



UNIVERSITI PUTRA MALAYSIA

***SOCIODEMOGRAPHIC DETERMINANTS LEVEL OF KNOWLEDGE AND
ATTITUDE RELATED TO HUMAN PAPILLOMAVIRUS (HPV)
VACCINATION IN THE PRIMARY PREVENTION OF CERVICAL CANCER
AMONG UNIVERSITY TUNKU ABDUL RAHMAN (UTAR) STUDENTS.***

**CHEK LOK YEE
MOHAMAD IZW AN BIN ZAINOL
NUR ZARIFAH SY AHMI BT ABD RAZAK**

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CHEK LOK YEE

MOHAMAD IZWAN BIN ZAINOL

NUR ZARIFAH SYAHMI BT ABD RAZAK

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Sociodemographic Determinants of Knowledge and Attitude Related to Human Papillomavirus (HPV) Vaccination in the Primary Prevention of Cervical Cancer among University Tunku Abdul Rahman (UTAR) Students.

Chek L.Y., Mohamad Izwan Zainol¹, Nur Zarifah Syahmi Abdul Razak¹, Maiza Tusimin², Halimatus Sakdiah Minhat³

¹ Second Year Medical Student, Faculty of Medicine and Health Sciences, ² Department of Obstetrics & Gynecology, ³ Department of Community Health, Universiti Putra Malaysia

ABSTRACT

Introduction: Cervical cancer is the third most common cancer among women globally and Human Papillomavirus (HPV) is a recognized causative agent in 70% of all cases. The Malaysian government had officially implemented the HPV immunisation program in secondary school children in 2010.

Objective: To identify the sociodemographic determinants of knowledge and attitude towards HPV vaccination in the primary prevention of cervical cancer among Universiti Tunku Abdul Rahman (UTAR) students.

Methods: A cross-sectional study was conducted using self-administered questionnaires, recruiting 374 UTAR's students as respondents by using convenience sampling method. Respondents were categorized into good/poor level of knowledge and positive/negative attitude towards HPV vaccination.

Results: More than half of the respondents were female (64.5%) and majority were 20 years old and below (55.8%). Generally, 54.7% of the total respondents had high level of knowledge towards HPV vaccine and 57.5% of the total respondents showed negative attitude towards HPV vaccine. Female respondents age 20 years old and below showed good knowledge (56.4%) and more positive attitude (55.8%) towards HPV vaccine. Students from Faculty of Medicine and Health Sciences (FMHS) exhibited both good knowledge (67.3%) and positive attitude (62.4%) towards HPV vaccine as compare to Faculty of Accountancy and Management (FAM).

Conclusion: Majority of UTAR students have a good knowledge towards HPV vaccination but still exhibited negative attitude towards HPV vaccination depicting the necessity to impart and further intensify the sense of health awareness among all students especially among male students. The judicious use of social media apart from the conventional mass media should be an advantage as to enhance the practice of HPV vaccination among them and thereafter minimise the health and economic burden of cervical cancer.

Key Words: Human papillomavirus (HPV) vaccination, knowledge and attitude, cervical cancer prevention

Penentu Sosiodemografi Terhadap Pengetahuan dan Sikap Berkaitan dengan Human Papillomavirus (HPV) Vaksinasi dalam Pencegahan Awal Kanser Pangkal Rahim dalam kalangan Pelajar Universiti Tunku Abdul Rahman (UTAR).

Chek L.Y., Mohamad Izwan Zainol¹, Nur Zarifah Syahmi Abdul Razak¹, Maiza Tusimin², Halimatus Sakdiah Minhat³

¹ Pelajar Perubatan Tahun Dua, Fakulti Perubatan Dan Sains Kesihatan, ² Jabatan Obstetrik & Ginekologi, ³ Jabatan Kesihatan Komuniti, Universiti Putra Malaysia

Pendahuluan : Kanser pangkal rahim adalah kanser ketiga tertinggi dalam kalangan wanita di dunia dan 70% dalam setiap kes disebabkan oleh Human Papillomavirus (HPV). Kerajaan Malaysia juga telah menjalankan program imunisasi di sekolah menengah bermula pada tahun 2010.

Objektif : Mengetahui pasti penentu tahap pengetahuan dan sikap pelajar Universiti Tunku Abdul Rahman terhadap vaksin HPV dalam pencegahan kanser rahim.

Kaedah: Satu kajian keratan rentas telah dijalankan dengan menggunakan soal selidik dengan mengambil kira 374 pelajar UTAR sebagai responden dengan menggunakan kaedah persampelan rawak mudah. Responden dikategorikan kepada tahap baik / kurang pengetahuan dan sikap positif / negatif terhadap vaksin HPV.

Keputusan: Lebih separuh daripada responden adalah perempuan (64.5%) dan majoriti berumur 20 tahun dan kebawah (55.8%). Secara amnya, 54.7% daripada jumlah responden mempunyai tahap pengetahuan yang tinggi terhadap vaksin HPV dan 57.5% daripada jumlah responden menunjukkan sikap negatif terhadap vaksin HPV. Responden perempuan yang berumur 20 tahun dan kebawah menunjukkan tahap pengetahuan yang baik (56.4%) dan sikap positif (55.8%) terhadap vaksin HPV. Pelajar-pelajar dari Fakulti Perubatan dan Sains Kesihatan (FMHS) menunjukkan tinggi pengetahuan (67.3%) dan sikap positif (62.4%) kepada vaksin HPV berbanding dengan Fakulti Perakaunan dan Pengurusan (FAM).

Kesimpulan: Majoriti pelajar UTAR mempunyai pengetahuan yang baik terhadap vaksin HPV tetapi masih menunjukkan sikap negatif terhadap vaksinasi HPV yang menggambarkan perlunya penyebaran dan meningkatkan rasa kesedaran kesihatan dalam kalangan semua pelajar terutamanya dalam kalangan pelajar lelaki. Penggunaan bijak media sosial selain daripada media massa konvensional perlu menjadi satu kelebihan untuk amalan suntikan vaksin HPV dalam kalangan pelajar di samping dapat mengurangkan beban kesihatan dan ekonomi kanser pangkal rahim.

Key Words: Vaksin Human Papillomavirus (HPV), pengetahuan dan sikap, pencegahan kanser rahim

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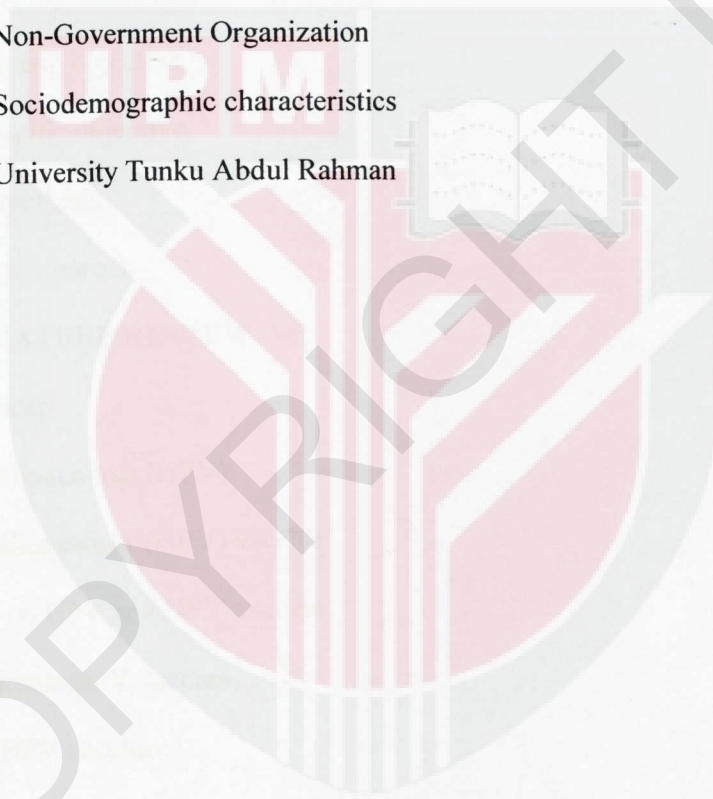
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LISTS OF ABBREVIATIONS

CIN	Cervical intraepithelial neoplasia
DNA	Deoxyribonucleic acid
FAM	Faculty Accounting and Management
FMHS	Faculty Medicine and Health Sciences
HPV	Human Papillomavirus
NGO	Non-Government Organization
SC	Sociodemographic characteristics
UTAR	University Tunku Abdul Rahman



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Chapter 1 Introduction

1.1 Background

Worldwide, cervical cancer is one of the commonest cancers in women (Ahmedin, 2011). In Malaysia, it is the third most common cancer among women and fifth most common cancer in the entire general population (National Cancer Registry, 2007). The cervical cancer constitutes 8.4% of total female cancers in our country (National Cancer Registry, 2007). Cervical cancer screening program was established in Malaysia in the year 1969 as secondary prevention of cervical cancer among target group of women aged 20-65 years and many cancers awareness programs have been launched over the years (Halimah et al., 2004). The coverage of the screening of cervical cancer is poor as the Pap smear coverage in our country is less than 2% in 1992, 3.5% in 1995, and 6.2% in 1996. Therefore, the government have made a drastic measure by implementing free HPV vaccination in 2010 for school children as primary prevention.

In 2007, a National Immunization Survey regarding HPV and HPV vaccination among women adult in United States found that the awareness of HPV is 84.3% while awareness of HPV vaccine is 78.9% (Euler et al., 2007). There is also study conducted in China to know about their knowledge and attitude of HPV and HPV vaccines among women live in metropolitan and rural regions of China. Only 15% of women in that study have ever heard of HPV. About 84.6% of women in that study willing to be vaccinated if the vaccines are available to them (Li et al., 2009).

Several studies have been done to determine the level of awareness of HPV vaccination. For instance, in Melaka, 77.6 % secondary school girls have heard about HPV vaccination (Redhwan et al., 2012). While study among female university students showed that only 10.3% had heard of the HPV vaccine (Sam et al., 2009). Majority of them gained knowledge by newspaper, followed by friends and other public media such as magazines, television and radio. Only 48% of the students have intention to receive the HPV vaccination while the rest refused due to their concern with regards to the safety and efficacy of the new vaccine (Sam et al., 2009).

1.2 Problem statement

There have been shown increasing cases and death of cervical cancer globally and in Malaysia (National Cancer Registry, 2007). Although there are many HPV awareness programme have been carried out in Malaysia, it does not show a satisfying increasing number of awareness towards HPV vaccination.

There are many barriers that prevent people from taking HPV vaccination. One major barrier would be the cost and availability of the HPV vaccination which could be a burden especially those with low socioeconomic background (Al-Dubai et al., 2010). Another barrier will be poor knowledge on HPV vaccine. For example, Muslim, which constitutes a major proportion in Malaysian population, is sceptical in regards to the HALAL certification of the vaccine (Wong, 2008). As HPV vaccine just enters the market, the issues of safety, efficacy, and adverse effect are rising in all groups. Majority of people also do not know that HPV infections are related to cervical cancer (Wong et al., 2010). Young women in Malaysia also think that they do not need

to take this HPV vaccine since they are not sexually active (Jain et al., 2009). This is rather a misconception as HPV vaccine should be administered before they become sexually active to achieve an effective protection against cervical cancer.

This scenario can be solved by raising the awareness towards HPV and cervical cancer, not only amongst female, but also the male population in Malaysia. As the awareness of the consequences of HPV and cervical cancer raised, hopefully this will further encourage women to adhere to the ministry of health's primary and secondary prevention program against cervical cancer. Moreover, with the awareness of HPV as a sexually transmitted infection, hopefully the promiscuous female will abandoned this bad habit or at least practice barrier contraception to protect them against its dreadful risk (Fauziah et al., 2010).

1.3 Significance of problem

Cervical cancer is a crucial issue as it is the third most common cancer among women in Malaysia (National Cancer Registry, 2007). Therefore our research is vital as it is aimed to determine the knowledge and attitude towards HPV vaccine for primary cervical cancer prevention among university students. From that, we can help our society to gain more information and awareness towards HPV if our results reveal that young Malaysian have a very low level of knowledge and attitude towards HPV. On the other hand, if our results shown high level of knowledge and attitude towards HPV, it confers the success and effectiveness of the cervical screening and HPV vaccination programme for which it should be continue to benefits mankind.

1.4 Objective

1.4.1 General objective

To determine the sociodemographic determinants level of knowledge and attitude related to Human Papillomavirus (HPV) vaccination in the primary prevention of cervical cancer among University Tunku Abdul Rahman (UTAR) students.

1.4.2 Specific objective

1. To determine the socio demographic characteristics of the respondents which include:
 - a) Age
 - b) Gender
 - c) Ethnicity
 - d) Education level
 - e) Parental income
2. To determine level of knowledge related towards HPV vaccination.
3. To determine level of attitude towards HPV vaccination.
4. To determine the association between knowledge on HPV vaccination among UTAR students and their sociodemographic characteristics.
5. To determine the association between attitude on HPV vaccination among UTAR students and their sociodemographic characteristics.
6. To compare the level of knowledge and attitude related to HPV vaccination between medical and non-medical UTAR students.

1.5 Research hypothesis

Alternative hypothesis:

- 1) There is significant association between knowledge on HPV vaccination among UTAR students and their sociodemographic characteristics.
- 2) There is significant association between attitude towards HPV vaccination among UTAR students and their sociodemographic characteristics.
- 3) There is significant difference of level of knowledge and attitude related to HPV vaccination between students UTAR from Faculty Medicine & Health Science and Faculty Accounting & Management.

1.6 Conceptual framework

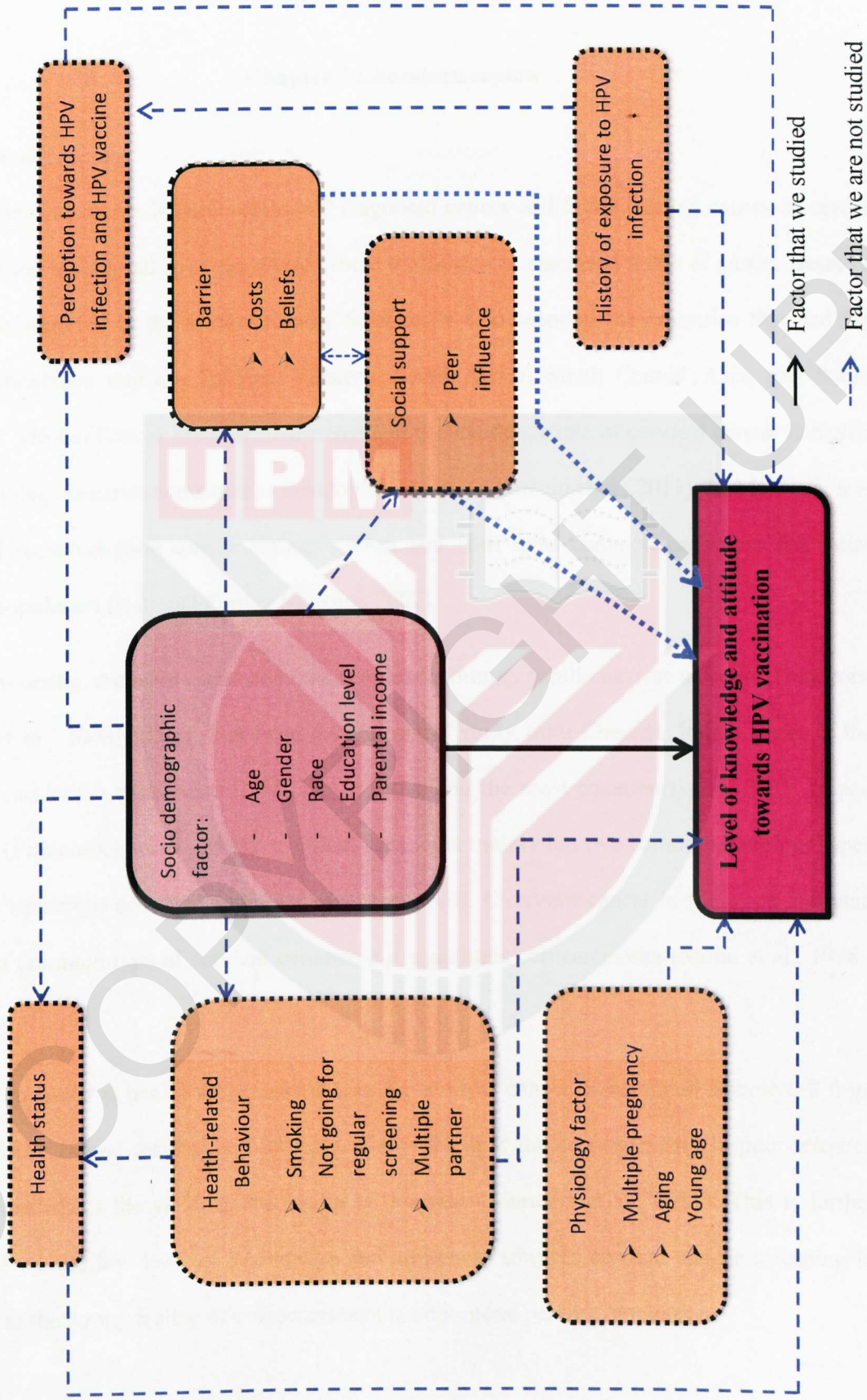


Figure 1 Conceptual framework of level and attitude towards HPV vaccination

Chapter 2 Literature review

2.1 Cervical cancer

Cervical cancer is third commonly diagnosed cancer and fourth leading causes of cancer death among women all over the world where 9.0% of new cases and 8.0% of cancer death of women is reported in the Global Cancer Statistic. It also reported the countries that had the highest incidence rate are Eastern, Western, South Africa, South Central Asia, and South America. Global Cancer Statistic also stated that the incidence rate of cervical cancer is higher in developing countries compared to developed country (Ahmedin et al., 2011). In Malaysia, it is the third most common cancer among women and fifth most common cancer in the entire general population (National Cancer Registry, 2007).

Basically, the main cause of cervical cancer is human papillomavirus infection (Maucort-Boulch et al., 2008). Using data from a case control study from Chennai, Indian, most of the cervical carcinoma cases were HPV DNA positive and the most common type is HPV 16 and HPV 18 (Francheschi et al., 2003). Cervical carcinoma mainly has two common histology types which is squamous cell carcinoma and adenocarcinoma. Overview cancer in Malaysia indicated that most common type of cervical carcinoma is squamous cell carcinoma (Mona et al., 1998 - 2002).

Pap smear is one of the screening tests for cervical cancer. It examined sample cell from woman's cervix and cervical cell changes. The problem is the cost especially in poor-resource region does affect the yield of the screening program (Ahmedin et al., 2011). This is further enhanced by the low level of knowledge and awareness towards cervical cancer screening in addition to the strong feeling of embarrassment to undergone pelvic examination.

2.2 Human Papillomaviruses (HPV)

Human papillomaviruses (HPV) are non-enveloped, double stranded DNA viruses that infect epithelial tissues (de Sanjose et al., 2010) which cause anogenital infections. There are more than 100 different types of HPV have been described (de Villiers et al., 2004). About 40 types can typically infect both female and male genital and anal areas and 30 types are associated with cervical cancer. The most common serotypes of HPV included types 6, 11, 16, 18, 31, 33, 35, 45, 52, 58 of which types 16 and 18 are high-risk types accounting for over 70% of all cases worldwide including Malaysia (Munoz et al., 2003). Other less prevalent oncogenic types include types 31, 33, 45, 52, 58, and 59 (Cheah, 1994).

HPV is transmitted through sexual intercourse. It is one of the most common sexually-transmitted diseases (STD) and is always acquired soon after the onset of sexual intercourse (Adams et al., 2007; Dunne et al., 2007). This make HPV very common in sexually active adolescent girls and young women (Braly, 1996 ; Richardson et al, 2003 ; Syrjänen et al, 2005 ; Kitchener et al, 2006 ; Dunne et al., 2007). HPV normally infect and replicate in mucoepithelial tissues. HPV contain early viral protein E6 and E7, which can inactivate the cellular tumour suppressor protein (RB and p53) and promote hyperplasia of host cells in the basal layer of infected epithelium, which may finally result in cervical cancer. Most infections of HPV are asymptomatic, transient, and have no adverse effects. Therefore, many people who are infected by HPV may be unaware of the transmission and become carriers of HPV (Wong et al., 2007).

HPV can be divided into oncogenic and non-oncogenic types. There are about 30 types of oncogenic HPV. Types 16, 18, 31, 33, 45 and others are high risk oncogenic types which may result in high and low cervical changes and anogenital cancer. Types 6, 11, 42, and others are low risk oncogenic types which will causes genital wart. There are also about 60 types of HPV that are not oncogenic by causing only common body wart. There is no specific antiviral agent of HPV but the there is some HPV vaccine that can protect human from HPV. The quadrivalent HPV vaccine was 90.7-100% effective in preventing infection of the four HPV types, and associated genital warts, CIN, vulval intraepithelial neoplasia, and vaginal intraepithelial neoplasia (Markowitz et al., 2007) Besides, the bivalent HPV vaccine also showed similarly high efficacy in protecting against persistent HPV infection and CIN (Harper et al., 2006).

2.3 HPV vaccine

HPV vaccine is classified as one type of subunit vaccines. These types of vaccines include only the antigens that best stimulate the immune system instead of the entire microbe. These vaccines also use epitopes (very specific parts of the antigen which antibodies or T cells recognize and bind to). Since the subunit vaccines contain only the essential antigens and not the total molecules of the microbe the adverse actions of the vaccine are low (NIAID, 2012). Human papilloma virus (HPV) that can causes the development of cervical cancer, genital warts, and some less common cancers can be prevented by HPV vaccine. Nowadays, there are two HPV vaccines that currently being used which are Gardasil and Cervarix. By using the vaccine it mainly can prevent HPV type 16 and HPV type 18 that will cause 70% of cervical cancers, 60% of vaginal cancers, 80.0% of anal cancer and 40.0% of vulvar cancers (Clifford et al., 2008).

Gardasil is one of the vaccines that being approved by Food and Drug Administration to being use to the society on June 2006. The proper name of Gardasil is Human Papillomavirus Quadrivalent (types 6, 11, 16, 18) Vaccine Recombinant. The vaccine was manufactured by Merck & CO., Inc, License. Gardasil can be administered to male and female age 9 to 26 years old for the prevention of diseases caused by HPV. There are three doses for the administration of Gardasil. There are possibility adverse effects after administration of Gardasil such as headache, fever, nausea, dizziness, pain, swelling erythema, pruritus, and bruising at the local injection site. There are also chances to develop syncope, sometimes associated with tonic-clonic movements and the other seizure-like activity. Anaphylaxis also has been reported to be the adverse effects (Food and Drug Administration US, 2006).

Another HPV vaccine is Cervarix that being approved by Food and Drugs Administration in year 2009. The scientific name of Cervarix is Human Papillomavirus Bivalent (type 16 and 18) Vaccine, Recombinant. This vaccine was manufactured by GlaxoSmithKline Biologicals. Cervarix is approved to be used in female age 9 to 25 years old. There are also three doses for the administration of Cervarix. The most common local adverse reactions after administration of Cervarix are pain, redness, and swelling at the injection site. Then, the most common general adverse effects are fatigue, headache, myalgia, gastrointestinal symptoms, and arthralgia (Food and Drug Administration US, 2009).

2.4 Knowledge on HPV and HPV vaccine

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). In the study among female university student (Wong et al., 2010), knowledge on HPV and HPV vaccine among them are remarkably poor where only 10.3% of participants had heard about the releasing HPV vaccine. Study done by Al-Dubai et al. among Malaysian women (2010) also shown that only 26.0% had heard about HPV. The study among adolescents in Hungary showed that their knowledge on HPV was relatively low and there only 39% of participants that had heard about HPV (Marek et al., 2011). Another studied in Australian secondary school students showed that student knowledge about HPV was generally poor (Agius et al., 2010).

In the study among Iranian women living in Malaysia, 82.7% of respondents did not have knowledge on HPV vaccination and 18.1% of them received information from friends, neighbors, and lecturers. Meanwhile 10.0% received from gynecologists, 0.4% from general medical doctor and no source of information from television (Minhat, 2013). Different findings were found in study among Malaysians where the main source of HPV vaccination was from media (Tan, 2008).

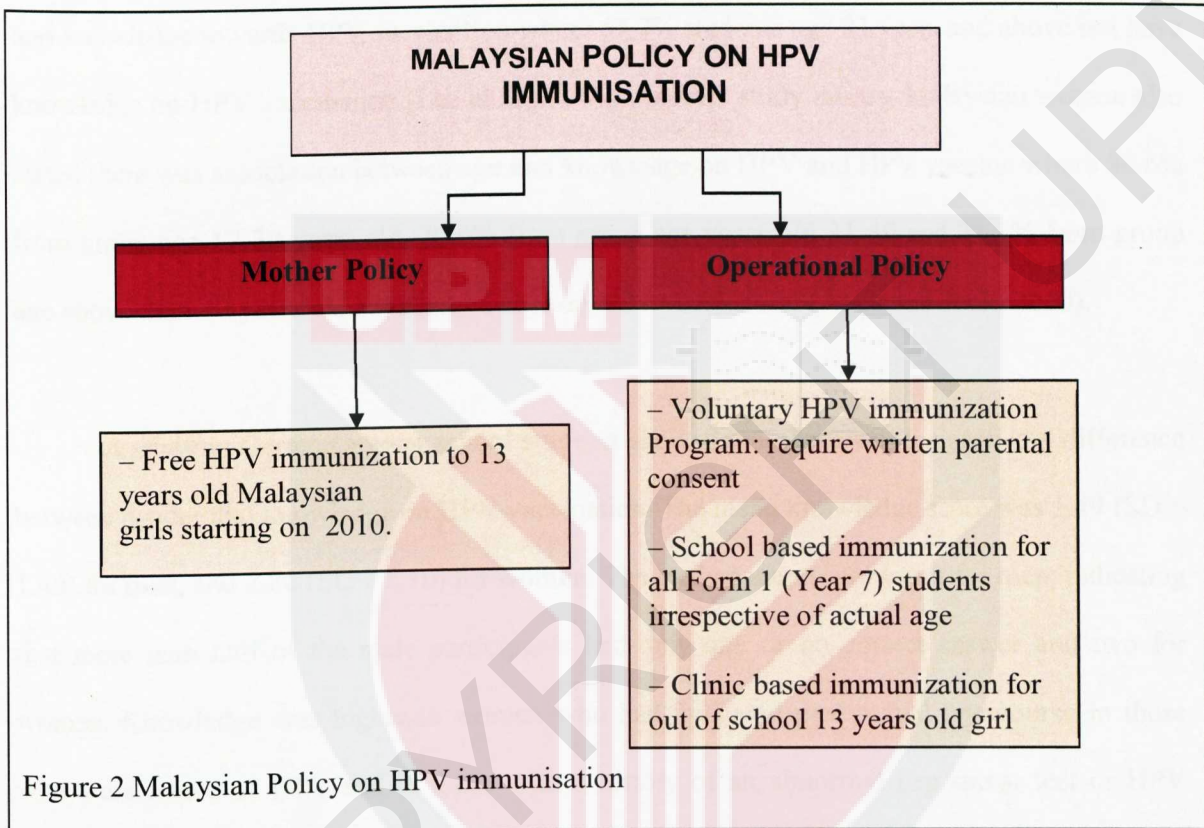
2.5 Attitude towards HPV vaccine

In the study by Li et al. (2009) among women in China, there are 84.6% of respondents were willing to vaccinated where 31.9% of them fear of getting genital warts and 56.6% concern from being infected with HPV. Study among young women in Malaysia showed that 53.3% of participants are willing to be vaccinated and 17.0 % refused to be vaccinated because of uncertain safety of vaccine and side effect (Al-Naggar et al., 2010). In other study among university students in Malaysia reported that 62.0% did not have intention to receive HPV vaccine. Reason they refuse to receive HPV vaccine was because safety and efficacy of new vaccine (50.9%), perceived themselves as not a risk of HPV infection (41.5%) and felt embarrassed about receiving sexually transmitted infection vaccine (11.8%) (Wong et al., 2007).

In the study done by Al- Dubai (2010) among Malaysian women showed that 53.0% of participants had positive attitude towards HPV vaccine. In the same study also stated that the barriers that constitute to the 47% negative attitude towards HPV vaccination were the side effect of vaccine (40.0%), afraid of needles (27.0%), and concerned about the social stigma related to HPV vaccination (Al-Dubai., 2010). While study among female college students in Korea reported that they concern about the potential harmful effect of the vaccine and the cost of HPV vaccine (Kang et al., 2010). The study among multiethnic women reported that 80% of them considered vaccine HPV. The other 20% think they did not need the HPV vaccine because the participants perceived themselves not to be at risk, concern about the adverse effect and cost of HPV vaccine (Wong, 2008).

2.6 Practice of HPV vaccine

There are two policy in Malaysia on HPV immunisation currently, which are mother policy and operational policy (based on Introduction of national HPV immunisation program, 2010).



In 2008, a study on uptake of HPV vaccine stated that 80.0% of the daughters had not received the vaccine, although it had been offered and 26.0% had started vaccination or completed the series. A study on practice of HPV vaccine among school students in Melaka showed that majority of participant were vaccinated (77%) in their school (Al-Naggar et al., 2011). Regarding practice of HPV vaccines among Malaysian women, 51.5% of them have been vaccinated (Al-Naggar et al., 2011).

2.7 Association between sociodemographic characteristics and knowledge on HPV vaccination

In the study among female university student in Korea, there was association between age and knowledge towards HPV vaccination where 53.7% students age 21 years and above not have knowledge on HPV vaccination (Lee et al., 2011). Another study among Malaysian women also stated there was association between age and knowledge on HPV and HPV vaccine where 30.6% from group age 17-30 years old, 20.6% from group age years old 31-40 and 21.3% from group age above than 40 years old have knowledge on HPV vaccination (Al-Dubai et al., 2010).

A study in German among school students showed that there was a significant difference between gender and knowledge on HPV vaccination. The mean knowledge score was 1.49 (SD = 1.49) for men, and 2.80 (SD = 2.10) for women. The median sum score was 1 for men, indicating that more than half of the male participants had only one or no correct answer and two for women. Knowledge was higher in women who had indicated past sexual intercourse in those who were aware of HPV and in those with a history of an abnormal Pap smear test or HPV infection. In men, knowledge was higher in those who were aware about HPV and those who were aware about the HPV vaccine (Blodt et al., 2011). According to a study conducted in Korea, there was a significant difference between male and female with knowledge towards HPV vaccine. Knowledge was lower in male where 5.0% of male and 12.1% of female knew that cervical cancer can be prevented by HPV vaccination (Oh et al., 2010).

Study done in United Kingdom among public found the significant difference between ethnicity and knowledge of HPV vaccination where 23.0% of white and 8.3% of non-white respondents had score more than zero (Walsh et al., 2008). According to study done among female university students reported that there was a significant association between ethnicity and knowledge of HPV vaccination. Chinese respondent had the highest percentage that had heard about HPV vaccination (44.8%) followed by Malays (41.8%), Indian (11.9%) and others (1.5%) (Wong et al., 2010). Whereas, study done among Malaysia women stated that there was no significant difference between ethnicity and knowledge of HPV vaccination (Al-Dubai et al., 2010).

In the study among Thai women found that there was a significant difference between educational level with knowledge of HPV vaccination in which students master had highest percentage (52.2%) and below high school students was the lowest which is 23.0% (Charakorn et al., 2011). A study done by Minhat et al., (2013) also shown that there was a significant difference between educational level and knowledge towards HPV vaccine. A contrary finding was reported by Tan where there was no significant difference between educational level and knowledge of HPV vaccine (Tan, 2008). The increasing of education level constitute to good knowledge towards HPV and HPV vaccine (Khoo, et al., 2011). The same result shows that the tertiary education level has more significant association towards the knowledge of HPV compared to primary and secondary school (Al-Naggar et al., 2011). In the others study among Southeast Asian women show difference result between the education level and knowledge of HPV, HPV vaccine and cervical cancer because the secondary school have the higher knowledge compared to university students (Wong, 2011).

2.8 Association between sociodemographic characteristics and attitude on HPV vaccination

A study done by Al-Dubai reported that there was association between age and attitude towards HPV vaccination. 65.6% respondents from group age 17-30 years old, 55.6% from group age 31-40 years old and 32% from group age above than 40 years old had positive attitude towards HPV vaccination (Al-Dubai et al., 2010). In Korea, study among adult female and male showed there was a significant association between age and acceptance of HPV vaccine where age group 30-39 have the highest percentage towards HPV vaccination acceptance (Oh et al., 2010).

A study found that there was no significant difference between gender and attitude on HPV vaccination where the mean score of both gender was relatively the same as 1.92 for male and 1.96 for female (Walsh et al., 2008). Another cross sectional study also shown there was a significant difference between gender and attitude towards HPV vaccine where women (73.4%) had higher proportion than men (67.9%) that agreed they would personally receive the vaccine if it was available (Marshall et al., 2007).

A study among Malaysian women showed that there was no significant difference between ethnicity and attitude towards HPV vaccination (Al-Dubai et al., 2010). Similar result was shown in the study among female university students (Wong et al., 2010) and among rural Southeast Asian women (Wong, 2011).

In the study among female university students found that there was no significant association between educational level and attitude towards HPV vaccination (Wong et al., 2010). Contrarily with study among Malaysian women where there was a significant association between education level and attitude towards HPV vaccine. University students had more positive attitude towards HPV vaccination (64.1%) as compared to primary (28.6%), secondary (42.3%) and diploma students (53.6%) (Al-Dubai et al., 2010). From that study we can say that the increase in level of education constitute to positive attitude towards HPV vaccination.

A local studied among Malaysian women found that 66.7% of respondents' family income below than RM2000 had more positive attitude as compared to respondents' family income more than RM4000 (56.3%) but there was no significant association between family income and attitude towards HPV vaccine (Al-Dubai et al., 2010). In Hong Kong, respondents with low monthly income (91.0%) had positive attitude as compared to respondents with high monthly income (82.0%) (Lee et al., 2007).

2.9 Association between sociodemographic characteristics and practice of HPV vaccination

Among a total number of 233 women recruited from the general population participated, age, marital status and family income significantly influence the practice of HPV vaccine ($p=0.001$). However race and educational status were not significantly influence the practice of HPV vaccine (Al-Naggar et al., 2011). The youngest age group (17-30 years old), single respondents and family income between RM 2000-4000 have the highest practice of HPV vaccination (Al-Naggar et al., 2011).

Another similar study that conducted among a total number of 612 secondary school girl students shows that majority of them vaccinated in their school (77.90%) and this may be due to the effort of government offering free vaccine for secondary school girls now (Al-Naggar et al , 2012). From this study, socio demographic factors that significantly influenced the practice of HPV vaccine among school girls were age, race, parents' income and parents' education (p -value <0.001). Residency and family history of cervical cancer do not significantly influence the practice of HPV vaccine. Secondary school girls who are 13 years old (youngest age group in this study), Malay ethnicity, parents' income less than RM 3000 and secondary level of parents' education were constitute to the highest practice of HPV vaccination (Al-Naggar et al , 2012).

Chapter 3 Methodology

3.1 Study location

The study was carried out in University Tunku Abdul Rahman (UTAR), Campus Sungai Long, Cheras, Selangor.

3.2 Study design

The study was a cross sectional study.

3.3 Study duration

The study was carried out from 28 March 2013 to 4 September 2013. There are 2 phases. The first phase included the proposal preparation presentation, approval and submission of ethical form. The second phases were the data collection, analysis, full report and final presentation. Refer Gantt chart in Appendix 1.

3.4 Sampling

3.4.1 Study population

All students in University Tunku Abdul Rahman (UTAR), Campus Sungai Long, Cheras, Selangor. This campus contains only 2 faculties, which are:

1. Faculty of Accountancy & Management (FAM).
2. Faculty of Medicine & Health Sciences (FMHS).

3.4.2 Sampling population

a) Inclusion criteria

1. Undergraduate university students.
2. Local students.
3. Age between 19 and 23.

b) Exclusion criteria

1. International students.

3.4.3 Sampling unit

An undergraduate students of UTAR.

3.4.4 Sampling frame

A list of undergraduate university students from University Tunku Abdul Rahman (UTAR), Campus Sungai Long, Cheras, Selangor.

3.4.5 Sampling method

Convenience sampling

3.4.6 Sample size

We calculated our sample size according to formula based on Lemeshow, Klar, & Lawanga (1990).

$$\begin{aligned}
 n &= \frac{(z_{1-\alpha/2})^2 [P(1-P)]}{d^2} \\
 &= \frac{(1.96)^2 [0.67(1-0.67)]}{0.05^2} \\
 &= 339.75 \approx 340
 \end{aligned}$$

where,

n = sample size

z = number of standard error away from the mean = 1.96

P = percentage of participants had heard about HPV (Based on Knowledge and Attitude Regarding Human Papillomavirus and HPV Vaccine among College Students, by O'Flarity, 2012)

d = desired precision = 0.05

Before we conclude and decide our sample size, we take 10% of non-respond rate into our consideration. After taking into account the possibility of 10% non-response rate into the calculation of the sample size, the final sample size required for this study is 374.

3.5 Instrument and data collection technique

3.5.1 Instrument

There are 2 questionnaires involved which are:

1. **Sociodemographic characteristics of the respondents** – Factors that will be asked under the sociodemographic section include age, gender, ethnicity, educational level, faculty, and parental income. The questionnaire will be pre-tested prior to data collection.
2. **Knowledge and attitude towards HPV vaccination** – A validated questionnaire from a study by Minhat et al. (2013) was used with Cronbach coefficient alpha value of 0.92. Their study was on sociodemographic determinants of knowledge on HPV vaccination among Iranian women living in Malaysia. Score of '1' will be given for any correct answer and '0' for any incorrect answer or those who answered 'do not know'. The median score of 6.0 for knowledge was used as a cut-off point to categorize into good and poor level of knowledge. "Good knowledge" was referred to the scores if more than median and the scores equal or less than median were referred to "poor knowledge" (Holcomb et al. 2004). Whereas, a 4-likert scale was used to measure the attitude score, with '1' indicate strongly agree, '2' for somewhat agree, '3' for somewhat disagree and '4' for strongly disagree. An 'overall attitude score' was used for the purpose of the analysis which refer to the actual total score of attitude from 18 questions for each respondent, divided by the expected total maximum score of attitude multiplied by 100. Scores between 0-47 are labelled as 'negative attitude' and 48-100 as 'positive attitude' (Murtaza, 2008).

3.5.2 Data collection technique

We distributed our questionnaire to our respondents at a few places such as lecture hall and classes. 20 minutes was given to our respondents to finish the questionnaire and hand back to us. Collected data were analysed via SPSS version.

3.6 Variables

3.6.1 Dependent variables

Level of knowledge and attitude related to HPV vaccine.

3.6.2 Independent variables

Socio demographic such as:

- a. Age
- b. Gender
- c. Ethnicity
- d. Education level
- e. Faculty
- f. Parental income

3.7 Data analysis

Means and standard deviation were used to describe continuous data for normal distribution data, whereas median value was used for data which are not normally distributed. The data was analysed by using Social Package for Social Science Version 21.0. Bivariate analysis was used to identify the association between the variables. A p -value of less to 0.05 was used for level of significance.

Table 3.1: Statistical analysis

Factors	Type of analysis
<p>1. Descriptive results: Sociodemographic characteristics of the respondents</p>	<p>No statistical analysis involved. The n and % of respondents will be shown according to age, gender, ethnicity, educational level, parents income</p>

2. Bivariate analysis:

a. Association between knowledge and age, gender, race, marital status, educational level, parents income

b. Association between attitude and age, gender, race, marital status, educational level, parents income.

d. Association between knowledge and attitude between medical and non-medical.

T test, chi square or ANOVA tests will be used according to the type of data involved during the analysis.

3.8 Ethics

Prior to the commencement of the study, ethical clearance and approval letter obtain from:

1. Medical ethics committee, Faculty of Accountancy & Management, UTAR, Campus Sungai Long, Cheras, Selangor.
2. Medical ethics committee, Faculty of Medicine & Health Sciences, UTAR, Campus Sungai Long, Cheras, Selangor.

3.9 Definition of terms

Table 3.2: Definition of terms

Gender	Difference sex which is male or female.
Age	Based on respondent birth date from identity card.
Race	Based on respondent race from identity card.
Knowledge	Based on the knowledge score that respondent answer in the questionnaire.
Attitude	Based on the attitude score that respondent answer in the questionnaire.
Education level	Based on year of study.

Chapter 4 Results

4.1 Response Rate

$$\begin{aligned}
 \text{response rate} &= \frac{\text{valid response}}{\text{total number approached} - \text{out of scope}} \times 100 \\
 &= \frac{369}{390 - 0} \times 100 \\
 &= 94.6\%
 \end{aligned}$$

A total number of 390 respondents from University Tunku Abdul Rahman (UTAR) were approached and 369 of respondents participated in the study give the response rate of 94.6%.

4.2 Sociodemographic Characteristic

Demographic characteristics that were studied include age, gender, ethnicity, education level, faculty, and parent's income. Majority of the respondents were Chinese (91.9%) and the minor group were Malay (0.3%), Indian (5.7%) and others (2.2%). Most of the respondents were 20 years old and below (55.8%) and the others 44.2% were respondents' age above 20 years old. Year 1 and 2 students contributed to most of the respondents, 45.5% and 40.9% respectively while only 8.1% from year 3 and 5.4% from year 4. Majority of the respondent were female, which constitutes to 64.5%, compared to male (35.5%). The Faculty of Account and Management have 197 students (53.4%) and Faculty Medicine and Health Science 172 students (46.6%). 99.7% (n= 368) of the respondent were single and only one respondent who is married.

Majority of their parent's income were below than RM3000 (63.1%) while the remaining 36.9% of the respondent's parent has income higher than RM3000.

Table 4.1 Sociodemographic Characteristics of respondents		
Variables	Respondent (N=369)	
	Frequency (n)	Percentage (%)
Age		
≤ 20 years old	206	55.8
>20 years old	163	44.2
Gender		
Male	131	35.5
Female	238	64.5
Ethnicity		
Malay	1	0.3
Chinese	339	91.9
Indian	21	5.7
Others	8	2.2
Educational level		
Year 1	168	45.5
Year 2	151	40.9
Year 3	30	8.1
Year 4	20	5.4
Faculty		
FMHS	172	46.6
FAM	197	53.4
Parents income		
≤ RM3000	233	63.1
≥ RM 3000	136	36.9

4.3 Knowledge and Attitude towards HPV Vaccination

Table 4.2 Respondent's knowledge and attitude towards HPV vaccination		
Variables	Respondent	
	Frequency (n)	Percentage (%)
Knowledge towards HPV vaccination		
Good knowledge	202	54.7
Poor knowledge	167	45.3
Attitude towards HPV vaccination		
Positive attitude	157	42.5
Negative attitude	212	57.5

Most of the students (54.7%) have good knowledge with regards to HPV vaccination. In contrary, this study revealed a relatively high percentage of negative attitudes towards HPV vaccination which is 57.5%.

4.4 Distribution of Respondent's Knowledge towards HPV Vaccination

The respondents were assigned to answer 15 questions to test their knowledge on HPV vaccination (questionnaire part B). Nonetheless only 12 most important questions were displayed in the table 4.3. The respondent demonstrated a high knowledge (75.9% correct answer) in regards to the best age to get the vaccine (question 6). On the other hand, majorities (85.9%) of the respondent are not aware of the different type of HPV vaccine and 77.5% are not aware of the vaccine's cost. More than half of them are aware that women who receive HPV vaccination should still undergo regular Pap smear screening.

Table 4.3 Distribution of respondent's knowledge towards HPV vaccination		
Questions	Frequency (%)	
	Yes*	No*
How many types of HPV vaccine are available?	52 (14.1)	317 (85.9)
How much is it per dose?	83 (22.5)	286 (77.5)
What is the best age to get the vaccine?	280 (75.9)	89 (24.1)
How many times women should be vaccinated against HPV?	249 (67.5)	120 (32.5)
Men would be benefit from HPV vaccination?	129 (35.0)	240 (65.0)
Do you think HPV vaccine is more useful for women who have multiple sexual partners?	207 (56.1)	162 (43.9)
Do you think women who received of HPV vaccine do not need to do regular pap smear?	204 (55.3)	165 (44.7)
Can HPV vaccine cause genital warts?	119 (32.2)	250 (67.8)
Can HPV vaccine cure cervical cancer?	189 (51.2)	180 (48.8)
Can HPV vaccine cure genital warts?	145 (39.3)	224 (60.7)
Can pregnant women take HPV vaccine?	198 (53.7)	171 (46.3)

*yes: correct answer, *no: wrong answer and no information

4.5 Association between Sociodemographic Characteristics and Knowledge towards HPV Vaccination

Table 4.4 Association between age and knowledge towards HPV vaccination							
Age	Knowledge towards HPV vaccination				Total	Chi – Square Test Value	
	Poor	%	Good	%		χ^2	<i>p</i> -value
≤ 20 years old	92	55.1%	114	56.4%	206	0.067	0.796
>20 years old	75	44.9%	88	43.6%	163		
Total	167	100.0%	202	100.0%	369		

Majority of the respondents who aged 20 years old and below showed good knowledge towards HPV vaccination (56.4%) as compared to those aged above 20 (43.6%). Nonetheless, there is no significant association between age and level of knowledge score towards HPV vaccination ($p = 0.796$).

Table 4.5 Association between gender and knowledge towards HPV vaccination							
Gender	Knowledge towards HPV vaccination				Total	Chi – Square Test Value	
	Poor	%	Good	%		χ^2	<i>p</i> -value
Male	70	41.9%	61	30.2%	131	5.482	0.019
Female	97	58.1%	141	69.8%	238		
Total	167	100.0%	202	100.0%	369		

The female respondents have good level of knowledge towards HPV vaccination as compared to male respondents (69.8% vs. 30.2%). Statistically, there is a significant association between gender and knowledge towards HPV vaccination ($p= 0.019$).

Table 4.6 Association between ethnicity and knowledge towards HPV vaccination			
Ethnicity	Frequency (%)	Kruskal Wallis test value	
		χ^2	<i>p</i> -value
Malay	1 (0.5)	4.523	0.210
Chinese	339 (91.9)		
Indian	21 (5.7)		
Others	8 (2.2)		
Total	369 (100.0)		

Our study revealed no association between ethnicity and knowledge towards HPV vaccination ($p= 0.210$).

Table 4.7 Association between educational level and knowledge towards HPV vaccination			
Educational level	Frequency (%)	Kruskal Wallis test value	
		χ^2	<i>p</i> -value
Year 1	168 (45.5)	44.004	0.001
Year 2	151 (40.9)		
Year 3	30 (8.1)		
Year 4	20 (5.4)		
Total	369 (100.0)		

Statistically, there is a significant association between educational level and knowledge towards HPV vaccination amongst the respondent ($p= 0.001$).

Table 4.8 Association between parents income and knowledge towards HPV vaccination

Parent's income	Knowledge towards HPV vaccination				Total	Chi – Square Test Value	
	Poor	%	Good	%		χ^2	<i>p</i> -value
≤ RM 3000	127	76.0%	106	52.5%	233	21.828	0.001
>RM 3000	40	24.0%	96	47.5%	136		
Total	167	100.0%	202	100.0%	369		

There is a significant association between parents' income and knowledge towards HPV vaccination ($p= 0.001$). The respondents with parent's income less than RM 3000 revealed a good knowledge towards HPV vaccination (52.5% vs. 47.5%) as compared to respondents having parental income of more than RM 3000.

4.6 Association between Sociodemographic Characteristics and Attitude towards HPV Vaccination

Table 4.9 Association between age and attitude towards HPV vaccination

Ages	Attitude towards HPV vaccination				Total	Chi – Square Test Value	
	Negative	%	Positive	%		χ^2	<i>p</i> -value
≤ 20 years old	109	51.4%	97	61.8%	206	3.932	0.047
>20 years old	103	48.6%	60	38.2%	163		
Total	212	100.05	157	100.0%	369		

Respondents who aged 20 years old and below showed a positive attitude towards HPV vaccination as compared to the respondents aged beyond 20 (61.8% vs. 38.2%). Statistically, there is a significant association between age and level of attitude towards HPV vaccination ($p=0.047$).

Table 4.10 Association between gender and attitude towards HPV vaccination

Gender	Attitude towards HPV vaccination				Total	Chi – Square Test Value	
	Negative	%	Positive	%		χ^2	p -value
Male	92	43.4%	39	24.8%	131	13.563	0.001
Female	120	56.6%	118	75.2%	238		
Total	212	100.0%	157	100.0%	369		

Majority of the female have a positive attitude towards HPV vaccination as compared to male respondent (75.2% vs. 24.8%). There is a significant association between gender and attitude towards HPV vaccination as the p -value is 0.001.

Table 4.11 Association between ethnicity and attitude towards HPV vaccination

Ethnicity	N	Kruskal Wallis test value	
		χ^2	p -value
Malay	1 (0.5)	4.027	0.259
Chinese	339 (91.9)		
Indian	21 (5.7)		
Others	8 (2.2)		
Total	369 (100.0)		

This study revealed no significant association between ethnicity and attitude towards HPV vaccination ($p= 0.259$).

Table 4.12 Association between educational level and attitude towards HPV vaccination			
Educational level	N	Kruskal Wallis test value	
		χ^2	p -value
Year 1	168 (45.5)	2.465	0.482
Year 2	151 (40.9)		
Year 3	30 (8.1)		
Year 4	20 (5.4)		
Total	369 (100.0)		

The study revealed no significant association between educational level and attitude towards HPV vaccination ($p= 0.482$).

Table 4.13 association between parents income and attitude towards HPV vaccination							
Parent's income	Attitude towards HPV vaccination				Total	Chi – Square Test Value	
	Negative	%	Positive	%		χ^2	p -value
≤ RM 3000	139	65.6%	94	59.9%	233	1.256	0.262
>RM 3000	73	34.4%	63	40.1%	136		
Total	212	100.0%	157	100.0%	369		

Majority of the respondents with parental income of less than RM 3000 have a positive attitude towards HPV vaccination as compared to those with parents earning more than RM 3000 (59.9% vs. 40.1%). However, statistically, there is no significant association between parents' income and attitude towards HPV vaccination ($p= 0.262$).

4.7 Level of Knowledge and Attitude towards HPV Vaccine between FMHS and FAM

Faculty	Knowledge towards HPV vaccination				Total	Chi – Square Test Value	
	Poor	%	Good	%		χ^2	<i>p</i> -value
	FMHS	36	21.6%	136			
FAM	131	78.4%	66	32.7%	197		
Total	167	100.0%	202	100.0%	369		

The FMHS shows good knowledge towards HPV vaccine (67.3%) when compare to the FAM (32.7%). There is a significant association between faculty and knowledge towards HPV vaccination as the *p*-value is 0.001.

Table 4.15 Association between faculty and attitude towards HPV vaccination

Faculty	Attitude towards HPV vaccination				Total	Chi – Square Test Value	
	Negative	%	Positive	%		χ^2	<i>p</i> -value
FMHS	74	34.9%	98	62.4%	172	27.441	0.001
FAM	138	65.1%	59	37.6%	197		
Total	212	100.0%	157	100.0%	369		

The study revealed a positive attitude towards HPV vaccination amongst the FMHS respondents as compared to respondents from the FAM (62.4% vs. 37.6%). With *p*-value of 0.001, there was a significant association between faculty and knowledge towards HPV vaccination.

Chapter 5 Discussion

5.1 Distribution of Respondents

There were total of 369 respondents recruited in this study. Demographic characteristics that were studied include age, gender, ethnicity, education level, faculty and parent's income. The Malaysian population comprises diverse ethnic groups as reflected in our study population with predominance of Chinese, followed by Indians, Malays and others. Majority of the respondents were Chinese (91.9%) and the minor group were Malay (0.3%), Indian (5.7%) and others (2.2%). In contrary, in a studied by Wong et al., majority of the respondent were Malay (64.8%), while others were Chinese (25.1%), Indian (8.8%) and others (2.5%) (Wong et al., 2007).

Most of the respondents were 20 years old and below (55.8%) and the others 44.2% were respondents' age above 20 years old. Year 1 and 2 contributed to most of the respondents, 45.5% and 40.9% respectively while only 8.1% from year 3 and 5.4% from year 4. This is due to the fact that the year 3 and year 4 students were undergoing their practical training for students FAM and posting in the hospital for students FMHS. This was expected since the sample populations were amongst young university students. Despite being a private university, majority of the respondents' parents' income were less than RM 3000 (63.1%).

5.2 Knowledge towards HPV Vaccination

This study revealed more than half (54.7%) of the respondents had good knowledge towards HPV vaccination. In contrary, Wong et al. demonstrated only 10.3% of respondents had ever heard of the HPV vaccine (Wong et al., 2007) while a recent local study on Iranian women also demonstrated only 17.6% of respondent with good knowledge (Minhat et al., 2013). This result may reflect the effectiveness of the government health campaign against Cervical Cancer, especially ever since the launched of the National HPV Immunization Program in 2010. The vast campaign through mass media has major role in affecting the attitude amongst the youth.

Upon specific questions on knowledge of HPV vaccination to both male and female respondent, interestingly the respondents exhibited relatively good knowledge on the best age to get vaccinated (75.9%), the number of vaccination that women require (67.5%), the importance of HPV vaccination in promiscuous women (56.1%), and the importance of undergoing PAP smear screening despite receiving HPV vaccination (44.7%). This implies that the basic knowledge on HPV related diseases and vaccination had reached this group of youth. The respondents also knew that HPV is a sexually transmitted disease. Redhwan et al., also revealed that 71.7% of respondents were able to answer correctly for the question whether multiple sex increases the risk of HPV (AL-Naggar et al., 2010). On the other hand, the knowledge of the availability of the different types of HPV vaccine is poor yielding 85.9% of wrong answers. Most of respondents were not aware of the availability of 2 types of HPV vaccines available nationwide.

5.3 Association between Sociodemographic Characteristics and Knowledge towards HPV Vaccination

5.3.1 Association between age and knowledge towards HPV vaccination

This study demonstrated most of the respondents who age 20 years old and below showed good knowledge towards HPV vaccine (56.4%). A study conducted among general population showed that majority of the respondents age 17 to 30 had good knowledge (82.4%) towards HPV vaccine (Al-Naggar et al., 2010). Another study showed that respondents age 13 to 17 had heard of the HPV vaccine about 77.6% (Redhwan et al., 2011). The younger population possessing good knowledge on HPV vaccination is parallel with the government effort since 2010 where the National HPV Immunization Program was launched for secondary school girl. In addition, the NGOs have been actively involved in promoting the HPV vaccination targeting at the youth population.

5.3.2 Association between gender and knowledge towards HPV vaccination

Majority of the female respondent had significantly good knowledge towards HPV vaccination (69.8%) as compare to male respondent in this study. Similar finding were revealed in a study by O'Flarity (2012) where 83.0% of female respondents knows more about the HPV vaccine. Ji et al found there was association between gender and knowledge towards HPV vaccine (Ji et al., 2007).

5.3.3 Association between ethnicity and knowledge towards HPV vaccination

There was no significant association between ethnicity and knowledge towards HPV vaccination in this study. In contrary, Li et al found a significant association between ethnicity and knowledge towards HPV vaccination (Li et al., 2007). This is probably because certain ethnicity may have different believe and socioeconomic barriers which limit the dissemination and understanding of knowledge towards HPV vaccination. The different result between our study and their study is because the different in distribution of respondents by ethnicity where our study was not normally distributed as the majority of respondents were Chinese.

5.3.4 Association between educational level and knowledge towards HPV vaccination

This study found that there was significant association between knowledge towards HPV vaccine and educational level as the p -value is 0.001 (<0.05). Similar findings were reported in the other studies (Minhat., 2013; Wong., 2010). Whereas, there are also some studies among Malaysian women (Al-Dubai., 2010; Tan., 2008) found that there was no significant association between educational level and knowledge towards HPV vaccine.

5.3.5 Association between parental income and knowledge towards HPV vaccination

There was significant association between parental income and level of knowledge on HPV vaccine. Respondents with low parents' income showed good knowledge on HPV vaccination (52.5%) while parents with high income showed poor knowledge on HPV vaccine (47.5%). A similar study among Malaysian women (Al-Dubai., 2010) found that respondents with high family income had a good knowledge towards HPV vaccine.

5.4 Association between Sociodemographic Characteristics and Attitude towards HPV Vaccination

5.4.1 Association between age and attitude towards HPV vaccination

In this study there was significant association between age and attitude towards HPV vaccine as the p-value is 0.049 (<0.05). Respondents who aged 20 years old and below showed a positive attitude towards HPV vaccination as compared to the respondents aged beyond 20 (61.8% vs. 38.2%). Study among Malaysian women (Al-Dubai., 2010) also reported that there was significant association between attitude towards HPV vaccine and age. The lower age people (19-30 years old) shows the highest percentage of positive attitude towards HPV vaccine (65.6%) while the higher age (>40 years old) have the higher percentage of negative attitude towards HPV vaccine (68.0%) (Al-Dubai., 2010). So, we can say that the lower the age, constitute to the positive attitude towards HPV vaccine.

5.4.2 Association between gender and attitude towards HPV vaccination

According to gender difference, the female students showed positive attitude towards HPV vaccination as compared to male. More than half of the respondents with positive attitude are females (75.2%). A study among Korean adult (Oh., 2010) also found that adult female had a positive attitude more than adult male. This is due to less information about the HPV related male disease vaccine. Most of the male respondents think that HPV vaccine just for women and related to cervical cancer. So, they think HPV vaccine is not necessary for male.

5.4.3 Association between ethnicity and attitude towards HPV vaccination

In this study, there was no significant association between ethnicity and attitude towards HPV vaccination as the p -value is 0.259 (>0.05). Study done by Al-Dubai (2010) also found that there was no significant association between ethnicity and attitude towards HPV vaccine. This is because our ethnic populations were not normally distributed. Our studies have more Chinese's respondents while their studies have more Malays respondents.

5.4.4 Association between educational level and attitude towards HPV vaccination

In our study, the distributions of respondents according to educational level were not normally distributed. Kruskal Wallis test was used to know the association between educational level and attitude towards HPV vaccine and the result was not significant as the p -value 0.482 (>0.05). Whereas, another similar study showed that education level had significant association with attitude towards HPV vaccine, which their p -value is 0.002. (Al-Dubai et al, 2010).

5.4.5 Association between parental income and attitude towards HPV vaccination

In this study, majority of the respondents with positive attitude towards HPV vaccine were respondents who parents income less than RM 3000, which is 59.9%. Another study showed that family income that less than RM2000 had a more positive attitude (66.7%) when compare to family income that more than RM 4000 (56.3%) (Al-Dubai et al, 2010). This showed that respondents with lower socioeconomic status are more acceptable to HPV vaccine.

5.5 Level of Knowledge and Attitude towards HPV Vaccine between FMHS and FAM

5.5.1 Association between faculty and knowledge towards HPV vaccination

Our study reported that respondents with good knowledge are higher from FMHS (67.3%) when compare to FAM (32.7%). Another study also reported that a medical education had high level of knowledge where 87.7% of them had heard of about HPV (Lenselink et al., 2007). This is because medical students should know more about HPV vaccine when compare to others students since medical students will have more chance to get to know HPV vaccine during their class and lecture.

5.5.2 Association between faculty and attitude towards HPV vaccination

Most of students with positive attitude were from FMHS (62.4%) when compare to FAM (37.6%). This may be due to the students from FMHS should know more and have a higher level of knowledge towards HPV vaccine. When these students understand the benefit of HPV vaccine and the consequence of HPV, they should have a more positive attitude towards HPV vaccine.

5.6 Recommendations

For any other further study, a larger sample size should be recruited. This will make the study much more accurate and will be able to represent the whole intended population. A better population which has a balance ethnicity proportion should be selected also. This will give a more representative result at the end of the result. Furthermore, future study can include the practice of HPV vaccine. This is because level of knowledge and attitude towards HPV vaccine may directly or indirectly affect the practice of HPV vaccine and any efforts try to find this association may increase the public's awareness regarding HPV vaccine. Therefore, association between level of knowledge and attitude towards HPV vaccine and practice of HPV vaccine should be done in future study since its result might bring great benefit to the progress of HPV vaccine promotion.

We also recommend that more public education and health promotion regarding HPV vaccine should be done. This is vital because cervical cancer are now in an increasing number globally and is mostly cause by Human Pappilomavirus (HPV) and getting a HPV vaccine can prevent the infection of Human Pappilomavirus (HPV) in an effective way. Besides, public education and health promotion regarding HPV vaccine should be carried out often in school, college and universities area. This is because the HPV vaccine is more effective if the person get this injection before he/she is sexually active. Some talks and exhibitions also should be done to increase the level of knowledge and attitude of public towards HPV, cervical cancer and HPV vaccine. Besides, since quite a number of males are not aware that HPV may have bad impact on them, some efforts should be done too to increase the awareness of HPV vaccine particularly the male gender. Other than that, posters, brochures and pamphlets should be also distributed to public in order to increase their knowledge and attitude towards HPV vaccine.

5.7 Limitations

The utilization of UTAR, a private university as study location, demonstrated an imbalance in the distribution of ethnicity and religion of the sample population. Nonetheless, it has yielded valuable facts and figures in regards to HPV related knowledge and attitude amongst both male and female private university student which could be utilize to further enhance the current educational message or program, as to improve the knowledge and attitude towards HPV vaccination in particular to the younger generation.

5.8 Conclusion

In conclusion, majority of UTAR students have a good knowledge towards HPV vaccination but still exhibited negative attitude towards HPV vaccination depicting the necessity to impart and further intensify the sense of health awareness among all students especially among male students. Gender, educational level, parental income and faculty were the socioeconomic determinants that were significantly associated with the level of knowledge towards HPV vaccination. Whereas, age, gender, and faculty were the socioeconomic determinants that were significantly associated with the attitude towards HPV vaccination. The judicious use of social media apart from the conventional mass media should be an advantage as to enhance the practice of HPV vaccination among the youth population thereafter minimizing the health and economic burden of cervical cancer.

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APPENDIX 1: Questionnaire

A: Socio demographic / Sosidemografi

1. Age / *Umur* : _____
2. Gender / *Jantina*:
 Male / *Lelaki* Female / *Perempuan*
3. Ethnicity / *Etnik* :
 Malay / *Melayu* Chinese / *China*
 Indian / *India* Others / *Lain-lain*
4. Religion / *Agama*:
 Islam / *Islam* Buddhist / *Buddha*
 Hindu / *Hindu* Christian / *Kristian*
 Taoist/ Confucian Others / *Lain-lain*
5. What is your level of education? / *Apakah tahap pendidikan anda ?*
 Undergraduate year 1 / *Pra-siswazah tahun 1*
 Undergraduate year 2 / *Pra-siswazah tahun 2*
 Undergraduate year 3 / *Pra-siswazah tahun 3*
 Undergraduate year 4 / *Pra-siswazah tahun 4*
 Undergraduate year 5 / *Pra-siswazah tahun 5*
6. What is your faculty? / *Apakah fakulti anda?*
 Faculty of Medicine & Health Sciences / *Fakulti Perubatan & Sains Kesihatan*
 Faculty of Accountancy & Management / *Fakulti Perakaunan & Pentadbiran*
7. What is your course? / *Apakah kursus anda?* _____
8. What is your marital status? / *Apakah status perkahwinan anda?*
 Single / *Bujang* Married / *Berkahwin*
9. How much is your parents' income? / *Berapakah pendapatan ibu bapa anda?*
 ≤RM3000 ≥ RM3000

B. Knowledge on HPV vaccine / Pengetahuan mengenai vaksin HPV

1. Have you heard about HPV vaccine? / Adakah anda pernah mendengar mengenai vaksin HPV?

Yes / Ya No / Tidak

2. How many types of HPV vaccine are available? / Berapa banyak vaksin yang boleh didapati?

One / Satu

Two / Dua

Three / Tiga

Four / Empat

No information / Tiada maklumat

3. Do you know that a lot of women have already taken HPV vaccination? / Adakah anda tahu sudah ramai wanita yang telah mengambil vaksin HPV?

Yes / Ya No / Tidak

4. Have you heard about the price of HPV vaccine? / Adakah anda pernah mendengar mengenai harga vaksin HPV?

Yes / Ya No / Tidak

5. If yes, how much is it per dose? / Jika ya, berapakah harganya bagi setiap dos?

< RM 100

RM101-200

RM 201-300

RM 301-400

6. What is the best age to get the vaccine? / *Apakah umur terbaik untuk mendapatkan vaksin?*

After child birth / *Selepas melahirkan anak*

Before sexual activity / *Sebelum seksual aktiviti*

Once marriage / *Setelah berkahwin*

After 50 years old / *Selepas berumur 50 tahun*

7. How many times women should be vaccinated against HPV? / *Berapa banyak kalikah wanita harus mendapatkan vaksin HPV?*

1 time / *1 kali*

2 times / *2 kali*

3 times / *3 kali*

No information / *Tiada maklumat*

8. Men would be benefit from HPV vaccination? / *Adakah lelaki juga mendapat manfaat melalui vaksin HPV?*

Yes / *Ya*

No / *Tidak*

No information / *Tiada maklumat*

9. Do you think HPV vaccine is more useful for women who have multiple sexual partners? / *Adakah anda merasakan bahawa vaksin HPV lebih berguna pada wanita yang mempunyai pasangan seks yang ramai?*

Yes / *Ya*

No / *Tidak*

No information / *Tiada maklumat*

10. Do you think women who received of HPV vaccine do not need to do regular Pap smear? /
*Adakah anda berfikir bahawa wanita yang sudah menerima vaksin HPV tidak perlu melakukan
ujian rutin Pap smear?*

Yes / *Ya*

No / *Tidak*

No information / *Tiada maklumat*

11 .Can HPV vaccine cause genital warts? / *Bolehkah HPV vaccine menyebabkan ketuat
kemaluan?*

Yes / *Ya*

No / *Tidak*

No information / *Tiada maklumat*

12..Can HPV vaccine cure cervical cancer? / *Bolehkah vaksin HPV menyembuhkan kanser
serviks?*

Yes / *Ya*

No / *Tidak*

No information / *Tiada maklumat*

13. Can HPV vaccine cure genital warts? / *Bolehkah vaksin HPV menyembuhkan ketuat
kemaluan?*

Yes / *Ya*

No / *Tidak*

No information / *Tiada maklumat*

14. Can pregnant women take HPV vaccine? / *Bolehkah wanita mengandung mengambil vaksin HPV?*

Yes / Ya

No / Tidak

No information / *Tiada maklumat*

15. Are you aware of any education training program on HPV vaccine among women? / *Adakah anda menyedari adanya program pendidikan mengenai vaksin HPV dalam kalangan wanita?*

Yes / Ya

No / Tidak

No information / *Tiada maklumat*

C: Attitude towards the HPV vaccine / Sikap terhadap vaksin HPV

The next questions are about your attitude towards obtaining an HPV vaccine given the vaccine's availability at the Student Health Center and other primary health centers. Please read each question carefully and (/) the answer the best matches your attitude(s). / Soalan-soalan berikut adalah mengenai sikap anda ke arah mendapatkan vaksin HPV yang ada di Pusat Kesihatan Pelajar dan lain-lain pusat-pusat kesihatan utama. Sila baca setiap soalan dengan teliti dan (/) jawapan yang terbaik menggambarkan sikap anda.

1. My getting the HPV vaccine would be : / *Pengambilan vaksin HPV adalah :*

- A very good idea / *Idea yang sangat baik (1)*
- A somewhat good idea / *Idea yang agak baik (2)*
- A somewhat bad idea / *Idea yang tidak baik (3)*
- A very bad idea / *Idea yang sangat tidak baik (4)*

2. When deciding whether to get the HPV vaccine, how important to your decision making is the fact that the vaccine costs a lot of money? / *Apabila anda membuat keputusan untuk mendapatkan vaksin HPV, bagaimana pentingnya kos HPV vaksin yang mahal mempengaruhi keputusan anda?*

- Extremely important / *Amat penting* (1)
- Very important / *Sangat penting* (2)
- Somewhat important / *Agak penting* (3)
- Not at all important / *Tidak sama sekali penting* (4)

3. When deciding whether to get HPV vaccine, how important to your decision making is the fact that the vaccine may prevent you from getting cervical cancer? / *Apabila membuat keputusan untuk mendapatkan vaksin HPV, bagaimana pentingnya vaksin yang boleh mencegah daripada mendapat kanser pangkal rahim mempengaruhi keputusan anda?*

- Extremely important / *Amat penting* (1)
- Very important / *Sangat penting* (2)
- Somewhat important / *Agak penting* (3)
- Not at all important / *Tidak sama sekali penting* (4)

4. When deciding whether to get the HPV vaccine, how important to your decision making is the fact that the vaccine may hurt? / *Apabila membuat keputusan untuk mendapatkan vaksin HPV, bagaiman pentingnya vaksin yang mungkin boleh mencederakan mempengaruhi keputusan anda?*

- Extremely important / *Amat penting* (1)
- Very important / *Sangat penting* (2)
- Somewhat important / *Agak penting* (3)
- Not at all important / *Tidak sama sekali penting* (4)

5. When deciding whether to get the HPV vaccine, how important to your decision making is the vaccine's safety? / *Apabila membuat keputusan untuk mendapatkan vaksin HPV, bagaimana pentingnya vaksin yang selamat mempengaruhi keputusan anda?*

- Extremely important / *Amat penting* (1)
- Very important / *Sangat penting* (2)
- Somewhat important / *Agak penting* (3)
- Not at all important / *Tidak sama sekali penting* (4)

6. When deciding whether to get the HPV vaccine, how important to your decision making is the fact the vaccine may prevent you from getting HPV vaccine in the future? / *Apabila membuat keputusan untuk mendapatkan vaksin HPV, bagaimana pentingnya keputusan anda boleh mencegah anda daripada mendapat vaksin HPV pada masa hadapan?*

- Extremely important / *Amat penting* (1)
- Very important / *Sangat penting* (2)
- Somewhat important / *Agak penting* (3)
- Not at all important / *Tidak penting sama sekali*(4)

7. How comfortable would you be asking your doctor or health care professional about HPV and/or the HPV vaccine? / *Sejauh mana keselesaan anda untuk meminta doktor atau penjagaan kesihatan profesional mengenai HPV dan / atau vaksin HPV?*

- Extremely comfortable / *Amat selesa* (1)
- Very comfortable / *Sangat selesa* (2)
- Somewhat comfortable / *Agak selesa* (3)
- Not at all comfortable / *Sama sekali tidak selesa* (4)

8. Assume that your doctor recommended that you get the HPV vaccine. How confident that you will be able to follow-through on this recommendation? *Jika doktor anda mengesyorkan anda untuk mendapatkan vaksin HPV. Adakah anda yakin terhadap cadangan tersebut?*

- Extremely confident / *Amat yakin* (1)
- Very confident / *Sangat yakin* (2)
- Somewhat confident / *Agak yakin* (3)
- Not at all confident / *Sama sekali tidak yakin* (4)

9. Obtaining the HPV vaccine need 3 separate trips to the doctor for the complete course of the vaccine. How confident that you would be able to follow through with all 3 vaccine appointments? / *Untuk mendapatkan vaksin HPV yang lengkap ia memerlukan 3 kali perjumpaan dengan doktor. Adakah anda yakin anda dapat mengikuti ketiga-tiga temujanji tersebut?*

- Extremely confident / *Amat yakin* (1)
- Very confident / *Sangat yakin* (2)
- Somewhat confident / *Agak yakin* (3)
- Not at all confident / *Tidak yakin sama sekali* (4)

10. How difficult it be to accept getting the HPV vaccine? / *Adakah sukar bagi anda untuk menerima vaksin HPV?*

- Extremely difficult / *Amat susah* (1)
- Very difficult / *Sangat susah* (2)
- Somewhat difficult / *Agak susah* (3)
- Not at all difficult / *Tidak sama sekali susah* (4)

11. How likely is it that there would be many barriers to your decision to accept getting HPV vaccine? / Adakah terdapat halangan yang boleh mengganggu keputusan anda untuk menerima vaksin HPV?

- Extremely likely / Amat berkemungkinan (1)
- Very likely / Sangat berkemungkinan (2)
- Somewhat likely / Agak berkemungkinan (3)
- Not at all likely / Tidak berkemungkinan (4)

12. If I were to contract HPV, it would be a serious health problem to me. / Jika saya menghidapi HPV, ia akan menjadi masalah kesihatan yang serius kepada saya.

- Strongly agree / Sangat setuju (1)
- Somewhat agree / Agak setuju (2)
- Somewhat disagree / Agak tidak setuju (3)
- Strongly disagree / Sangat tidak setuju (4)

13. Even if I DO NOT receive the HPV vaccine, I believe that I am too healthy to get HPV or cervical cancer. / Walaupun saya tidak mengambil vaksin HPV, saya percaya bahawa saya terlalu sihat untuk mendapat HPV atau kanser pangkal rahim.

- Strongly agree / Sangat setuju (1)
- Somewhat agree / Agak setuju (2)
- Somewhat disagree / Agak tidak setuju (3)
- Strongly disagree / Sangat tidak setuju (4)

14. If I were to get HPV and/or cervical cancer in the future, it's not a big deal because they are easy to treat and cure. / . *Jika saya mendapat HPV dan / atau kanser pangkal rahim pada masa depan, ia bukan satu masalah besar kerana penyakit tersebut mudah untuk dirawat dan disembuhkan.*

- Strongly agree / *Sangat setuju* (1)
- Somewhat agree / *Agak setuju* (2)
- Somewhat disagree / *Agak tidak setuju* (3)
- Strongly disagree / *Sangat tidak setuju* (4)

15. Even if I DO NOT receive the HPV vaccine, I believe that I am at risk for HPV and/or cervical cancer. / . *Walaupun saya tidak menerima vaksin HPV, saya percaya bahawa saya berisiko untuk menghadapi HPV dan / atau kanser pangkal rahim.*

- Strongly agree / *Sangat setuju* (1)
- Somewhat agree / *Agak setuju* (2)
- Somewhat disagree / *Agak tidak setuju* (3)
- Strongly disagree / *Sangat tidak setuju* (4)

16. Given what you know about the HPV vaccine today, how likely is it that you will try to get more information about it within the next year? / *Jika anda tahu mengenai vaksin HPV pada hari ini, adakah anda akan cuba untuk mendapatkan maklumat lanjut mengenainya dalam tempoh setahun akan datang?*

- Extremely likely / *Amat berkemungkinan* (1)
- Very likely / *Sangat berkemungkinan* (2)
- Somewhat likely / *Agak berkemungkinan* (3)
- Not at all likely / *Tidak berkemungkinan* (4)

17. How likely is it that you will actually get the HPV vaccine within the next year? / *Adakah kemungkinan anda akan mendapatkan vaksin HPV pada tahun akan datang?*

- Extremely likely / *Amat berkemungkinan* (1)
- Very likely / *Sangat berkemungkinan* (2)
- Somewhat likely / *Agak berkemungkinan* (3)
- Not at all likely / *Tidak berkemungkinan* (4)

18. What is the likelihood you will get the HPV vaccine if a health care provider offers it to you within the next year? / *Apakah berkemungkinan anda akan mendapatkan vaksin HPV jika pembekal penjagaan kesihatan menawarkan kepada anda dalam tempoh setahun akan datang?*

- Extremely likely / *Amat berkemungkinan* (1)
- Very likely / *Sangat berkemungkinan* (2)
- Somewhat likely / *Agak berkemungkinan* (3)
- Not at all likely / *Tidak berkemungkinan* (4)

APPENDIX 2 : GANTT CHART

No	Weeks	1	2	3	4	17	18	19	20	21	22	23	24
		25/3-3/4	4/4	5/4 - 16/4	18/4-12/4	15/7 - 2/8	15/7 - 2/8	7/8 - 19/8	20/8	21/8 - 26/8	28/8	29/8 - 4/9	5/9
1	Preparation and submission of draft proposal												
2	Submission of proposal												
3	Proposal preparation and presentation of final proposal												
4	Preparation and submission of ethical approval and permission letters to organizations												
5	Data collection and analysis and submission of data analysis												
6	Data analysis presentation												
7	Preparation of project report and scientific article												
8	Submission of project report and scientific article												
9	Preparation of final presentation												
10	Final presentation												
11	Correction of final report												
12	Submission of final report, scientific article												

APPENDIX 3: Organisation chart

Main supervisor	Dr. Maiza binti Tusimin Department of Obstetrics & Gynaecology 012-5129464/ ext 264 maiza@medic.upm.edu.my
Co-supervisor	Dr. Halimatus Sakdiah binti Minhat Department of Community Health 012-3438175 halimatus@medic.upm.edu.my
Leader	Chek Lok Yee 161721
Members	Mohamad Izwan bin Zainol 162829 Nur Zarifah Syahmi binti Abdul Razak 163972

APPENDIX 4: Budget Planning

Item	Quantity	Price
Photostatting	425	RM 170
Printing	400	RM 40
Hardcover	3	RM 60
Transportation	-	RM 120
Total	828	RM 390

JKEUPM Ref No. : FPSK_Mei (13)18 (undergraduate)

Members of the JKEUPM who reviewed the documents:

Prof. Dr. Zamberi Sekawi

Date of approval: 28/5/2013

Endorsed at JKEUPM Meeting on 7/6/2013, attended by:

NAME	DESIGNATION	GENDER	TICK IF PRESENT
Prof. Dr. Norlijah Othman	Paediatrics & Dean, Faculty of Medicine and Health Sciences	Female	√
Prof. Dr. Zamberi Sekawi	Medical Microbiologist & Deputy Dean of Research and Internationalization, Faculty of Medicine and Health Sciences	Male	
Prof. Dato' Dr. Lye Munn Sann	Medical Statistician, Dept of Community Health, Faculty of Medicine and Health Sciences	Male	√
Prof. Dr. Tengku Aizan Abd Hamid	Gerontologist & Director, Institute of Gerontology	Female	
Prof. Dr. Lekhraj Rampal	Medical Statistician, Dept of Community Health, Faculty of Medicine and Health Sciences	Male	√
Prof. Dr. Elizabeth George	Pathologist, Dept of Pathology, Faculty of Medicine and Health Sciences	Female	
Prof. Dr. Lim Thiam Aun	Anesthesiologist, Dept of Surgery, Faculty of Medicine and Health Sciences	Male	
Prof. Dr. Wan Omar Abdullah	Medical Parasitologist, Dept of Medical Microbiology and Parasitology, Faculty of Medicine and Health Sciences	Male	√
Prof. Dr. Patimah Ismail	Professor of Biomedicine, Dept of Biomedical Sciences, Faculty of Medicine and Health Sciences	Female	√
Prof. Dr. Azali Mohamed	Professor of Macroeconomics, Dept of Economics, Faculty of Economics and Management	Female	
Assoc. Prof. Dr. Johnson Stanslas	Pharmacologist, Dept of Medicine, Faculty of Medicine and Health Sciences	Male	√
Assoc. Prof. Dr. Mansor Abu Talib	Assoc. Professor of Guidance and Counselling, Dept of Human Development and Family Studies, Faculty of Human Ecology	Male	
Assoc. Prof. Dr. Noritah Omar (Lay Person)	Assoc. Professor of English Language, Dept of English Language, Faculty of Communication and Modern Languages	Female	√
Dr. Rojanah Kahar (Lay Person)	Lecturer of Dept of Human Development and Family Studies, Faculty of Human Ecology	Female	√
Tan Sri Dato' Napsiah Omar (Lay Person)	Chairman, National Population and Family Development Board	Female	√