RESEARCH COMMUNICATION

Knowledge, Attitudes and Barriers for Human Papilloma Virus (HPV) Vaccines among Malaysian Women

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Abstract

A cross-sectional study was conducted among 300 Malaysian women in the obstetrics and gynecology outpatient clinic in a selected hospital in Bangi, Selangor to determine the level of knowledge of HPV and HPV vaccines, attitudes toward HPV vaccination and barriers of being vaccinated. Factors associated with knowledge and attitudes were also addressed with a questionnaire. Seventy eight women (26%) had heard about the HPV virus and 65 about HPV vaccines (21.7%). Marital status was associated significantly with awareness of HPV and HPV vaccine (p=0.002, p=0.002; respectively), in addition to level of education (p=0.042). The percentages of women who reported correct answers for the questions on knowledge of HPV and HPV vaccine ranged from 12% to 25%. One hundred fifty nine respondents (53%) had a positive attitude toward HPV vaccination. Age, marital status, and level of education were associated significantly with attitude (p<0.001, p<0.001, p=0.002; respectively). The most important barriers reported were 'unawareness of the vaccine' 'concerned about side effects' and 'afraid of needles'. This study found a very low level of knowledge of HPV and HPV vaccine. Education of population is highly recommended and barriers to being vaccinated should be dealt with seriously.

Keywords: Knowledge - attitudes - barriers - HPV vaccination - Malaysian women

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Introduction

Cervical cancer is one of the most common cancers in women worldwide. The primary underlying cause of cervical cancer is human papilloma virus (HPV), a highly prevalent sexually transmitted infection (Bosch et al., 1995). Up to 80% of sexually active females in the United States have been exposed to the virus by age 50 years (Myers et al., 2000). It was estimated that, 500,000 new cases of cervical cancer occur each year resulting in 260,000 deaths in 2005 (Mennini, 2008). Eighty percent of these cases and over 80 percent of these deaths occurring in developing countries (Pisani et al., 1990). More than half of all cases in the world occur within the Asia-Pacific region (Garland, 2008). India alone has the highest estimated number of cervical cancer cases and deaths within Asia, corresponding to a quarter of the global disease burden (Garland, 2008).

In Malaysia, cervical cancer is the second most common cancer in women which constituted 12.9% of total female cancers as reported in the 2003 Second Report of the National Cancer Registry of Cancer Incidence in Malaysia (Lim et al., 2004). HPV-16 and HPV-18 are estimated to account for 88% of cervical carcinomas in Malaysian women (Cheah, 1994). According to the Ministry of Health Malaysia, there was an average of 2,000-3,000 hospital admissions of cervical cancer per year in the country, with the majority of cases presenting at late stages of the disease (Ministry of Health Malaysia, 1999) and the death rate due to cervical cancer from 1996 to 2000 ranged from 0.29% to 0.41% (Social Statistics Bulletin, 2005).

Cervical cancer can be prevented by identifying pre-cancerous lesions early using Pap smear screening and treating these lesions before they progress to cancer (Wong et al., 2009). Prevention, early diagnosis and treatment have been shown to reduce mortality due to cervical cancer in many countries (Free et al., 1991; National Institutes, 2007) and HPV vaccine has high efficacy for prevention of HPV vaccine types and related outcomes (Garland et al., 2007).

In Malaysia, the cervical cancer screening programme was established in 1969 to ensure early detection of cervical cancer among the target group of women aged 20-65 years (Wong et al., 2009) and many action plans and cancer awareness campaigns have been launched over the years (Lim et al., 2004). Nevertheless, no reduction in the prevalence of cervical cancer has been noted to date (Wong et al., 2009). The coverage and uptake of cervical cancer screening is considered poor as the Pap smear coverage in the country is less than 2% in 1992, 3.5% in 1995, and 6.2% in 1996 (Ministry of Health, 1997). Many

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reasons are behind this poor coverage. Unawareness of the general public about the benefits of screening is one of the possible reasons (Othman, 2002).

In 2006, the Malaysian government provided regulatory approval of the vaccine (Wong, 2008). Barriers to vaccination include costs, limited vaccine availability, and lack of vaccine awareness (Herzog et al., 2008). A little is known about the level of knowledge and attitude toward HPV vaccine in Malaysian women and also a little is known about the barriers of HPV vaccine acceptance in this country. A qualitative study in Malaysia reported that the majority of participants were not aware of HPV or HPV infection and only 10 percent of them had heard about the HPV vaccine (Wong, 2008). Therefore this study aimed to address three research questions (1) level of awareness, knowledge and attitude toward HPV and HPV vaccine, (2) reasons for non-acceptance of HPV vaccine and (3) factors associated with awareness, knowledge and attitude toward HPV and HPV vaccine among Malaysian women.

Methodology

Participants

This cross-sectional study was conducted among 300 women in the obstetrics and gynecology outpatient clinic in a selected hospital in Bangi, Selangor during the period from March 2009 until June 2009. Written consent was obtained from the participants and they were given written information about the conduct of the study enclosed with the questionnaire form. Women aged less than 18 or more than 49 years and/or unable to communicate in one of the three languages (English, Bahasa Malaysia or Mandarin) were excluded from this study.

Table 1. Socio-Demographic Characteristics of the Participants (n=300)

	N	%
Variable		
Age		
17-30	128	42.7
31-40	97	32.3
>45	75	25
Race		
Malay	275	91.7
Chinese	17	5.7
Indian	8	2.7
Marital Status		
Single	53	17.7
Married	220	73.3
Divorced	27	9.0
Education Level		
Primary	21	7
Secondary	78	26.0
Diploma	84	28.0
University	117	39.0
Total Family Income (RM)*		
<2000	21	7.0
2000 to 4000	144	48.0
>4000	135	45.0
No of Children‡		
No children	46	18.6
1-3	174	70.4
> 3	27	10.9

*RM=Ringgit Malaysia, ‡ total is 274 because single women were not included.

Research instruments

The questionnaire consisted of five parts: A) A questionnaire was developed for this study to obtain

Table 2. Factors Associated with Awareness of HPV and HPV Vaccine

	Heard about HPV			Heard about HPV vaccine		
	YES N (%)	NO N (%)	P value	YES N (%)	NO N (%)	P value
Variable						
Age						
17-30	39 (30.5)	89 (69.5)		33 (25.8)	95 (74.2)	
31-40	20 (20.6)	77 (79.4)		18 (25.8)	79 (74.2)	
>40	19 (25.3)	56 (74.7)	0.246	14 (18.7)	61 (81.3)	0.328
Race						
Malay	71 (25.8)	204 (74.2)		58 (21.1)	217 (78.9)	
Chinese	4 (23.5)	13 (76.5)		6 (35.3)	11 (64.7)	
Indian	3 (37.5)	5 (62.5)	0.738	1 (12.5)	7 (87.5)	0.315
Marital status						
Single	24 (45.3)	29 (54.7)		21 (39.6)	32 (60.4)	
Married	47 (21.4)	173 (78.6)		38 (17.3)	182 (82.7)	
Divorced	7 (25.9)	20 (74.1)	0.002	6 (22.2)	21 (77.8)	0.002
Education level						
Primary	4 (19.0)	17 (81.0)		4 (19.0)	17 (81.0)	
Secondary	13 (16.7)	65 (83.3)		13 (16.7)	65 (83.3)	
Diploma	30 (35.7)	54 (64.3)		25 (29.8)	59 (70.2)	
University	31 (26.5)	86 (73.5)	0.042	23 (19.7)	94 (80.3)	0.191
Total family income						
<2000	5 (23.8)	16 (76.2)		6 (28.6)	15 (71.4)	
2000 to 4000	44 (30.6)	100 (69.4)		36 (25.0)	108 (75.0)	
>4000	29 (21.5)	106 (78.5)	0.219	23 (17.0)	112 (83.0)	0.198
Number of children						
No children	13 (28.3)	33 (71.7)		10 (21.7)	36 (78.3)	
1 to 3	39 (22.4)	135 (77.6)		33 (19.0)	141 (81.0)	
More than 3	2 (7.4)	25 (92.0)	0.109	1 (3.7)	26 (96.3)	0.116

Table 3. Knowledge of HPV-Related Issues N=300

	Correct answer	Correct answer (N)	Correct answer %	Wrong answer N	Wrong answer %
HPV is transmitted by sexual intercourse	True	65	21.7%	235	78.3%
HPV causes cervical cancer	True	66	22.0%	234	78.0%
HPV causes genital warts	True	38	12.7%	262	87.3%
Vaccination protects against cervical cancer	True	76	25.3%	224	74.7%
Vaccine can be offered to female children age 9 and above	True	47	15.7%	253	84.3%
Vaccine requires two to three injections	True	54	18.0%	246	82.0%
Vaccine is only for women with more than 1 sexual partner	False	70	23.3%	230	76.7%

socio-demographic and socio-economic factors. It included questions about age, marital status, race, level of education, total family monthly income and number of children. B) Two questions to assess the participants' awareness towards HPV and HPV vaccine. C) Knowledge of the participants on HPV and HPV vaccine was assessed by seven questions. D) Attitude toward HPV vaccine was assessed by one question 'Do you think that the introduction of HPV vaccination is a good idea?' Respondents were asked to indicate their agreement with that statement. E) Reasons for non-acceptance of the vaccine were assessed with nine questions; participants were asked if they were agreed that these factors were reasons of non-acceptance of HPV vaccine. The questionnaire was given in English, Bahasa Malaysia and Mandarin languages. It was pre-tested on 15 women before the conduction of the study to ensure it was easily understood.

Statistical methods

Data analysis was performed using "Statistical Package for Social Sciences (SPSS) version 13. After all data were entered into SPSS, they were reviewed for the accuracy of data entry. All the continuous variables were categorized. Descriptive statistics was done. Chi square test was performed to explore the relation between socio-demographic and economic factors and the study outcome variables (awareness knowledge and Attitude).

Results

Socio-demographic characteristics

Participants of this study were 300 women with mean age of 33.6 years. One hundred twenty eight (42.7%) were in the age group 17-30 years old and seventy five (25%) were > 40 years old. Majority of the participants were Malay (91.7%), married (73.3%) with number of children 1-3 (70.4%). Majority of the participants have a university degree (117, 39%). One hundred forty four women (48%) had monthly family income between 2000RM to 4000 RM. (Table1).

Awareness of HPV and HPV vaccines

Participants were asked if they had heard about human papilloma virus (HPV) and HPV vaccine.

Only seventy eight out of 300 women (26%) have heard about HPV virus and 65 have heard about HPV vaccine (21.7%). Only Marital status and level of education were found to be significantly associated with awareness on HPV (p=0.002, p=0.042 respectively) (Table 2).

Marital status only was significantly associated with HPV vaccine awareness (p=0.002) (Table 2).

Knowledge of HPV-related issues

Knowledge of the participants on HPV and HPV vaccine was assessed by seven questions. Sixty five women (21.7%) reported that HPV is transmitted through sexual intercourse. Sixty six women (22.0%) reported that HPV is one of the causes of cervical cancer among women. Regarding genital warts, 38 women (12.7%) reported that HPV can cause the genital warts among women, 76 (25.3%) knew that HPV vaccination can protect women against cervical cancer. Forty seven participants (15.7%) reported that vaccine can be offered to female children nine and above of age and 54 (18%) reported that HPV vaccine requires 2-3 injections.

Seventy of the participants (23.3%) reported that vaccine is not only for women with more than one sexual partner. (Table3). Age, marital status and number of children were significantly associated with knowledge of Malaysian women on HPV and HPV vaccine (p=0.048, p=0.022, p=0.005 respectively) (Table 4).

Table 4. Factors Associated with Knowledge of HPV and HPV Vaccine Among Malaysian Women

	Yes N (%)	No N (%)	P value
Variable			
Age			
17-30	43 (33.6)	85 (66.4)	
31-40	20 (20.6)	77 (79.4)	
>40	16 (21.3)	59 (78.7)	0.048
Race			
Malay	70 (25.5)	205 (74.5)	
Chinese	8 (47.1)	9 (52.9)	
Indian	1 (12.5)	7 (87.5)	0.097
Marital status			
Single	22 (41.5)	31 (58.5)	
Married	51 (23.2)	169 (76.8)	
Divorced	6 (22.2)	21 (77.8)	0.022
Education level			
Primary	4 (19.0)	17 (81.0)	
Secondary	18 (23.1)	60 (76.9)	
Diploma	23 (27.4)	61 (72.6)	
University	34 (29.3)	83 (70.9)	0.683
Total family income			
<2000	8 (38.1)	13 (61.9)	
2000 to 4000	40 (27.8)	104 (72.2)	
>4000	31 (23.0)	104 (77.0)	0.295
No of Children			
No Children	18 (39.1)	28 (60.9)	
1 to 3	37 (21.3)	137 (78.7)	

Table 5. Factors Associated with Attitude Toward HPV Vaccine

	Yes N (%)	No N (%)	P value
Variable			
Age			
17-30	84 (65.6)	44 (34.4)	
31-40	51 (52.6)	46 (47.4)	
>40	24 (32.0)	51 (68.0)	<0.001
Race			
Malay	147 (53.5)	128 (46.5)	
Chinese	8 (47.1)	9 (52.9)	
Indian	4 (50.0)	4 (50.0)	0.864
Marital status			
Single	37 (69.8)	16 (30.2)	
Married	116 (52.7)	104 (47.3)	
Divorced	6 (22.2)	21 (77.8)	<0.001
Education level			
Primary	6 (28.6)	15 (71.4)	
Secondary	33 (42.3)	45 (57.7)	
Diploma	45 (53.6)	39 (46.4)	
University	75 (64.1)	42 (35.9)	0.002
Total family income			
<2000	14 (66.7)	7 (33.3)	
2000 to 4000	69 (47.9)	75 (52.1)	
>4000	76 (56.3)	59 (43.7)	0.161
Number of Children			
No children	28 (60.9)	18 (39.13)	
1 to 3	85 (48.9)	89 (51.1)	

Attitudes toward HPV vaccination

Respondents were asked if HPV vaccine introduction was a good idea. One hundred fifty nine out of 300 respondents said 'yes' (53%) (had positive attitude) toward the vaccine, 51(17%) said 'no' (had negative attitude) and 90 (30%) had no decision. Of those who had heard about HPV, 52 participants (66.7%) said that vaccine introduction was a good idea whereas 26 (33.3) of them said 'no'.

Factors associated significantly with Attitude toward HPV vaccine were age (p<0.001), marital status (p<0.001) and education level (p= 0.002) (Table 5).

Barriers of being vaccinated

Regarding the barriers about the HPV vaccine among the participants, one hundred thirty one participants (43.7%) reported that non awareness of the vaccine is considered a barrier. One hundred twenty participants (40%) concerned about the side effects of the HPV vaccine. Eighty one (27%) of the participants were afraid of needles. Seventy one (23.7%) of the participants were afraid of social stigma related to HPV vaccination.

Other barriers reported by the participants were 'no time to take the vaccine' (20.3%), 'vaccine was expensive'(15.7%), 'vaccine is not reachable' (11.7%), and 'vaccination was not needed because they were not sexually active' (10.7%) (Table 6).

Discussion

This study found that awareness of HPV (26%) and HPV vaccine (21.7%) were low in comparison to previous studies which reported higher rate of awareness ranged from 57.6% to 84.3% (Jain et al., 2009 and Christian et al ., 2009). However, low level of knowledge was found by some previous studies from Malaysia (Wong, 2008) and other countries (Giles & Garland, 2006; Moreira et al., 2006; Donders et al., 2008; Vanslyke et al., 2008). For example, a study in Norway showed that only 20% of women had heard about HPV (Kahn et al., 2003). Lenehan et al., (2008) found low levels of knowledge about some specific parameters of HPV vaccination such as 'what will it cost' and 'how many injections are required' (Lenehan et al., 2008). In this study, few participants reported that HPV is transmitted through sexual intercourse. Sixty six women (22.0%) reported that HPV is one of the causes of cervical cancer among women. This is very low compared to that reported by Holcomb et al. (2004) which reported that 39% of the participants knew that HPV could cause cervical cancer. However, low percentage of knowledge was reported in a previous Norway study which found that 15% of the participants knew about HPV relationship to cervical cancer (Kahn et al. 2003). Regarding genital warts, thirty eight women (12.7%) reported that HPV can cause the genital warts among women. This is very low compared to Holcomb et al. (2004) study which reported that 33.8% of the respondents were aware that HPV caused genital warts. The majority of the study participants reported that vaccine is only for women with more than one sexual partner. Similar findings reported by Wong (2008) that many young women felt that they did not need the vaccine or would prefer to wait because they were not sexually active; this highlights the failure to educate women of the importance of vaccination before exposure to HPV. Young women must be made aware that the vaccine is most effective if administered before initiation of sexual activity (Goldie et al., 2004; Zimet, 2005) so they should not delay vaccination.

Regarding the barriers about the HPV vaccine among the participants, (10.7%) reported that vaccination was not needed if women were not sexually active. similar study reported that the reason for not receiving HPV vaccination included not being sexually active (Jain et al., 2009). Some

Table 6. Barriers of Being Vaccinated

	Yes N (%)	No N (%)	Do not know N (%)
Not aware of the vaccine	131 (43.7)	105 (35.0)	64 (21.3)
Concern about side effects of the vaccine	120 (40.0)	104 (34.7)	76 (25.3)
Afraid of needles	81 (27.0)	177 (59.0)	42 (14.0)
Afraid of social stigma	71 (23.7)	152(50.60)	77 (25.7)
Do not have time to take vaccination	61 (20.3)	182 (60.7)	57 (19.0)
Vaccine is expensive	47 (15.7)	51 (17.0)	202 (67.3)
Vaccine is not easily reachable	35 (11.7)	74 (24.7)	191 (63.6)
Vaccination not needed if not sexually active	32 (10.7)	106 (35.3)	162 (54.0)

of the participants reported that vaccine is not reachable; they did not take the vaccine because it's expensive, and do not have time to take the HPV vaccination (15.7%, 11.7% and 20.3%) respectively. This finding is similar to a Canadian study which reported that most young women would accept HPV vaccine if it is free of charge (Sauvageau et al., 2007). The recommended 3-dose course costs approximately US$360 (MYR 1200) in the private sector in Malaysia and is unaffordable for many, especially women of lower socioeconomic status. To ensure wide coverage, the vaccine may need to be incorporated into the vaccination program in Malaysia (Wong and Sam, 2007).

Eighty one (27%) of the participants were afraid of needles. Similar finding was reported by Rosenthal et al., (2008) that those mothers who had daughters who would not mind shots were more likely to vaccinate their daughters, which is similar to the finding of others that rejectors of vaccination report disliking needles and pain (Zimet et al., 2001). Thus, it may be important to address fear of shots as part of the counseling process. Accurate and supportive information will need to be provided to public. One hundred twenty participants (40%) concerned about the side effects of the HPV vaccine. Consistent findings showed that the rejection of vaccination were largely centered on the newness of the vaccine, and thus, not having enough information regarding safety and efficacy (Rosenthal et al., 2008). Similar finding by Jain et al., (2009) reported that vaccination side effects were the main reason among participants. Another study reported that the newness of the vaccine, efficacy and safety were the major concerns for the study participants (Wong, 2008). Therefore physician should provide information on vaccine efficacy and the duration of protection in order to enable vaccine recipients to make informed choices. Seventy one (23.7%) of the participants were afraid of social stigma related to HPV vaccination. In this study the level of education was found to be significantly associated with awareness of HPV. Similar finding reported that higher education was associated with higher HPV and HPV vaccine awareness. Tiro et al. found similar results in a national survey assessing HPV awareness among women 18-75 years old (Tiro et al., 2007). Therefore educational materials should be developed to provide comprehensive, detailed information about HPV and the vaccine with an emphasis given to women from minority groups and those with lower education (Calloway et al ., 2006; Sherris et al., 2006).

In this study, marital status was significantly associated with HPV vaccine awareness. In contrast, a previous study showed that not being married is associated factor with initiation of the HPV vaccine series among women (Jain et al., 2009). This may due to those unmarried women may perceive themselves at greater risk for HPV infection and therefore may be more interested in vaccination. Age, marital status and number of children were significantly associated with knowledge of HPV and HPV vaccine. Regarding Attitude toward HPV vaccine, factors associated significantly with it were age, marital status and education level.

There is evidence that increased knowledge of a particular disease and its associated vaccine have proven to be important determinants of people's health beliefs and practices (Bodenheimer et al., 1986). Thus, rising public awareness and knowledge on HPV and HPV vaccine are important determinant of heath and health promotion programs implemented by the government. Without communication vaccines may have little impact on disease burden. It is important to raise awareness among population on HPV and its link to cervical cancer. Education on HPV vaccine should also include information about its safety and its benefit to prevent cervical cancer. Thus, public health campaign and patient education is required to increase the acceptance of the HPV vaccine among the population. Even though the HPV vaccine has been available since November 2006 in Malaysia, high price of the vaccine still a barrier that prevent women to be vaccinated. It is important to offer the vaccine in lower price to be affordable to all women.

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