

## **The Study on the Awareness and the Acceptability Level among Health Sciences Students at the Higher Learning Institution in Malaysia on Human Papillomavirus (HPV) Vaccination Issue.**

### **Kajian Terhadap Kesedaran dan Tahap Penerimaan Dikalangan Pelajar Sains Kesihatan di Institusi Pengajian Tinggi di Malaysia Mengenai Isu Vaksin Human Papillomavirus (HPV)**

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#### **ABSTRACT**

*The awareness on Human Papilloma Virus or known as HPV that affecting both males and females all around the world does not ensure that the individual will easily accept HPV vaccination and therefore may lead to health strategies implications. Therefore, the aim of this study was to assess the awareness and the acceptability level among the health sciences students with regard to gender differences at one of the higher learning institution in Malaysia regarding HPV vaccination and infection. A cross sectional study design using a set of questionnaire based survey was conducted among 210 students between the age group 19-28 years comprising 90 males and 120 female students using convenient sampling method to gauge the awareness of HPV infection and the acceptability of HPV vaccination among them. The result of the study was analysed by using SPSS17 and descriptive analysis frequency and percentage. Mean scores for demographic items were tabulated, statistical difference were found regarding awareness with regard to gender differences ( $p < 0.05$ ) from the perspectives of preventable nature of cervical cancer, availability of vaccine, age group for vaccination, transmission of virus and other modes. Therefore, the existence of gap in term of awareness and acceptability of HPV vaccination among the health sciences students should be addressed closely in order to reach out the public population. Results of this study will help in assessing the need for awareness programs regarding this public health issue.*

**Keywords:** HPV vaccination, HPV awareness, HPV acceptability, Health sciences students

#### **ABSTRAK**

*Keperihatinan terhadap jangkitan Virus Human Papilloma (HPV) di kalangan lelaki dan perempuan tidak menjamin individu berkenaan akan mendapatkan vaksin HPV dan ini menyumbang mereka kepada implikasi strategi kesihatan. Justeru, kajian ini bertujuan*

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untuk meninjau tahap kesedaran dan penerimaan pelajar-pelajar Sains Kesihatan berdasarkan jantina di salah sebuah pusat pengajian tinggi di Malaysia ke atas vaksin HPV dan jangkitannya. Satu kajian silang keratan rentas menggunakan borang kaji selidik telah dijalankan ke atas 210 pelajar berumur di antara 19-28 tahun (90 pelajar lelaki dan 120 pelajar perempuan) menggunakan kaedah persampelan mudah untuk menilai keperihatinan jangkitan HPV dan tahap penerimaan vaksin HPV di kalangan mereka. Hasil kajian dianalisis menggunakan SPSS17 menggunakan analisis deskriptif frekuensi dan peratusan. Min skor bagi item-item demografi telah dijadualkan dan didapati terdapat perbezaan statistik berhubung keperihatinan berdasarkan perbezaan jantina ( $p < 0.05$ ) daripada perspektif pencegahan awal kanser servikal, ketersediaan vaksin, kategori umur untuk divaksin, transmisi virus dan mod lain. Hasil kajian juga mendapati wujud jurang dari segi keperihatinan dan penerimaan vaksin HPV di kalangan pelajar Sains Kesihatan yang perlu ditangani dengan teliti bagi meningkatkan keperihatinan populasi umum. Hasil kajian ini akan dapat membantu untuk penilaian keperluan mengadakan program keperihatinan berhubung isu kesihatan umum.

**Kata Kunci:** Vaksin, Jangkitan, HPV, Sains Kesihatan

## Introduction

Proper vaccine administration of immunization is a vital method of halting an infectious disease by making a person immune or resistant, (WHO, 2016). It also reduces escalation of the disease in the population. Vaccinations national programs, which being practiced in many countries are either recommended or mandatory. Recommended vaccination are vaccines that are included in the national immunization program and normally being funded by the government or paid by the recipient themselves. On the other hand, mandatory vaccination means every child must receive a vaccination forced by the law, leaving parents with no option to accept the uptake or not. In Boston, United States, a child that did not take any one vaccine listed in the immunization schedule will not be approved to enroll in schools. As in Malaysia, vaccinations are only recommended not mandatory. Figure 1 shows the vaccines listed in the Immunization Schedule of the National Immunisation Programme, which is provided free of charge in all Ministry of Health Malaysia facilities.

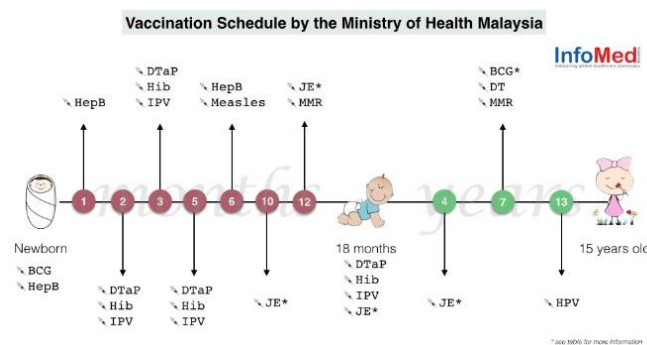


Figure 1: Immunisation Schedule for National Immunisation Program, Ministry of Health Malaysia, (2015). Retrieved from <http://infomed.com.my/vaccination-in-malaysia>

Human Papillomavirus (HPV) vaccine is used to prevent HPV, which is a common virus affecting both males and females all around the world. Papilloma means warts, non-cancerous tumors which are caused by some of the HPV types. HPV is mostly transmitted sexually through the contact with infected genital skin, mucous membranes or bodily fluids

and can be passed through intercourse or oral sex. However, HPV is asymptomatic where patient does not develop any symptoms due to HPV, but only realizes it when there is warts and have abnormal Pap smear (screening procedure for cervical cancer) results. In fact, there is no test to find out a person's HPV status. Although there are vaccines for HPV, there are some that are not aware of the effects of HPV that could be detrimental.

Due to that, in 2010, the HPV vaccine was introduced as part of the National Immunization Programme in Malaysia. The HPV vaccine will protect girls from developing cervical cancer when they are adults. Thus, health sciences students as future health care professionals play an important role in instilling the awareness and acceptability of HPV and HPV vaccination among the public. The way health professionals have been oriented with HPV vaccine and their willingness to indicate it to the public will affect the effectiveness of HPV vaccination.

Hence, it is vital to evaluate the health sciences students' awareness and acceptability on HPV vaccination at initial stage and followed by the public awareness in spreading in a wider range of population. Moreover, very few studies have been documented to the level of awareness and acceptability of HPV infection and vaccination among health sciences students that will play a crucial role as a future health practitioners. Therefore, the aims of this study is to analyze the awareness and acceptability about HPV vaccination among health sciences students.

### Problem Statement

In recent years, the active role played by health sciences students in providing health information became an important platform source of information to the public, especially to parents and children in term of creating awareness in public issues especially through their community and clinical practice base on their educational background. Furthermore, recent highlights on HPV infection and HPV vaccination has caught the concern and interest to the public, but eventually the amount of awareness regarding this concern is still at low impact. Therefore, it was still vague from the aspects of creating awareness whether these group of health sciences and medical students have gauge the improved knowledge on HPV infection and HPV vaccination. Therefore, this situation has lead the researchers to conduct this current study to have a vivid understanding and to ascertain if there were awareness and acceptability on this public issue based on their perspectives from gender differences.

### Literature Review

A study conducted by Sami et al., (2009) on the knowledge, attitude and barriers for HPV vaccine among Malaysian women indicated that only 26% of the participants of the study heard about the HPV and only 21.7 % heard about HPV vaccine. However, 2 years later, another similar research was conducted in various schools in Malacca, Malaysia, which concluded that the prevalence of HPV vaccine among school girls were high, 77.6% of the respondents had heard about HPV vaccines (Redhwan et al., 2011). A further study was conducted on medical students in a private university in Malaysia and showed that more than 80% of the respondents were aware that HPV could cause genital warts and cervical cancer (Mari et al., 2014). This outcome shows that there were a tremendous improvement in term of awareness among Malaysian women regarding HPV vaccine.

As a contrast, a similar survey was carried out by Sarah Mc Cusker. S, M et al., (2013) among the first year medical students in UK as to identify their awareness in detailed knowledge of human papillomavirus (HPV) and the HPV vaccine. This study revealed that there was a lack of understanding regarding the extent of protection against cervical cancer

conferred by the HPV vaccine, even among an educated population in UK who could have a vested interest in acquiring such knowledge.

Another interesting study was conducted by Perlman, S., et al (2014) in sub-Saharan African (SSA) countries as to assess the knowledge and awareness of cervical cancer, HPV and HPV vaccine, and willingness and acceptability to vaccinate among the population. The finding review revealed high levels of willingness and acceptability of HPV vaccine, but low levels of knowledge and awareness of cervical cancer, HPV or HPV vaccine. This finding alarm that there is an urgent need to educate and to inform the public about HPV, HPV vaccine, and cervical cancer, (adolescents, parents and healthcare professionals), as to leverage high levels of willingness and acceptability of HPV vaccine towards successful implementation of HPV vaccination programs.

Finally, awareness is not limited to the knowledge of HVP vaccine and the implication, but know the affordability of the vaccine. Due to that, a study was done by Khoo C.L et al (2011) as to determine the awareness of cervical cancer, HPV vaccination and its affordability among people in a rural area in Penang, Malaysia. The result revealed that, most participants (88.8%) had heard of cervical cancer, however, only 29.3% and 42.2% of them had heard of HPV and HPV vaccination respectively and only 5.2% knew the actual market price for the vaccine. They were willing to pay an average of RM 96.7 for the full course of vaccination if it is not given to them for free, whereas the market price is RM1200.

Study done by Daley et al., (2006), revealed that one of the contributing factors for not getting a vaccination among the respondents was due to the cost of the vaccine. It was reported that the barrier to uptake of HPV vaccine was due to the expensive price of the vaccine. In Malaysia, the price of the vaccine per dose in private clinics and hospitals was approximately RM300, (Ariyananda, 2014). As such, the government of Malaysia offers free HPV vaccination to secondary school females and those who were willing to be vaccinated starting from 2010 (Buang, 2010).

As to show undivided commitment, in Malaysia 2012 budget, millions of ringgit were allocated by government towards a free HPV vaccination program in order to prevent cervical cancer as well as to 'catch-up' group of 18-year-olds. The government effort is seen as aligned to anticipate the unwillingness to get the HPV vaccine due to the cost issue as reported in the studies done by Mari et al., (2014) which revealed that 89.7% of participants willing to get the vaccination if it was for free and only 12.25% do not mind paying themselves for the vaccine.

Another interesting finding by Fredrickson, Davis, and Bocchini (2001) reported that the most commonly expressed reason for parental refusal of vaccines were the side effects, religious or beliefs that the disease was not harmful. A similar finding was reported by W.Y. Lim et al., (2016) that reasons for parents refused the immunization to be given to their children, were due to believe in alternative treatment (75%) less side effects, 37.5% assumed vaccines are not effective, 25% expressed doubts about the vaccine(s) contents, did not receive information about vaccine/ immunization from doctor/nurse (12.5), negative information from family members (12.5%), information from TV, radio, newspaper, etc. (12.5%), religious influence (12.5%), personal belief (12.5%) and long waiting time at the clinic (12.5%). These finding show that even though all the respondents were fully aware of the HPV vaccine, but that does not mean they will easily accepted it.

Acceptability of HPV vaccine can be improved by the provision of information about HPV infection and its link to cervical cancer (Hoque et al., 2013). Thus, it is vital for future health care professionals to be well-versed about HPV and HPV vaccine.

## Methodology of the Research

A cross sectional survey study was conducted to know the awareness of students on HPV infection and vaccination at one of the university in Malaysia among the medical and health sciences students. Questions consists of two sections; firstly on awareness on HPV infection and the second section was on awareness on HPV vaccination. All questions were close ended. 210 students attempted to the questionnaires from various health science program and medical program. A total of 50 students were from Diploma in Pharmacy, 34 students were from Bachelor of Pharmacy, 35 students were from Diploma in Radiography, 60 students were from Diploma in Physiotherapy and 31 were medical students. Data entry and analysis of results was done using the computer software SPSS for Windows and descriptive method. A pilot study including 18 participants was carried out to test the survey instrument. The pilot test questionnaire obtained an internal consistency (Cronbach Coefficient Alpha = 0.83).

### Procedure

The application of the survey was conducted from April 2016 to July 2016 by the researchers', following the students' calendar of classes. A pilot study was conducted where questionnaires were distributed manually to 18 respondents (10% of the total number of respondents). Based on the feedback given, amendment to the questionnaire questions were done accordingly. Participation in this study was the voluntary and anonymous basis.

### Statistical Analysis

Analysis of data was performed using the computer software SPSS for Windows and descriptive method. P-value was calculated in behalf of the total number of responses. A p-value <0.05 was considered statistically significant.

## Findings of the Study

**Table 1: Demographic characteristics of the population studied**

Participant Characteristics	Number Of Participants (n=210)	Percent Distribution (%)	Mean (SD)
<b>GENDER</b>			
Male	90	43	0.88(1.10)
Female	120	57	1.78 (1.55)
<b>AGE</b>			
19-20	52	25	1.17 (1.50)
21-22	45	21	1.65 (1.35)
23-24	42	20	1.68 (1.38)
25-26	40	19	1.35 (1.65)
27-28	31	15	1.15 (1.48)

**Table 2: Comparison of Awareness among Male and Female on HPV Infection**

Items	Male (n=75) %	Female (n=101) %	Total (n=176) %	p value
How is virus of HPV transmitted?	57 (76%)	81 (80%)	138 (78%)	*0.047 (p<0.05)
Can HPV virus cause cancer of cervical?	72 (96%)	97 (96%)	169 (96%)	0.493
What are the HPV carcinogenic strains	22 (29%)	48 (48)	70 (40%)	0.354
What are the cervical cancer incidence in Malaysia	28 (37%)	41 (41%)	69 (39%)	0.876

\*p<0.05

*Frequency of affirmative answers in the total of responses*

**Table 3: Comparison of Awareness among Male and Female on HPV Vaccination**

Items	Male (n=75 )	Female (n=101)	Total (n=176)	p value
Vaccine can prevent cervical cancer?	31	58	89	*0.046 (p<0.05)
HPV vaccine available in Malaysia?	32	55	87	*0.045 (p<0.05)
HPV part of national program?	30	61	91	0.976
Women to be tested before HPV vaccination?	13	38	51	*0.032 (p<0.05)
HPV vaccine to be given to sexually active women?	12	35	47	*0.037 (p<0.05)
HPV protect those already infected?	38	50	88	0.651
HPV protect other diseases?	13	18	31	0.654

Age group for vaccination?	26	48	74	*0.048 ( $p < 0.05$ )
Vaccine protection against strains?	22	27	49	0.723

\* $p < 0.05$

*Frequency of affirmative answers in the total of responses*

## Demographic Data

The total sample for this study consist of 176 health sciences students. The age ranges was between 19-28 years and the mean age was 23.5. The study population for males was 43% and females 57% (T1).

### 1. Comparison of Awareness among Gender on HPV Infection

#### a. Awareness regarding HPV transmission

138 (78%) respondents were well aware of transmission of HPV virus (T2). 81 (80%) female students as compared to 57 (76%) male students knew the HPV transmission by virus. The differences in the gender awareness regarding the transmission was significance ( $p = 0.047$ ) among the group (T2).

#### b. Awareness regarding HPV cervical cancer

Overall awareness of this fact was 96% among the respondents. 97 (96%) females and 72 (96%) males knew the fact that cervical cancer is known to be caused by high risk of HPV. Awareness in this group showed no differences between gender (T2).

#### c. Awareness regarding HPV carcinogenic strains

Overall awareness regarding the awareness of carcinogenic strains was 40% ( $n = 70$ ). 48% females as compare to 29% males were aware of this. Once again this awareness showed no statistical difference between gender groups (T2).

#### d. Awareness regarding cervical cancer incident in Malaysia

This was the lowest scoring item with the overall correct response of 39% only. Only 37% (28) males and 41% (41) female students choose the correct response. The differences among gender showed no difference between the two groups (T2).

### 2. Comparison of Awareness among Male and Female on HPV Vaccination

#### a. Awareness regarding preventable nature of cervical cancer

89 respondents were well aware of the preventable nature of cervical cancer. 58 female students as compared to 31 males knew that cervical cancer can be prevented. The difference in the awareness regarding the preventable nature of cervical cancer was significant ( $p = 0.046$ ) among the gender group (T3).

b. Awareness regarding availability of vaccine in Malaysia

Awareness regarding the availability of vaccine against HPV was (n=87). 55 females as compared to 32 males were aware for this. This differences was statistically significant (p=0.045). Comparing to gender differences for this particular issue we found that the awareness was more among the female students (T3).

c. Awareness regarding HPV part of national program

91 respondents knew about HPV part of national program, which included 30 males and 61 female students. Awareness on this item showed no differences between gender (T3).

d. Awareness regarding age group for vaccination

Overall awareness regarding age group for vaccination was 74. 26 are males, and 48 are females knew this (p=0.048). This awareness showed statistical differences between gender (T3).

e. Awareness regarding vaccine for sexually active women

27% only knew about the awareness regarding vaccine for sexually active women which include 16% males and 35% females. This showed difference between the gender group (p=0.037) (T3).

f. Awareness regarding protection towards infected

This was the highest scoring item in the whole questionnaire with overall correct response of 51% from males. Awareness regarding protection towards infected from female was only 49%. There is no differences statistically (p=0.651) (T3).

g. Awareness regarding protection towards other diseases

Overall awareness regarding protection towards other diseases among population studied was only 18%. Females students are more aware compared to male, and gender differences showed no differences between this two groups (p= 0.654) (T3).

h. Awareness regarding vaccine protection against strains

22 males out of 75 was aware regarding vaccine protection against strains and only 27 female students knew this. Awareness on this showed no differences between gender (p=0.723) (T3).

**Table 4: Acceptability of HPV Vaccine According To Gender**

Items	Male (*their female siblings)	Female	p value
Parents negative perception about the vaccine	3 (20%)	4 (21%)	<0.001



Did not get the vaccine due to exceed age limit for complimentary vaccine	2 (15%)	3 (16%)	0.45
Did not get the vaccine due to fear for injection	4 (27%)	5 (26%)	0.89
Did not get the vaccine due to the cost factor	3 (20%)	4 (21%)	<0.001
Did not get the vaccine due to religious factor	3 (20%)	3 (16%)	<0.01

*\*p<0.05 The extension factors of acceptability of HPV vaccine*

i. Level of acceptability among respondents

In order to access gender acceptability of HPV vaccine, female students were more prone to parents negativity perception about the vaccine 21% versus male students 20%,  $p<0.001$ .

Perception of not getting vaccination due to exceed age limit for complimentary vaccine, female students responses were 16% versus male students 15% at the level of 0.45.

Furthermore, 27% of male students were prompted to fear from injection compared to female students 26%,  $p=0.89$ .

Respondent were not willing to accept HPV vaccine due to cost factor prompted by female students (21% versus male students 20%,  $p<0.001$ ).

Other factor of unwillingness to be vaccinated for HPV vaccine is due to religious factor by male students 20% and female students 16%,  $p=0.01$ .

The acceptability of HPV vaccine among the gender population studied is reflected in Table 4 and 5. The differences was found to be statistically significant between gender ( $p<0.001^*$ ).

On top of that, being aware and alert about the HPV vaccine, does not ensure that the respondents will take the vaccine accordingly. Due to that, as to assess the acceptability of HPV vaccine among the respondents, 5-point Likert scale was used. The respondents were asked to rank 1 to 5 in which 1- to strongly disagree and 5- to strongly agree with 5 statements. The data revealed that the overall acceptability of participants were positive. About more than half of them,  $p=0.89$ , would get the vaccine if it was free. The result also indicated that all the participants agreed to get the vaccine, but most of them were not aware of the government scheme in which free vaccination is available for those who are eligible for it. This finding was consistent with previous studies conducted among medical students in Malaysia by Mari et al., (2014) and those in the Penang rural area, Khoo C.L et al (2011), where most of the participants were willing to pay an amount up to RM500 and RM96.70 only, if they have to pay. The knowledge of vaccination increases the willingness to pay for the vaccine. Thus, these results highlighted the importance of awareness, (knowledge of HPV as well as knowing where to obtain it) which will automatically increase the level of acceptability, especially among the targeted group. (Pulcini et al., 2013).

It was also indicated that 49% ( $p=0.78$ ) of the respondents did not take the vaccination at all, which was considered high, since the respondents were the health sciences students. The feedback received for not getting vaccinated were, they did not aware about it, exceeded the age limit for free vaccine, fear of injection, could not afford it ( $p=0.001$ )parents'

refusal due to the negative story heard before ( $p=0.001$ ), negative perception and religious reason ( $p=0.01$ ) and only 2% ( $p=0.001$ ) due to allergic reaction and epilepsy.

Unexpectedly, it was a surprised to discover that fear for injection 29% ( $p=0.89$ ) was one of the barrier that stopped some of the respondents' from getting the HPV vaccination. As a future health providers and practitioners, this factor will affect the trust and the confidence level of the public towards them if no necessary action taken to improve the situation. Emphasis approaches and training should be conducted as to instill and increase the confidence level of this particular group.

Another interesting finding was, many respondents mentioned that, their parents did not receive enough information from the health providers regarding the vaccination. The parents would like to get more information about the possible negative consequences of vaccines, like side effects and ingredients of the vaccines and the disadvantages of the vaccination. Since those information had not reach the respondents parents, they started to seek information by themselves and they made their choices based on all the positive and negative information they obtained without proper guidance from the trained professions.

## Discussion

More than half of participants in the study were well aware of the preventable nature of cervical cancer. A study conducted among medical students in a private university in Malaysia, which showed that more than 80% of respondents were aware that HPV can cause cervical cancer (Mari et al., 2014). High level of awareness was also observed in school girls in Melaka where 77.6% of them had heard about HPV vaccine (Redhwan et al., 2011). Another study reported on preventable nature of cervical cancer was only known by half of the students (54.5%) in other Indian medical college, but interestingly in this cohort of study 89% (table 3) of respondents were well aware of the etiology of cervical cancer (Mehta, Rajaram, Goel, Pandey, 2013) (Pandey, Vanya, Bhagat, Shetty, 2012). Study done among doctors in Bangalore also reported a lower level of awareness regarding HPV vaccination (Swapnajaswanth, Suman, Suryanarayana, Murthy, 2013).

Awareness regarding the availability of vaccine against cervical cancer in Malaysia was more predominant among the female students. In the study of Di Guiseppe et al. (2008), it was reported that 42.1% of the adolescents knew that vaccine was a preventive measure, but only 15.3% knew that vaccine was available in Italy. Nevertheless, a higher level of awareness on HPV vaccination among female respondents were identified compared to males as a high percentage of female students comprehend correctly to the survey, and the differences in awareness of availability of HPV vaccine in Malaysia and the age group of vaccination was significant. Since November 2006, the HPV vaccine has been available in Malaysia, but nevertheless high price of the vaccine still hinder women to be vaccinated. This current study is aligned with the findings observed by S Mehta et al and D. Pandey et al). This may be the reason of causal relationship with other cancers, fostering females to be more concern. Holcomb et al. found that women are interested in learning about HPV, how the virus is transmitted, and how women can prevent becoming infected. Another study done in India reported awareness among graduate and postgraduate students about this health issue is low (Saha et al, 2010). The awareness of availability of HPV vaccine in Malaysia among the respondents in this study was 87% (Table 3), whereas a study conducted in Belgium among women attending routine gynecological care was only 50% (Donders, Gabrovskaa, Bellen, Van, 2008). Females had a better understanding regarding the awareness and availibility of vaccine and the protective efficacy.

Pertaining to the awareness of students in comprehending issue of whether HPV vaccine should be given to sexually active women, there were comparable awareness regarding this issue. Female seemed to be more aware with a significant difference in gender. Human papilloma virus (HPV) is the necessary cause for the development of cervical cancer (Doorbar, 2006) and it is the most common infection among young and sexually active individuals (Weaver, 2006). Awareness to the young women in terms of vaccine administration should be made before initiation of sexual activity (Goldie et al. 2004; Zimet, 2005). The failure to educate young women the significance of vaccination before exposure to HPV should be highlighted as they felt they did not need the vaccine or would prefer to keep on hold because they are not sexually active (Wong, 2008).

#### Limitation of the study

This study was conducted among health sciences students from only one university in Malaysia, which limits the generalizability to other populations or settings. Therefore, the consequences may not portray all the health sciences students of other universities in Malaysia. Another limitation is, researchers were not able to reach the respondents' parents directly. The feedback on the rejection of HPV vaccines by their parents were solidly through the respondents' as a middle person. Such feedback would have made the findings more representative if the answers were from the parents itself.

#### Conclusion

Being a medical or health sciences students does not warrant good knowledge on HPV infections and HPV vaccination. In comparison to gender, the female students had a better knowledge coverage. It is ideal to enhance the knowledge on HPV infection and its vaccination among medical and health sciences students as they can act as educators to public while undergoing their medical curriculum. As males seem to have lower knowledge on HPV, they should be prioritized to be equipped with the knowledge. There is indication that high knowledge on certain diseases and its vaccine association have been demonstrated to be an important hallmark of health promotion program.

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