

RESEARCH ARTICLE

Does the Success of a School-based HPV Vaccine Programme Depend on Teachers' Knowledge and Religion? - a Survey in a Multicultural Society

Yin Ling Woo^{1,2*}, Sharina Mohd Razali¹, Kuoh Ren Chong¹, Siti Zawiah Omar^{1,2}

Abstract

Organized introduction of prophylactic human papillomavirus (HPV) vaccination can reduce the burden of cervical cancer in developing countries. One of the most effective ways is through a national school-based program. Information on teachers is therefore important since this group may have a disproportionate influence in the success of any implementation. **Objective:** To assess teachers' knowledge and perception of HPV, cervical cancer and HPV vaccine prior to commencing a school-based HPV vaccination program in a multiethnic, predominantly Muslim country. Factors associated with acceptability of the vaccine were identified. **Method:** A bilingual questionnaire was applied to 1,500 secondary school teachers from 20 urban schools in Malaysia. Data collected were analyzed using SPSS version 17. **Results:** 1,166 questionnaires were returned. From this group, 46.1% had never heard of HPV while 50.9% had never had a pap smear. However, 73.8% have heard of the HPV vaccine with 75% agreeing to have it. 96% considered themselves religious with 79.8% agreeing to have the vaccine. **Conclusions:** A national school-based HPV immunization program can be implemented effectively in a multiethnic, cultural and religious country despite limited knowledge of HPV-related pathology among teachers. In addition, the perception that religion has a negative influence on such a program is unwarranted.

Keywords: HPV vaccine - school-based vaccination programme - cervical cancer prevention - developing world

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Introduction

More than 80% of women dying from cervical cancer are from the developing world. This accounts for 13% of female cancers in these countries (Globocan, 2012). It is projected that by 2030 there will be a doubling of death in these countries if no interventions are implemented (Ladner et al., 2012).

The prophylactic HPV vaccines, Gardasil and Cervarix are highly effective in preventing type-specific high-grade premalignant lesions of the cervix. Organized HPV vaccination has been shown to dramatically reduce the incidence of newly diagnosed genital warts and high grade cervical intraepithelial neoplasia among those vaccinated (Brotherton et al., 2011; Smith et al., 2011). This supports the notion that cervical cancer can be reduced through HPV vaccination. Hence, a potential strategy to reduce the burden of cervical cancer is through a structured HPV vaccination program, particularly in countries where organized cervical screening does not exist.

Globally, immunization is one of the most successful forms of public health interventions. The assumption that the cost of vaccines prohibits successful implementation of HPV vaccination (Muthumariappan et al., 2010) can

be challenged. Many pilot projects across the globe have demonstrated that high uptake of HPV vaccination can be achieved through innovative partnerships between governmental, non-governmental and charitable organizations (Ladner et al., 2012). Through these projects, the lack of systematic research on the acceptability of the vaccines was identified as being a critical factor requiring attention (Li et al., 2009).

Uptake of vaccines depends not just on cost and population acceptability but also on the infrastructure to deliver it. School-based immunization programs are one of the most successful approaches (Ladner et al., 2012; Soofi et al., 2012) with teachers playing an important supportive role.

It was planned that the HPV vaccine be incorporated into the Malaysian national immunization program in 2010 whereby 13 year old girls are offered free vaccination; a school-based program was employed. In conjunction, a questionnaire-based study to assess the broad understanding/ perception of HPV and attitude of teachers towards HPV vaccination was conducted. Identifying and addressing the misunderstanding among teachers may empower them to play a more active role in school based HPV vaccination program.

¹Department of Obstetrics and Gynaecology, Faculty of Medicine, ²University Malaya Cancer Research Institute, University Malaya, Lembah Pantai, 50603 Kuala Lumpur, Malaysia *For correspondence: ylwoo@um.edu.my

Materials and Methods

This survey was conducted from September to November 2010. A bilingual questionnaire, validated internally, was utilized (KR Chong, unpublished). Participants were teachers from secondary schools from urban schools. Permission was granted by the Ministry of Education (Ref: KP(BPPDP)603/5/JLD.06) to carry out the survey.

Questionnaires were sent either by post or in person to the respective schools. A total of 1500 questionnaires were sent out and 1166 were collected.

Participation was voluntary without any incentives. Their willingness to answer the questionnaire was taken as consent to participate in this study. When there were unanswered questions, the denominator used for the analysis would have been less than the total number of questionnaires returned.

Data were analyzed using statistical software (SPSS version 17.0). T-test was used to examine the association between the different groups and their responses.

Results

Of the 1500 questionnaires sent to 20 national schools in urban Klang Valley, 1166 (77.7%) were returned and analyzed. As expected, 936 (94%) of the teaching profession were females. The mean age of the respondents was 36.6 (SD=9.7), with majority of them being ethnic Malays (68.9%), followed by Chinese (20.4%) and Indians (8.1%). Among the respondents, 69.4% practiced Islam, 14.8% Buddhism, 8.4% Christianity and 6.4% Hinduism. The majority of respondents was married (76%) and received government aid for medical care (75.6%). The demographics are shown in Table 1.

Of the 936 female respondents, 431 (50.9%) indicated that they have never had a pap smear. Among the 408 (43.6%) that have had a prior cervical cytology, 380 (93.1%) claimed to have a normal smear history. The correlation of HPV knowledge among the female respondents, in relation to their cytology history is shown in Table 2.

The survey revealed that nearly half (46.1%) of the teachers have never heard of HPV with the majority not knowing that it is sexually acquired or that it is associated with genital warts. Despite this, roughly $\frac{3}{4}$ (73.8%) of those surveyed have heard of the cervical cancer vaccine with more than 75% of them agreeing to have the vaccine. In addition, more than 70% of them would vaccinate their daughters and encourage their friends/family to be vaccinated.

Knowledge about HPV among male and female teachers also differed significantly. The majority of female teachers 451 (53.7%) have heard of HPV vaccine compared to 18 (33.3%) among male teachers ($p=0.006$, $p<0.05$). Half of female teachers 462 (50.5%) were aware that HPV is associated with cervical cancer compared to male teachers ($p=0.008$, $p<0.05$). Both female and male teachers were not aware that HPV was spread by sexual activity.

More than 99% of respondents claimed to belong to

one of the four main religious groups in Malaysia. On a scale of 1-10 (1=not important, 10=very important), the respondents were asked to rate the importance of religion is in their lives. For the purpose of analyses, the role of religion among the respondents were grouped into three categories; not so important (1-3), moderately important (4-6), highly important (7-10). 1051 (96%) viewed religion as being very important. Only 9 (0.8%) stated that religion was not so important while 35 (3.2%) claimed that religion was moderately important to them. In this study, no meaningful correlations could be obtained among the different levels of religiosity.

The responses of the respondents who had children ($n=769$, 67.8%) were compared to those who did not have any children ($n=364$, 32.1%). There were no significant differences in their responses, in particular whether or not they would allow their daughters to be vaccinated (77.3% vs 76.8% respectively).

When asked about the factors that influenced their decision to accept the vaccine, the most popular reason was safety of the vaccine (84%), followed by risks associated with vaccine (55.4%), effectiveness of the vaccine (55%) and doctor's advice (54.4%). The least popular reason for not taking the vaccine is the fact that they are vegetarian (4.2%). Surprisingly, only a minority (35.8%) thought that the 'halal-ness' of the vaccine would influence their decision in taking or not taking the vaccine. This was contrary to what we had expected in a predominantly Muslim population.

Table 1. Demographics of Teachers Surveyed

		N	(%)
Gender	Female	936	94
	Male	60	6
	Unrecorded	170	
Ethnicity	Malay	790	68.9
	Chinese	234	20.4
	Indian	93	8.1
	Others	29	2.6
	Unrecorded	20	
Religion	Muslim	796	69.4
	Buddhist	170	14.8
	Christian	97	8.5
	Hindu	74	6.4
	Others	8	0.7
	No religion	2	0.2
	Unrecorded	19	
Marital Status	Married	876	76
	Single	248	21.5
	Divorced	18	1.6
	Widow/widower	10	0.9
	Living with partner	1	0.1
	Unrecorded	13	
Healthcare plan	Self financing	238	20.7
	Government subsidy	869	75.6
	Others	43	3.7
	Unrecorded	16	
Education level	College/university	1099	95.1
	Secondary	38	33.3
	Studying at college/university		
	Others	14	1.2
	Unrecorded	5	0.4
		10	

Table 2. Cervical Cytology History in Relation to HPV Knowledge

HPV knowledge	Pap smear		
	Never had (n=431)	Had (n=408)*	
		Normal smear history (n=380)	History of abnormal cytology (n=14)
Have heard of HPV			P values=0.007*
Agree	212 (49.6%)	228 (60.3%)	4 (28.6%)
Disagree	30 (7%)	26 (6.9%)	2 (14.3%)
Don't know	185 (43.3%)	124 (32.8%)	8 (57.1%)
Unrecorded	4	2	-
TOTAL	427	378	14
HPV infection is common in Malaysia			P values=0.0009*
Agree	86 (20.4%)	117 (31.8%)	5 (35.7%)
Disagree	77 (18.2%)	58 (15.8%)	1 (7.1%)
Don't know	259 (61.4%)	193 (52.4%)	8 (57.1%)
Unrecorded	9	12	-
TOTAL	422	368	14
HPV infection causes warts			P values=0.109
Agree	58 (13.7%)	69 (18.9%)	1 (7.1%)
Disagree	15 (3.5%)	17 (4.6%)	1 (7.1%)
Don't know	351 (82.8%)	280 (76.5%)	12 (85.7%)
Unrecorded	7	14	-
TOTAL	424	366	14
HPV infection is acquired by sexual activity			P values=0.0005*
Agree	123 (29%)	147 (40.2%)	7 (50%)
Disagree	23 (5.4%)	28 (7.7%)	-
Don't know	278 (65.6%)	191 (52.2%)	7 (50%)
Unrecorded	7	14	-
TOTAL	424	366	14
HPV infection is associated with cervical cancer			P values<0.0001
Agree	192 (45.4%)	211 (57.2%)	6 (42.8%)
Disagree	1 (0.2%)	4 (1.1%)	-
Don't know	230 (54.4%)	154 (41.7%)	8 (57.1%)
Unrecorded	8	11	-
TOTAL	423	369	14
Have heard of cervix cancer vaccine			P values=0.0038*
Agree	286 (66.5%)	290 (76.3%)	11 (78.6%)
Disagree	57 (13.3%)	42 (11.1%)	2 (14.3%)
Don't know	87 (20.2%)	48 (12.6%)	1 (7.1%)
Unrecorded	1	-	-
TOTAL	430	380	14
Agreeable to have the vaccine			P values=0.06
Agree	359 (83.5%)	294 (77.8%)	10 (71.4%)
Disagree	23 (5.3%)	33 (8.7%)	2 (14.3%)
Don't know	48 (11.2%)	51 (13.5%)	2 (14.3%)
Unrecorded	1	2	-
TOTAL	430	378	14
Will vaccinate their daughters			P values=0.0038*
Agree	302 (80.3%)	256 (74.6%)	9 (75%)
Disagree	7 (1.9%)	23 (6.7%)	1 (8.3%)
Don't know	67 (17.8%)	64 (18.7%)	2 (16.7%)
Unrecorded	55	37	2
TOTAL	376	343	12
Will encourage their friends/family to be vaccinated			P values=0.0008*
Agreeable to have the vaccine	327 (76.9%)	247 (66.4%)	9 (64.3%)
Disagree	13 (3.1%)	27 (7.3%)	2 (14.3%)
Don't know	85 (20%)	98 (26.3%)	3 (21.4%)
Unrecorded	6	8	-
TOTAL	425	372	14

*P<0.05 was taken as being statistically significant

Only 145 (12.7%) teachers feel they have enough knowledge to counsel parents when asked. 670 (58.7%) feel they don't have enough knowledge to do so and majority of the teachers 1104 (96.8%) feel they need to be given more information about the vaccine. 1077 (94.6%) teachers feel government should provide more

information to educate the public about cervical cancer and the vaccine. 822 (72.3%) teachers would encourage their students to take this vaccine. 781 (68.5%) teachers comfortable discussing with their students/parents about this vaccine whilst 291 (25.5%) are unsure.

Discussion

While there have been numerous studies describing the attitudes, knowledge and acceptance of parents, students and healthcare professionals (Brabin et al., 2006; Madhivanan et al., 2009; Sam et al., 2009; Tozzi et al., 2009; Young, 2010; Ben et al., 2011; Phianmongkhol et al., 2011; Rashwan et al., 2011; Ghotbi et al., 2012) on HPV and its vaccine, to date, there have been no published studies on teachers. Pilot projects undertaken in less developed countries demonstrate that schools can be successfully used as a venue for HPV vaccinations (Ladner et al., 2012). Furthermore, the observation that teachers play an important role in helping with the vaccination program (record keeping, preparing the girls and parents for vaccination and following up with girls who missed vaccination) was noted.

Knowledge of HPV and its associated diseases in Asia Pacific has been shown to be poor (Shah et al., 2008; Young, 2010). In this cohort, 46.1% of teachers claimed that they have heard of human papillomavirus and 73.8% have heard of the HPV vaccine. This was significantly higher than the knowledge among local female university students where the corresponding findings were 21.7% and only 10.3% (Wong, 2008). This may have resulted from the extensive campaign (newspaper, banners, television advertisements) launched by the government to educate public about the HPV vaccine or because the respondents in this study have tertiary education.

Despite that, the majority of teachers in this study feel they do not have the knowledge to counsel parents if asked and that they need to be given more information about the vaccine.

Although the knowledge of HPV and its vaccine is relatively good compared to other Asia Pacific populations (Li et al., 2009; Madhivanan et al., 2009; Young, 2010) the majority of teachers surveyed were not aware that HPV is transmitted through sexual activity and its association with cervical cancer.

There has always been a perception that religion may be an issue when implementing a vaccine for a sexually transmitted infection, particularly in a predominantly Islamic country such as Malaysia. Some studies suggest the association of increased religiosity with a reduction in the likelihood to vaccinate (Ben et al., 2011) whilst others report no difference (Marshall et al., 2007).

One of the striking and important observations in this survey is that despite being a religious society, the acceptability of HPV vaccination was still high. This was contrary to studies that showed differences in acceptability among those who were religious compared to those who were not (Marshall et al., 2007; Ben et al., 2011). Furthermore, 95% of the cohort surveyed disagreed that vaccination would increase promiscuity. Due to the unique socio-cultural composition of Malaysia, it can be argued

that the observation made within this context may not be transferred to another society.

One of the most notable finding is that only 12.7% of these teachers felt that they had enough knowledge to counsel parents while 97% expressed that they needed more information. Despite this, the uptake of vaccine among 13 year-old-girls in Malaysia has been encouraging. The Malaysian Health Ministry reported its statistics for national school-based immunization program for 13 year-old-girls; in the last quarter of 2010, 95% of parents consented for the immunization (Ministry of Health, 2010). This was followed by an uptake of 90.3% for the first dose and 88.6% for the second dose of vaccine. This suggests that the teacher's knowledge and attitude towards HPV vaccine did not significantly influence the uptake amongst students. It is likely that parents readily accept the HPV vaccine as beneficial as it was implemented by the government in a school-based program. Furthermore, the 'status quo bias' phenomenon which describes how individuals would preferentially opt for the 'default' position (in this case, accept HPV vaccination) is likely to be in effect (Samuelson, 1988). This means that parents and students would most likely choose the recommended vaccination policy than to go through the 'inconvenience' of opting out.

Despite the poor knowledge about HPV and the vaccine, the majority would actually encourage vaccination and even vaccinate their daughters. This observation is consistent with other studies (Madhivanan et al., 2009; Tozzi et al., 2009)

In conclusion, a national school-based HPV immunization program can be implemented effectively in a multiethnic, cultural and religious country despite limited knowledge of HPV-related pathology among teachers. In addition, the perception that religion has a negative influence on such a program is unwarranted.

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