033%	0-2
<b>Level of attitude</b>		
Positive	75% - 100%	19 - 25
Neutral	50% - 074%	13 - 18
Negative	0 - 049%	0 - 12

**Table 2. Demographic Data of Respondents**

Groups	UKM n(%)	UM n(%)	Total n(%)
No. of subjects (N)	156 (51.1)	149 (48.9)	305 (100)
<b>Age (years)</b>			
21	22 (14.1)	26 (17.4)	48 (15.7)
22	122 (78.2)	118 (79.2)	240 (78.7)
23	12 (7.7)	5 (3.4)	17 (5.6)
			305 (100)
<b>Faculty</b>			
Medical	75 (48.1)	65 (43.6)	140 (45.9)
Dentistry	32 (20.5)	41 (27.5)	73 (23.9)
Pharmacy	49 (31.4)	43 (28.9)	92 (30.2)
			305 (100)
<b>Race</b>			
Malay	103 (66)	90 (60.4)	193 (63.3)
Chinese	48 (30.8)	53 (35.6)	101 (33.1)
Indian	3 (1.9)	3 (2)	6 (2)
Others	2 (1.3)	3 (2)	5 (1.6)
			305 (100)
<b>Marital status</b>			
Single	156 (100)	149 (100)	305 (100)
Married	0 (0)	0 (0)	0 (0)
Divorced	0 (0)	0 (0)	0 (0)

including HPV vaccination, attitude towards HPV vaccination, practice on HPV vaccination and factors promoting the participation in cervical cancer vaccination. After completing the questionnaire, participants were

given pamphlets regarding cervical cancer and HPV vaccination to create awareness and improve their knowledge, attitude and practice of HPV vaccination and other methods to prevent cervical cancer.

*Statistical analysis*

Data was analysed by using *Statistical Package for Social Sciences* (SPSS) version 12.0. Descriptive statistics including frequencies and percentages were calculated for each item in the questionnaire. Level of knowledge of the respondents was classified based on the score in table 1 according to the total mark for their answers in the questionnaires. These knowledge classifications were based on a previous study (Klug et al., 2008). One mark was given to each correct answer and the total mark was 8 (Table 1).

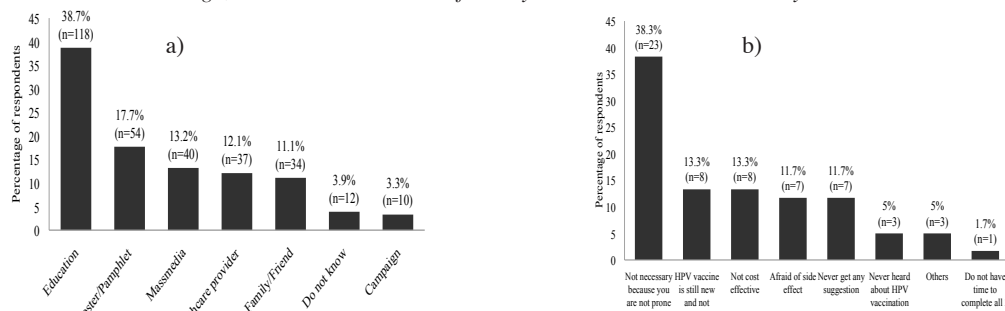
Attitudes of the respondents were divided into three categories of positive, negative and neutral based on the study by (Odusanya et al., 2001). The total score for questions regarding the respondents’s attitude needed to be first calculated before classifications of attitude could be made.

Chi-squared test was used to determine the significant association between the tested parameters. Independent T-test and ANOVA were conducted to determine if there was a significant difference between the parameters studied. Statistical significance level was 0.05.

**Results**

*Demographic data*

A total of 305 completed questionnaires, out of 358 ones distributed to third year female students were returned with a response rate of 85.2%. The respondents consisted of 156 UKM and 149 UM students. The majority of the respondents (78.9%) were 22 years old and most of them were Malay medical students. All respondents were single. Details of the demographic data are shown in Table 2.



**Figure 2. a) Main Source of Getting Information about HPV Vaccination, b) Reasons for not being Interested in Taking HPV Vaccine**

**Table 3. Practice Data of Respondents**

Groups	Yes n (%)	No n (%)	Total n (%)	$\chi^2$ & p value
<b>1) Taking HPV vaccine</b>				
	11 (3.6)	294 (96.4)	305 (100)	
<b>University</b>				
UKM	7 (4.5)	149 (95.5)	156 (51.1)	$\chi^2 = 0.712$ $p = 0.399$
UM	4 (2.7)	145 (97.3)	149 (48.9)	
<b>Faculty</b>				
Medical	6 (4.3)	134 (95.7)	140 (45.9)	$\chi^2 = 2.602$ $p = 0.272$
Dentistry	4 (5.5)	69 (94.5)	73 (23.9)	
Pharmacy	1 (1.1)	91 (98.9)	92 (30.2)	
<b>Race</b>				
Malay	4 (2.1)	189 (97.9)	193 (63.3)	$\chi^2 = 6.020$ $p = 0.111$
Non Malay	7 (6.3)	105 (93.7)	112 (36.7)	
<b>2) Recommending of HPV vaccine to family and friends</b>				
	266 (87.2)	39 (12.8)	305 (100)	
<b>University</b>				
UKM	133 (85.3)	23 (14.7)	156 (51.1)	$\chi^2 = 1.096$ $p = 0.295$
UM	133 (89.3)	16 (10.7)	149 (48.9)	
<b>Faculty</b>				
Medical	128 (91.4)	12 (8.6)	140 (45.9)	$\chi^2 = 6.179$ $p = 0.046^*$
Dentistry	58 (79.5)	15 (20.5)	73 (23.9)	
Pharmacy	80 (87)	12 (13)	92 (30.2)	
<b>Race</b>				
Malay	169 (87.6)	24 (12.4)	193 (63.3)	$\chi^2 = 5.939$ $p = 0.115$
Non Malay	97 (86.6)	15 (13.4)	112 (36.7)	
<b>3) Consulting health care provider</b>				
	111 (36.4)	194 (63.6)	305 (100)	
<b>University</b>				
UKM	67 (42.9)	89 (57.1)	149 (48.9)	$\chi^2 = 5.928$ $p = 0.015^*$
UM	44 (29.5)	105 (70.5)	149 (48.9)	
<b>Faculty</b>				
Medical	58 (41.4)	82 (58.6)	140 (45.9)	$\chi^2 = 2.867$ $p = 0.239$
Dentistry	24 (32.9)	49 (67.1)	73 (23.9)	
Pharmacy	29 (31.5)	63 (68.5)	92 (30.2)	
<b>Race</b>				
Malay	54 (28)	139 (72)	193 (63.3)	$\chi^2 = 19.565$ $p = 0.000^{**}$
Non Malay	57 (50.9)	55 (49.1)	112 (36.7)	
<b>3) Making an effort to get information</b>				
	154 (50.5)	151 (49.5)	305 (100)	
<b>University</b>				
UKM	88 (56.4)	68 (43.6)	156 (51.1)	$\chi^2 = 4.475$ $p = 0.034^*$
UM	66 (44.3)	83 (55.7)	149 (48.9)	
<b>Faculty</b>				
Medical	86 (61.4)	54 (38.6)	140 (45.9)	$\chi^2 = 13.318$ $p = 0.005^{**}$
Dentistry	27 (37)	46 (63)	73 (23.9)	
Pharmacy	41 (44.6)	51 (55.4)	92 (30.2)	
<b>Race</b>				
Malay	96 (49.7)	97 (50.3)	193 (63.3)	$\chi^2 = 1.328$ $p = 0.723$
Non Malay	58 (51.8)	54 (48.2)	112 (36.7)	

\* $p < 0.05$ , \*\* $p < 0.01$

### Knowledge of HPV infection, cervical cancer and HPV vaccination

There was no significant difference for total knowledge score between UKM and UM respondents ( $p = 0.097$ ). Details of knowledge according to universities are shown in Figure 1. There was significant difference for total knowledge score between medical and non medical (dentistry and pharmacy) respondents ( $p < 0.05$ ). Most (62.9%) of medical respondents had high level of knowledge about HPV infection, cervical cancer and HPV vaccination. There was no correlation between total score of knowledge with race ( $p = 0.093$ ).

### Attitude towards HPV vaccination

The attitude towards HPV vaccination of UM students was significantly more positive than UKM students ( $p < 0.05$ ). Details are shown in Figure 1d. The attitude of the respondents was not significantly different between medical, dentistry and pharmacy respondents ( $p = 0.196$ ). No significant difference existed between medical and dentistry respondents ( $p = 0.181$ ), dentistry and pharmacy respondents ( $p = 0.552$ ) and medical and pharmacy respondents ( $p = 0.769$ ). Most respondents from the three different faculties had positive attitude with no significant correlation ( $p = 0.182$ ) between the attitude and race of respondents.

### Practice of HPV vaccination

Only 11 respondents (3.6%) took the HPV vaccine. There was no significant association between the practice of taking HPV and universities ( $p = 0.399$ ). However, there was significant association between the practice and the effort taken to learn and search information about HPV vaccination by both university respondents ( $p < 0.05$ ). Details of practice data are shown in Table 3.

### Source of information and factors promoting the participation in the cervical cancer vaccination

The main source of the respondents in getting information regarding cervical cancer, HPV infection and vaccination was education (38.7%). Details are shown in Figure 2. The majority of the respondents (80.3%) were interested to take the HPV vaccine if vaccination were available at their campus. The main reason for being interested in taking this vaccination was because they were aware that cervical cancer is one of the most common cancers among women worldwide. Almost one-fifth of the respondents (19.7%) were not interested to take HPV

vaccine because they felt that they were not prone to be infected by HPV. Other reasons were doubt about the effectiveness and high cost of the HPV vaccines (Figure 2b).

## Discussion

The total score of knowledge on HPV infection, cervical cancer and HPV vaccination was high among UKM and UM respondents as they were studying medicine, dentistry or pharmacy. Their knowledge was higher than among health sciences students in a reported study (Tan et al., 2010) because the earlier study did not include medical or dentistry students. Medical students from both universities had higher knowledge about HPV vaccination than other students due to the fact that their education syllabus included more information regarding the disease, its treatment and prevention compared to syllabus of dental and pharmacy students. The medical respondents had also more clinical attachments at the hospital.

The knowledge of non-Malay respondents was higher than Malay respondents although the difference was not significant. This is because Chinese women have the highest incidence rate of cervical cancer in Malaysia, followed by Indian women while Malay women have the lowest rate (Lim et al., 2008). Thus, the level of awareness of cervical cancer and its preventive measures would be higher among non-malay respondents as they might seek more information about prevention of cervical cancer.

Similar to earlier reports (Tan et al., 2010), most of the respondents had a positive attitude towards HPV vaccination because they already had a high knowledge of cervical cancer and its prevention. They were also aware of how common is the disease in Malaysia and the existence of HPV vaccination to prevent cervical cancer. There was more acceptance of HPV vaccination among respondents in our study compared to respondents from different faculties attending a University in Kuala Lumpur (Wong and Sam, 2009). More UM respondents had a positive attitude than UKM respondents. This is possibly due to several factors that might contribute to a positive attitude such as financial status, family background and personal experience.

A low vaccination rate (3.6%) among the respondents in spite of their positive attitude towards vaccination was because the HPV vaccines were newly marketed in Malaysia and not many awareness programs about prevention of cervical cancer were done on or out of Universities' campuses.

There was high percentage of the respondents, especially medical students who would recommend the HPV vaccination to their family members and friends. This is because the medical students knew more about the risk to be infected by HPV, how severe the cancer can be and the importance to take a preventive measure against cervical cancer.

Most respondents were not interested in consulting the health care providers regarding the HPV vaccination. This was similar to an earlier report which concluded that some young women in Malaysia were reluctant to consult

healthcare providers on the HPV vaccination (Wong, 2008). Also a study conducted in Mysore, India (Krupp et al., 2010) showed that most of the Physicians believed that most of their patients would not respond positively to a vaccination recommendation.

Education was the main source in obtaining information about HPV vaccination among most of the respondents because they were students in medicine or a related subject. However, a study of American University Students (Lopez and Mahan, 2007) found that most students heard and knew about cervical cancer and HPV vaccination from television and radio. This is because the American students were doing non-medical subjects.

Although the majority of respondents were interested in taking HPV vaccination if it was provided conveniently at their campus, some of them refused vaccination. The primary reason for refusal was that they claimed that they were not prone to be infected by HPV. Thus, educational and awareness programs should be organized for University students to provide them with correct information about the risk of getting cervical cancer and the effective measures to prevent it. The students should understand that all women are susceptible to get cervical cancer. Other reasons for refusal of vaccination was that the vaccine was too expensive and doubt about its efficacy. Similar results were also reported (Wong, 2008; Bingham and laMontagne, 2009; Wong and Sam, 2009). However the efficacy and safety of HPV vaccines have already been established (Villa et al., 2005; Einstein et al., 2009) and this should be highlighted during educational and awareness programs.

It is ideal to implement a catch-up vaccination program in Malaysia for female school children who are above 13 years old and young adults. Although this program could be costly and hard to implement especially in rural areas but it is feasible as a similar program was successful in the vast country of Australia (Leask et al., 2009). Until it is possible to introduce a catch-up program in Malaysia, a subsidized HPV vaccination program can be implemented at Universities' campuses and also possibly at schools to young adult women who are not eligible for free vaccination. Such a program can be successful by collaboration between Ministry of Health, Ministry of education, Universities and non-governmental organizations.

In conclusion, the level of knowledge on HPV infection, cervical cancer and preventive measures against it among respondents from the two Universities was high. Most students had positive attitude towards HPV vaccination but only a few had already been vaccinated. Hence, HPV vaccines need to be subsidized to make them affordable for University students. More awareness programs and education about the effective methods to prevent cervical cancer should be provided at university campuses together with vaccination programs. This will help to reduce the rate of cervical cancer among Malaysian women.

## Acknowledgements

The results of this project have been presented in part at

the 16th International Union against Sexually Transmitted Infections Asia Pacific Conference. Bali, Indonesia, May 4-6, 2010. The presentation at this conference was supported by an un-restricting educational grant from GlaxoSmithKline (GSK) Malaysia.

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