

## Knowledge of Human Papillomavirus (HPV) and Cervical Cancer among Malaysia Residents: A Review

(Pengetahuan Mengenai Papilomavirus Manusia (HPV) dan Kanser Serviks dalam Kalangan Penduduk Malaysia: Suatu Ulasan)

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### ABSTRACT

*Cervical cancer is ranks as the third leading cause of female cancer deaths among women in Malaysia. Most of the cervical cases are caused by Human Papillomavirus (HPV) infection. To prevent HPV infection, Malaysia Government had implement Human Papillomavirus (HPV) vaccination program to all secondary school girls from 13 years old and above. The focus in this paper was to review the article based on the knowledge on HPV and cervical cancer among Malaysia resident before and after the implementation of HPV vaccine program. The knowledge about HPV, HPV vaccine, and cervical cancer after the implementation of national HPV vaccination program is better compare to before the program to be implemented. However, the knowledge is still poor among the respondents although there is an improvement after the program been implemented. The respondent gives a positive attitude towards HPV vaccination and cervical cancer screening. The main barrier of vaccination and Pap smear test are side effects, risk, cost, and effectiveness. In conclusion, knowledge about HPV and cervical cancer is really important among women. Education programs to the public are needed to enhance knowledge and to control the illness.*

*Keywords: Cancer; cervix; HPV; Malaysia; review*

### ABSTRAK

*Kanser serviks ialah penyebab utama kematian kanser wanita dalam kalangan wanita di Malaysia. Kebanyakan kes serviks disebabkan oleh jangkitan Papilomavirus Manusia (HPV). Untuk mencegah jangkitan HPV, kerajaan Malaysia telah melaksanakan program vaksinasi Papilomavirus Manusia (HPV) kepada semua pelajar sekolah menengah berumur 13 tahun ke atas. Fokus makalah ini adalah mengkaji artikel berdasarkan pengetahuan mengenai HPV dan kanser serviks dalam kalangan penduduk Malaysia sebelum dan selepas pelaksanaan program vaksin HPV. Pengetahuan tentang HPV, vaksin HPV dan kanser serviks selepas pelaksanaan program vaksinasi HPV nasional lebih baik dibandingkan sebelum program dilaksanakan. Walau bagaimanapun, pengetahuan ini masih lemah dalam kalangan responden walaupun ada peningkatan selepas program dilaksanakan. Responden memberi sikap positif terhadap vaksin HPV dan pemeriksaan kanser serviks. Halangan utama untuk vaksinasi dan ujian 'Pap smear' adalah kesan sampingan, risiko, kos dan keberkesanan. Kesimpulannya, pengetahuan tentang HPV dan kanser serviks sangat penting dalam kalangan wanita. Program pendidikan kepada orang awam diperlukan untuk meningkatkan pengetahuan dan mengendalikakan penyakit.*

*Kata kunci: HPV; kanser; Malaysia; serviks; ulasan*

### INTRODUCTION

According to the World Health Organization (WHO) (2018), the fourth most frequent cancer among women in the world is cervical cancer with 569,847 new cases and death 311,365 in 2018. In Malaysia, Cervical cancer ranks as the third leading cause of female cancer among women which is about 1,682 new cervical cases are diagnosed and about 944 death occur annually in 2018 (Bruni et al. 2019).

Cervical cancer starts in a woman's cervix. Figure 1 shows a female reproductive system image (WHO 2018). It occurs due to the cells of the cervix grow abnormally (Shetty & Shah 2018). This will invade other tissues around the cervix and organs such as the liver or lungs. The risk of developing abnormal cells is associated with infection of human papillomavirus (HPV). The early symptoms of cervical cancer are abnormal menstruation, irregular menstruation, heavy menstruation, weight loss, pelvic pain, and vaginal discomfort (WHO 2018).

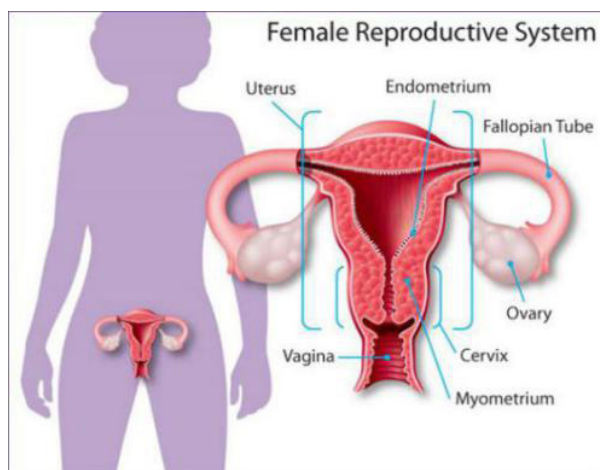


FIGURE 1. Female reproductive system (WHO 2018)

HPV is a group of viruses that cause cervical cancer. HPV is spread through sexual contact. There is evidence that HPV is a factor for cancer anus, vulva, vagina and penis. HPV types 16 and 18 are responsible for about 70% of all cervical cancer cases worldwide (Muñoz et al. 2004).

Pap smear test is used for early detection of cervical cancer before the development of HPV vaccine in Malaysia. Cervical cancer caused by high-risk oncogenic HPV types 16 and 18 can be prevented by HPV vaccine. Cervical cancer screening program in Malaysia had failed to accomplish its target of three yearly screening of 40% of women aged 20-65. The performance of screening program is poor and it caused considerable frustration within the Ministry of Health (Othman 2003). The HPV vaccine was approved to be used in Malaysia during 2007. The Ministry of Health recognise that the vaccine prevents oncogenic genotypes of HPV (Said 2018; Shaffie 2014). In 2010, the Ministry of Health, Malaysia has implement national HPV vaccination programs. The aim of the program is to reduce the burden of cancer.

To achieve this aim is by vaccinating girls through the existing school health program. This HPV vaccine for all secondary school girls from 13 years old and above (Wong & Sam 2010). Girls with the age 13 years old are chosen as the target group because more than 80% of this age are enrolled in school and do not receive other vaccinations. Furthermore, the vaccine is given to them because they have a high risk to get HPV infection and this vaccine will protect from cervical cancer in the future.

#### LITERATURE REVIEW

The studies on knowledge of HPV and cervical cancer were conducted in various groups including school, university, and women in Malaysia. All the studies about

knowledge on HPV and cervical cancer among Malaysia residents are concluded.

#### BEFORE IMPLEMENTATION OF NATIONAL HPV VACCINATION PROGRAMS

##### UNIVERSITY

One survey to identify the knowledge and attitude of the female students toward cervical cancer, HPV infection, and vaccination is conducted at public university in Kuala Lumpur during 2007 (Wong & Sam 2010). 1083 female students with different ethnic are chosen. Unfortunately, only 650 students responded to the survey. The result shows that 21.7% of the respondent had heard about HPV and 10.3% had heard about HPV vaccine. The knowledge on cervical cancer factor and screening is poor among the respondent with mean score of 2.63 out of 8. Less than half of the students willing to get vaccination (48%). The factor of refused to receive the vaccine are safety (50.9%) and risk (41.5%) of the vaccine, and shy on receiving the vaccine (11.3%).

A total of 675 female science students at Universiti Kebangsaan Malaysia (UKM) is selected in a survey (Tan et al. 2010). The aim of this study was to assess the knowledge and attitude on cervical cancer among students. The questionnaire is distributed and the correct answer will get one mark while the zero for an incorrect answer. The total of the marks for knowledge level on cervical cancer is 13. The result shows that 54.4% of the respondents is low level follow by intermediate (37.2%) and high (8.4%) level of knowledge on cervical cancer. For knowledge level on prevention, 48% is intermediate, 43.4% high level and 8.6% is low level. Majority of the respondents has a low level of attitude toward cervical cancer with 90.5%, 6.5% for intermediate level, and

3% for high level. However, most of the students aware of cervical cancer (85%). The most popular sources of information are mass media (59.1%) follow by education (48.6%) and posters on campus (39.4%) are the sources of information on cervical cancer.

#### WOMEN

There are 221 cervical cancer patients were selected to participate in a study (Othman et al. 2009). The questionnaire is distributed to respondents from nine hospitals in Malaysia. The range of age is between 44 and 50 years old. The goals of this study are to determine the awareness of cervical cancer about screening. More than half of the respondents had none or only primary education (56.3%) and the income is less than RM1000 (61.1%). Most of the respondents not done Pap smear test although the 63.3% of the respondents had heard about the test. The reasons for not having the test is never heard about the test (36.2%), shy (10.4%), afraid (13.1%), a test is not important (8.1%) and family did not give encouragement (4.5%).

During March 2009 until June 2009 (Al-dubai et al. 2010), a cross-sectional study is conducted in Hospital Bangi, Selangor. There are 300 women in the obstetrics and gynecology outpatient clinic is selected for a survey. The aim of this survey is to identify the knowledge and attitude towards HPV, HPV vaccine and the barrier of being vaccinated. As a result, 26% of the respondent had heard about HPV and 21.7% had heard about HPV vaccine. Knowledge of HPV is very poor among the women in this survey. 21.7% of the respondents reported that HPV is transmitted through sexual intercourse, 22.0% women answered that one of the cause of cervical cancer is HPV and HPV vaccine can protect women against cervical cancer (25.3%). About attitude towards vaccination, 53% of the women say HPV vaccination introduction is a good idea. The barrier for refused to get vaccination are side effects of vaccine (40%), afraid of needles (27%) and social stigma (23.7%), no time get vaccination (20.3%), price of vaccine is expensive (15.7%), vaccine not easily reachable (11.7%), and not sexually active (10.7%).

Sam et al. (2009) investigate the acceptance of HPV vaccination among mothers. In May 2007, the study is carried out at University of Malaya Medical Centre, in Kuala Lumpur. There are 362 mothers that had 399 daughters and 452 sons with the age is equal to or less than 18 years old. For the overall result, the knowledge of HPV and vaccine is low with the mean score of 3 out of 20. 33.4% of the mother had heard about genital warts, 12.2% had heard about HPV and 10.5% about HPV vaccine. Most of the respondents willing to vaccinate their daughters (65.7%) and sons (55.8%). The respondent reported that the vaccine is expensive and they would vaccinate their children if the vaccine is free and it is part of the routine national immunization schedule.

#### AFTER IMPLEMENTATION OF NATIONAL HPV VACCINATION PROGRAMS

##### SCHOOL

In the Klang Valley, the survey among teachers in secondary school is conducted to identify teacher's knowledge on HPV (Woo et al. 2012). There were 1500 questionnaire and distributed to 20 national schools. Only 1166 questionnaire was returned and the data is analyzed using statistical software. As a result, 94% of the respondent is female. 46.1% had never heard of HPV while 50.9% had never had a Pap smear. 73.8% of the respondent knew about HPV vaccine and 75% agree to have it. 50.5% of female teacher aware that HPV is associated with cervical cancer. The factor that influenced to accept the vaccine is the safety of vaccine with 84%, the risk of vaccine (55.4%), the effectiveness of vaccine (55%) and healthcare advice (54.4%). 58.7% of the teacher had a lack of knowledge and they need more information about the vaccine (96.8%).

A cross-sectional survey conducted in 8 schools in Kuala Lumpur (Rashwan et al. 2013). In this study, the aim was to assess the knowledge and views of students about cervical cancer. The questionnaire was distributed to 550 female students with a range of age is between 14 and 20 years old. There is low, intermediate and high level. 80.4% of the respondent had heard about cervical cancer. The knowledge of cervical cancer and the prevention of it is low among the student with 74.4% and 70.4%. However, 68.9% of the students interested to find out the information about cervical cancer. 69.3% of the respondent agree to have the vaccine and the reason to take the vaccine because of the risk of getting cancer (51.1%).

A questionnaire was distributed among parent of standard 5 at 10 primary schools in Kota Bahru (Mohd Sopian et al. 2018). A total of 280 parents were included in the study and the purpose of this study was to identify the parental knowledge among the parent, decision making and acceptance of HPV vaccination. The summed of the score must be higher than 70% to be considered as having good knowledge. The overall result shows that the knowledge among the parent is low (62%). 62.2% of wives agree to take a vaccine and decision making to take a vaccination HPV is shared by both parents (65.8%).

This study set out to determine the level of knowledge among students about cervical cancer and its prevention (Rashwan et al. 2011). A total of 76 students are chosen in four primary schools in Miri, Sarawak. More than half of the respondents had a poor knowledge level about cervical cancer and its prevention is poor (61.8%). 31.6 and 6.6% of the students had intermediate and high knowledge level of cervical cancer. 60.5% of a Chinese student was aware of cervical cancer and they obtained the information from their parent (25.9%), mass media (21.5%), friends (17.0%), school (14.8%), and internet

(14.1%). Majority of the students undecided and unwilling to take a vaccine.

The interview was done in six secondary schools in Negeri Sembilan and 380 students are chosen randomly (Fadhilah et al. 2016). The aim of this interview was to assess the knowledge, attitude, and practice of HPV, and cervical cancer. Most of the student had heard about HPV (50.3%), cervical cancer (66.3%), and HPV vaccine (50.8%). 52.8% of students know that HPV infection can cause cervical cancer. Unfortunately, 71.4% of the students did not know what Pap smear test is. Majority of the students know that HPV is available for secondary school (91.2%) and willing to be vaccinated against HPV (86.6%).

A total of 612 secondary students from six secondary schools in Melaka were selected in this study (Al-Naggar et al. 2012). The age of the students is between 13 and 17 years old. This study was conducted to determine the practice and an associated factor of HPV vaccine among students. The prevalence of HPV vaccination was 77.9% among the students. Most of the student knew about cervical cancer (69%) and HPV vaccine (77.6%). Majority of the students does not have a family history of cervical cancer (99%) and more than half of the parents had secondary education (56.4%). The students prefer encouragement from both healthcare workers and school teachers (49.3%) and support from parents (28.6%). 77.0% of the students want to be vaccinated at school while 21.9% unwilling to take the vaccine.

In 2016, a survey on student knowledge about HPV, cervical cancer, HPV vaccination, and practice on HPV vaccination is conducted at two secondary schools (Aung et al. 2016). 295 secondary students are selected in this survey. As a result, 88.5% of the students have heard about HPV and get the information from health professional. Most of the student had a high level of knowledge on HPV (54.6%), cervical cancer (59%) and HPV Vaccination (51.2%). Meanwhile, 56.3% of the students have poor practice on HPV vaccination.

In 2013, a survey was conducted to identify the level of knowledge and health beliefs toward HPV and HPV vaccination among female students (Wong et al. 2016). The questionnaire is distributed to 32 schools from 13 states in Malaysia. 2482 respondents are selected randomly and the respondents are 14 years old that has been vaccinated three doses of HPV vaccine. The sources information of HPV vaccine is from doctor (53.8%), teacher (53.4%), television or radio (29.6%), newspaper (21.3%), friends (13.4%), and internet (11.5%). Majority of the respondents agreed that vaccine able to prevent HPV infection (79.6%), HPV can cause cervical cancer (71.1%), and 72.4% of the respondents did not know that genital warts are caused by HPV. More than half of the respondents had a misconception on only females get HPV infection (85.7%) and HPV vaccine eliminated the

need for Pap smear test (68.3%). 84.5% of the students believe to prevent from HPV infection they need to be vaccinated and 81.8% of the respondents believe that taking a vaccine is a good idea because it is recommended by the government. Fear and painful is the main barrier for the students to be vaccinated (27.3%) follow by a vaccine cannot prevent from HPV infection (15.8%) and safety of the vaccine (7.2%).

#### UNIVERSITY

During October 2014 to March 2015, 580 pre-university students from matriculation program were selected for a study. The aim of this study was to evaluate the knowledge of HPV vaccination for cervical cancer before and after educational intervention among students (Kwang et al. 2016). As a result, most of the students aware that HPV can cause cervical cancer (57.6%) and the vaccine can prevent HPV infection (63.1%). Before the educational intervention, respondents with poor knowledge (48.3%) shows the higher percentage follows by moderate (42.9%), and good knowledge (8.8%). After educational intervention, the percentage of respondents that has good knowledge increases to 25.5% and for poor knowledge has decreased to 30.5%.

A total of 716 pre-university students is chosen at a public university in Kuala Lumpur and their age is between 18 and 25 years old (Kwang et al. 2014). The objective of this study was to evaluate the knowledge, perception, and attitudes towards HPV. Most of the respondent had heard HPV and cervical cancer (61%). 48.9% of the respondent has a low level of knowledge, 43.6% of the respondent had moderate knowledge and 7.5% has good knowledge of HPV and cervical cancer. Majority of the respondents think HPV infection is a serious disease (78.2%) and willing to be vaccinated (62.3%). The highest barrier for having a HPV vaccine is a high cost (56.0%). More than half of students need encouragement from a doctor to get a vaccine (60.8%).

A questionnaire is distributed to 120 medical students at a university in Malaysia (Shafei et al. 2014). The purpose of this study was to determine the knowledge of HPV infection and vaccination among medical students. The respondent needs to answer all the questions and three marks will be given to the correct answer, two marks for the unsure answer and one mark for the incorrect response. The summed of the score is ranged from 20 to 60 marks. As a result, the total knowledge score is high with 49.7. Most of the respondents ever heard about HPV (85.8%) and HPV vaccination program (80%). The main sources of information on the HPV vaccine program are television (25%). Television (25%) and newspaper (22%) are the main sources of information on HPV. 64.2% of the students willing to be vaccinated.

826 students from the main campus at Universiti Kebangsaan Malaysia is selected to complete a

questionnaire about HPV and cervical cancer (Shafiee et al. 2013). This study is to assess the knowledge, perception, and attitude towards HPV vaccination and cervical cancer prevention among university students. The respondents consist of 54% female and 46% male. 68.2% of the students aware that HPV infection can lead to cervical cancer. More than half of the respondent had heard about HPV vaccine (76.3%). 73.2% of the respondents aware that HPV vaccination can prevent cervical cancer and willing to be vaccinated (54.7%). Unfortunately, 45.3% of the students refuse to receive the vaccine because they worried about the effect (36%), considering the cost (29%) and concerned about the effectiveness of protection (28%).

A total of 675 female science students at Universiti Kebangsaan Malaysia (UKM) was selected in a survey (Tan et al. 2010). The aim of this study was to assess the knowledge and attitude on cervical cancer among students. The questionnaire was distributed and the correct answer will get one mark while the zero for an incorrect answer. The total of the marks for knowledge level on cervical cancer is 13. The result shows that 54.4% of the respondents is low level followed by intermediate (37.2%) and high (8.4%) level of knowledge on cervical cancer. For knowledge level on prevention, 48% is intermediate, 43.4% high level and 8.6% is low level. Majority of the respondents has a low level of attitude toward cervical cancer with 90.5%, 6.5% for intermediate level, and 3.0% for high level. However, most of the students aware of cervical cancer (85%). The most popular sources of information are mass media (59.1%) followed by education (48.6%), and posters on campus (39.4%) are the sources of information on cervical cancer.

Maharajan et al. (2015) investigate the knowledge and attitudes towards HPV among medical students and their willingness to pay for vaccination. There are 302 students and the age is between 20 and 26 years old. The result shows more than 90% of the respondents know that HPV infection is preventable (95.7%), HPV can cause cervical cancer (93.7%) and Pap smear can screen cervical cancer (90.1%). The attitude towards cervical cancer and HPV vaccination is positive. Majority of the respondents agree that the cervical cancer is a severe disease (92.7%), they did not want to be infected (92.4%) and information on HPV helps to make a decision to be vaccinated (90.8%). Most of the respondents willing to be vaccinated if the vaccine is free of charge (89.7%).

A survey was conducted at Management and Science University students, Shah Alam, Malaysia (Al-Naggar et al. 2010). The aim of this study was to determine the level of knowledge and barriers of cervical cancer screening among university students. There are 287 female university students participate in this survey and the age is between 18 and 30 years old. The result shows that only 6% of the respondents ever had a Pap smear test. Having more than one sex partner is the highest risk factor (77.5%) and

the lowest is the relationship between HPV and cervical cancer (51.2%). The barrier of cervical cancer screening is a worry (95.8%) and no encouragement from healthcare worker (61.2%).

#### WOMEN

A cross-sectional study among 112 participants in Universiti Sultan Zainal Abidin (UniSZA), Kampus Kota (City Campus), Kuala Terengganu, Terengganu shows that 99% of the respondent know that HPV can lead to cervical cancer and HPV vaccine can prevent this cancer (Shabbir et al. 2016). The respondent has good knowledge of the HPV vaccine. They knew that the HPV vaccine will not replace Pap smear screening (73%). Around 80 to 90% of the respondents knew that vaccine is safe and 79% think that vaccine at an acceptable price. Majority of the participants need a doctor to encourage them to get vaccinated (77%). There are 221 cervical cancer patients were selected to participate in a study (Othman et al. 2009). The questionnaire is distributed to respondents from nine hospitals in Malaysia. The range of age is between 44 and 50 years old. The goals of this study was to determine the awareness of cervical cancer about screening. More than half of the respondents had none or only primary education (56.3%) and the income is less than RM1000 (61.1%). Most of the respondents did not do the Pap smear test although the 63.3% of the respondents had heard about the test. The reasons for not having the test is never heard about the test (36.2%), shy (10.4%), afraid (13.1%), a test is not important (8.1%) and family did not give encouragement (4.5%).

In Selangor, a study on determining the health behaviors regarding cancer screening among women was conducted at two health centers (Abdullah et al. 2013). 384 women were selected for an interview and the age was between 20 and 76 years old. 80% of the participants is Malay and 58.1% of the respondents had never done Pap smear test. More than half of the women in this survey has a secondary education level (61.7%). The common barrier among women who did not undergo Pap smear is worry (49%) and cost (9.5%).

Wong (2011) investigated the knowledge and attitudes towards HPV, HPV vaccination and cervical cancer among young women in Malaysia. In this research, the interview was done to 499 households in Perak and Pahang. 11.6% of the respondent had heard about HPV and HPV vaccine (7.8%). The main sources of information are friends and relatives (45.7%), television (31.4%), newspaper (20%), radio (17.1%), and magazines (10%). Majority of the respondents does not know that HPV is related to cervical cancer (79.7%), never heard about Pap smear test (70.4%), and does not know the purpose of the Pap smear test (78.6%). However, many of the respondents agree to take HPV vaccine (65%). The respondent that refuse to take the vaccine because they worried about the

safety of the vaccine (27.4%), shy (20.7%), and risk of the vaccine (20%).

An interview was conducted at a teaching hospital in Kuala Lumpur and 369 patients participated in this survey (Baskaran et al. 2013). In this study, 369 patients are women who attending the Outpatient Department of University Malaya Medical Centre. The results showed that more than half of the respondents had done a Pap smear test (75.6%). 71.8% of the participants show a good perception of their susceptibility to cervical cancer and believed screening can identify changes in the cervix before becoming cancer (89.5%). About 70% of respondents feel embarrassing when doing screening and unsure if the screening caused pain (68%).

In January 2010, an interview was conducted to 30 university students in Malaysia (Al-Naggar et al. 2010). The aim of this study was to explore the perception and opinion on HPV among young women. The result showed that 83% of the respondent had heard about cervical cancer. However, 47% of the respondent had heard about HPV, 17% of the participants know HPV is the cause of cervical cancer and 53.3% did not know the mode of HPV transmission. 53.3% agreed to take a vaccine to protect from cervical cancer while 17% disagree to take the vaccine because of unknown safety and the side effect of the vaccine.

A cross-sectional survey among women was conducted in Perak (Gan & Dahlui 2013). The objective of this study was to assess and examine the factor associated with the practices of cervical screening in a rural area in Malaysia. 959 of women in five rural districts participate in this survey and the age is between 20 and 64 years old. More than half of the respondents never had a Pap smear test (51.1%) and less than half of the respondents had never heard of Pap smear test (30%). Majority of the respondents did not know the symptoms (62.1%) and risk factor (78.3%) of cervical cancer. The sources of information are private health personnel (45%). 60.9% of respondents prefer to approach their husband if they had symptoms of cervical cancer. Based on the result, women in a rural area has low knowledge of cervical cancer due to insufficient information.

There are 116 participants that are selected randomly in a village in Penang (Khoo et al. 2011). The aim of this study was to determine the awareness of cervical cancer, HPV vaccination, and its affordability. A total of 88.8% of the respondents had heard about cervical cancer, 29.3% had heard about HPV and 42.2% heard about HPV vaccination. 37.9% of the participants did not know that cervical cancer can be screened and did not know HPV can be transmitted sexually. Majority of the respondents give a wrong answer for the vaccination age group and total doses needed. Unfortunately, 5.2% of the respondents know the cost of the vaccine. In conclusion, the awareness of HPV and HPV vaccination is low among Malaysian.

## RESULT AND DISCUSSION

In 2010, the Ministry of Health, Malaysia has implemented national HPV vaccination programs. This HPV vaccine for all secondary school girls from 13 years old and above (Wong & Sam 2010). The aim of the program was to reduce the burden of cancer. To achieve this aim is by vaccinating girls through the existing school health program. Overall studies showed that the knowledge about HPV, HPV vaccine, and cervical cancer after the implementation of national HPV vaccination program is better compared to before the program was implemented.

In Malaysia, the knowledge about HPV and cervical cancer is still poor among the respondents although there is an improvement after the program been implemented. Based on the research, most of the survey had a high percentage of the respondents that get a low level of knowledge which is similar to other studies in others country (Chow et al. 2010; Holcomb et al. 2004; Leung & Leung 2010; Li et al. 2009).

Most of the respondents willing to take the vaccine because of the effectiveness of the vaccine, safety, advice from healthcare, and recommended by parents. Parents play an important role for students to take vaccination. Parent's education will influence the school students towards the HPV vaccine. This study stated that parent that had lower education level accepts the vaccine for their daughter compared to parents that had high education level (Brewer & Fazekas 2007; Constantine & Jerman 2007; Rosenthal et al. 2008; Wong et al. 2011). Parents should prepare themselves with knowledge because most of the students prefer their parents to encourage them to be vaccinated. The main barrier of HPV vaccine acceptance is side effects, the safety of the vaccine, risk, cost, and effectiveness. If the respondents are more educated about HPV vaccination and infection, the acceptance of it will increase. This has been supported by other studies (Gamble et al. 2010). Educational programs need to be done to overcome this barrier. Cervical cancer screening among women is low in Malaysia. Most of the women lack of knowledge on Pap smear test and this will contributed to women's non-attendance at cervical cancer screening. Abdullah et al. (2011) found out that it is important for healthcare professionals to provide enough information about cervical cancer. Women that had information about cervical cancer likely to attend the screening compared to those who had insufficient information. Healthcare professional should educate and encourage women to attend cervical screening. High level of embarrassment, lack of encouragement, painful and discomfort during the procedure, and the cost is the barrier to screening among women. Table 1 shows a summary of issues on HPV and cervical cancer among Malaysia resident.

TABLE 1. Summary of issues before and after implementation of national HPV vaccine program on HPV and Cervical cancer among Malaysia resident

Issues	Before	After
Awareness of HPV and cervical cancer	Low	Low
Knowledge of HPV and cervical cancer	Less than half of the respondent had heard about HPV, HPV vaccine and Pap smear test	Most of the respondent know about HPV, HPV vaccine and cervical screening test
Attitude on HPV vaccination	Positive attitude towards vaccination. The parents would vaccinate their children if the vaccine is free because the vaccine is expensive	Positive attitude towards vaccination

#### CONCLUSION

In conclusion, implementation of the national HPV vaccine program increase the knowledge on HPV, HPV vaccine, and cervical cancer. However, the overall result of the survey showed that majority of women in Malaysia still has low knowledge about HPV and cervical cancer same with other country. An action should be taken to improve the awareness on cervical cancer. Among school students, the decision to take vaccination was made by their parents. Parent's education will influence the school students towards the HPV vaccine. Parents should prepare themselves with knowledge. Women that had information about HPV infection and cervical cancer likely to attend the screening and get vaccinated compared to those who had insufficient information. Knowledge of HPV infection and cervical cancer is really important among women. A combination of HPV vaccination and Pap smear screening programmes is cost-effective to prevent cervical cancer. Education programs organized by health policy makers to the public are needed to enhance knowledge and to control the illness.

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