

Human papillomavirus (HPV) vaccination and factors related to intention to obtain the vaccine among young college women in Thailand

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Abstract

Purpose – Most cervical cancers are caused by genital human papillomavirus (HPV). However, it can be prevented if females receive an HPV vaccine. Nevertheless, there is limited evidence of HPV vaccination and predictors of intention to obtain the vaccine among young women in Thailand. The paper aims to discuss this issue.

Design/methodology/approach – This cross-sectional study examined HPV vaccination and factors influencing intention to vaccinate among a convenient sample of college women in Thailand. The data collection was conducted via a self-administered “HPV and HPV vaccine-related knowledge, attitudes, and behaviors” questionnaire.

Findings – Out of 1,030 participants, 309 (30.0 percent) were aware of HPV and the HPV vaccine. Out of these, 257 participants reported that they had not obtained the vaccine and 18 participants were unsure if they had already obtained the vaccine or not. Only 34 participants confirmed that they had received the vaccine. Among those who were aware of HPV and the HPV vaccine, 56.4 percent of them did not know that most HPV-infected persons do not show any signs or symptoms, and 53.3 percent thought that the vaccine provided protection against other sexually transmitted infections as well. Most had positive attitudes toward vaccination and subjective norms. Among the participants who had not received the vaccine, the intention to obtain the vaccine was predicted by age, knowledge, attitudes toward vaccination, and subjective norms. The reasons for not being vaccinated included the cost of the vaccine, lack of knowledge, and perception of themselves being at low risk.



Originality/value – This study found low HPV vaccination among college women. However, those who had not received the vaccine intended to obtain the vaccine at some point in the future. An HPV vaccination campaign may be well tailored in order to increase the intention to obtain the vaccine which, in turn, may increase the HPV vaccination. Vaccination cost sharing should be discussed among Thai policy makers in order to alleviate the financial burden for women.

Keywords Thailand, Vaccine, Subjective norms, HPV vaccination

Paper type Research paper

Introduction

Genital human papillomavirus (HPV) is a globally common sexually transmitted infection (STI)[1, 2]. There are over 100 genital HPV types. Out of these, 13 types are identified as cancer-causing or high-risk HPV types. Among the high-risk HPV types, HPV type 6, 11, 16, and 18 are responsible for most genital warts and anogenital cancers, especially cervical cancer[3]. Globally, cervical cancer remains amongst the top five of the most common cancers among women. Approximately 445,000 new cervical cancer cases were detected among women in developing countries in 2012, making up 84 percent of all cervical cancer cases in the world[2]. In Thailand, cervical cancer was the number one killer among women for decades and has only been second to breast cancer after 2007[4]. With a population of about 70 million in Thailand, there are approximately 6,300 new cases of cervical cancer with the death rate of 2,600 women each year – 7 Thai women die from cervical cancer each day[5].

The chance of being infected by genital HPV increases when the women are at a younger age, initiate sexual intercourse early, have multiple sexual partners, or have a partner who has multiple partners or an HPV infection, and do not use a condom[6-8]. Moreover, consistent condom use only provides 60 percent protection against HPV infection since HPV can be spread via unprotected skin-to-skin contact during sexual contact[9]. Currently, no specific treatment for the HPV infection is available. The clinical standard suggests the routine use of a Papanicolaou (Pap) test to detect early precancerous cervical lesions. Cervical lesion treatment (e.g. cryotherapy, laser therapy, and conization) can then be applied in order to lessen the risk of such lesions to develop into invasive cervical cancer cells[10].

Encouragingly, the primary prevention method of HPV infection has become available through HPV vaccines. The Gardasil® vaccine was first recommended for female aged 9-26 in 2006. Thereafter, the Cervarix® vaccine was approved for female aged 10-25 in 2009[1]. Since both HPV vaccines became available, the HPV vaccination rate has been increasing, especially in developed countries such as Australia, Canada, and the Netherlands[11]. In the USA, national data in 2009 showed the vaccination coverage among adolescents was 44.3 percent and among women aged 19-26 was 17.1 percent[12]. A 2012 study in the USA reported the HPV vaccination among young women aged 18-26 was 47.3 percent[13].

However, in Asia, there is limited literature on HPV promotion campaigns, vaccination uptake, and factors relating to the vaccination. Using the PubMed search engine with the keywords “HPV vaccination” followed by the country names in Asia produced limited literature between 2006 and 2015. In Singapore, out of 19 articles found, 2 articles discussed factors related to HPV vaccination among women aged between 18 and 49 years[14]. In Japan, among 66 published articles, one study discussed HPV vaccination and its related factors among young women[15]. In addition, an “HPV vaccination crisis” was reported due to controversies of the adverse effects of the vaccination, and the Japanese health officials took a negative position on HPV vaccination[16]. In Thailand, out of 44 articles found, one study reported HPV vaccination intention and related factors[17]. Since 2002, the Thai Government started to provide cervical screening to all women aged 35-60 years at five-year intervals. However, the Pap test has not been effectively used. Often, it is provided

to the women on demand when the women already started to have signs and symptoms of cervical cancer[18]. While Thailand has been trying to improve cervical cancer screening programs by using a dual-track strategy, i.e. using both Pap test and visual inspection to detect cervical cell abnormalities, Pap test screenings remain low (31-37 percent)[19]. Thus, it is imperative that primary prevention, by way of the HPV vaccination, should be promoted and adopted.

According to the theory of planned behavior[20], when a person has higher intention to engage in a behavior, the person has a higher chance to change the actual behavior. The intention to change a person's behavior is directly influenced by the attitude toward such behavior, subjective norms, and perceived behavioral control. Knowledge, demographic, or personal history usually are indirect factors influencing the intention or behavior itself[21]. By using this theory as a framework, this study examined the HPV vaccination and identified factors related to intention to obtain the vaccine among college women in Thailand. The study theoretical framework is shown in Figure 1.

Methods

This study was conducted with a convenience sample of young women from four public universities in Thailand in September-October 2015. The selected college women had to be between 18 and 26 years and willing to complete the study questionnaire. The maximum age was limited at 26 since the vaccine was recommended for women up to 26 years old. This study did not have any specific exclusion criteria.

Based on the study theoretical framework, the intention to obtain the vaccine might not be assessed unless the person was aware of HPV and the HPV vaccine. In favor of using a multiple regression analysis to determine the predictors of the intention to obtain the vaccine, the minimum sample size was calculated based on the established statistical parameters – a power of 0.9, small effect size (0.1), α equals 0.05, and three direct predictors (attitude toward obtaining the vaccine, subjective norm, and perceived behavioral control)[22]. The study needed at least 108 participants who were aware of HPV/the HPV vaccine and had not received the vaccine. When a pilot study was conducted, only 3 out of 15 women reported that they were aware of HPV/the HPV vaccine. In addition, since there was no published data on HPV/HPV vaccine awareness in Thailand, it was decided to seek at least 1,000 participants in order to ensure that the study obtained sufficient data.

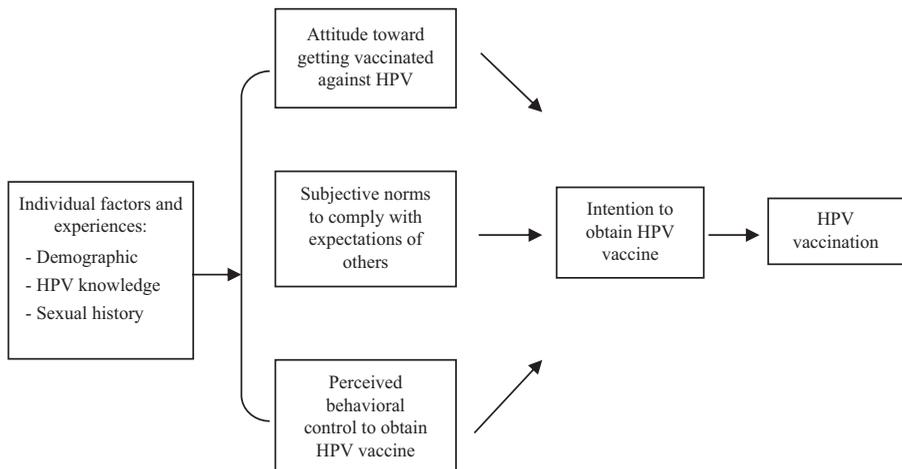


Figure 1.
The study theoretical framework

The study was approved by the Institutional Research Board of California State University, Dominguez Hills, on May 28, 2015 (IRB No. 15-214). The researchers visited various classrooms and invited the students to complete the study questionnaire. The informed consent was placed as the first page of the questionnaire. When a student decided to participate and signed the consent, the researcher then collected the consent page and instructed the student to start completing the rest of the questionnaire. To encourage participation, each participant received 30 Baht cash (approximately US\$ 1, the cost of a lunch meal at the university canteen).

The anonymous paper-based questionnaire titled HPV and HPV vaccine-related knowledge, attitudes, and behaviors was adapted and translated to Thai from the first author's prior study with college women in the USA[13]. The translated questionnaire was translated back by two persons – one researcher who earned her Doctorate Degree in nursing from the USA and one Thai-American citizen who earned her Master Degree in public administration. Both were fluent in Thai and English. The questionnaire consisted of HPV/HPV vaccine-related knowledge (eight true/false items), attitude toward obtaining an HPV vaccine (six semantic differential-scale items), subjective norm (five Likert-scale items), perceived behavioral control (four Likert-scale items), and intention to vaccinate (four Likert-scale items). Only the participants who had not been vaccinated answered the intention to vaccinate questions. The questionnaire was finalized after face validation was conducted with 15 college women. For Thai college women in this study, all scales had Cronbach's coefficient α between 0.69 to 0.91, except for the perceived behavioral control scale (0.45) which was excluded from further analysis.

Statistical Packet for the Social Sciences 22.0 was used for data analysis. Descriptive statistics were used to describe demographic and studied variables. Depending on the variables' level of measurement, Spearman's ρ , or Pearson correlation coefficients were utilized to examine the relationships between the participant characteristics, sexual history, indirect predictor (HPV knowledge), direct predictors (attitude toward obtaining the vaccine and subjective norm), and the outcome variable, intention to vaccinate. Hierarchical multiple regression was conducted by controlling significant indirect predictors (age, HPV knowledge).

Results

Participant characteristics

The average age of the 1,030 female participants was 19.7 (SD = 1.4). Most were Buddhist (94.9 percent). In total, 48.2 percent were in non-nursing major degree participants and 51.8 percent were nursing major students. For relationship and sexual-related history, 58.5 percent were single and 41.0 percent were dating. More than a half (63.9 percent) had initiated sexual intercourse; most of them (86.4 percent) had sex with males; and some (8.9 percent) had sex with both females and males. The average age of first sexual intercourse was 17.7 (SD = 1.5, range 14-23). The average number of sexual partners in their lifetime was 1.8 (SD = 1.7, range 1-19). Most never got tested for STIs (94.7 percent) and had never completed a Pap test (93.6 percent) (Table I).

Studied variables

Out of the 1,030 participants, 309 (30.0 percent) were aware of HPV and the HPV vaccine. A total of 257 participants reported that they had not obtained the vaccine, and 18 participants were unsure if they had already obtained the vaccine or not. Only 34 participants had already received the vaccine.

HPV/HPV vaccine knowledge. Among the 257 participants who had not received the vaccine (non-vaccinees), the mean HPV/HPV knowledge was 5.3 (SD = 1.7, range 0-8).

Variables	
<i>Age (n = 1,024)</i>	<i>M = 19.7 (SD = 1.4)</i>
<i>Religion (n = 1,028)</i>	
Buddhism	94.9%
Christianity	4.5%
Islam	0.4%
None	0.1%
<i>Major (n = 1,030)</i>	
Nursing	51.8%
Non-nursing	48.2%
<i>Relationship status (n = 1,028)</i>	
Single	58.5%
Dating	41.0%
Married	0.5%
Divorced	0.1%
<i>Ever having sex (n = 1,028)</i>	
Yes	63.9%
No	36.1%
<i>Partners (n = 369)</i>	
Men	86.4%
Women	4.6%
Both	8.9%
<i>Age of first sex (n = 365)</i>	<i>M = 17.7 (SD = 1.5)</i>
	Range 14-23
<i>Number of sexual partners in lifetime (n = 367)</i>	<i>M = 1.8 (SD = 1.7)</i>
	Range 1-19
<i>Being tested for STI (n = 365)</i>	
Yes	5.3%
No	94.7%
<i>Having Pap test done (n = 361)</i>	
Yes	6.4%
No	93.6%

Table I.
Participant
characteristics

Notes: *M*, mean. A number of responses (*n*) differ because the participants chose not to answer or inadvertently skipped the questions

More than half did not know that most HPV-infected persons do not show any signs or symptoms (56.4 percent). Only 46.7 percent knew that the vaccine does not provide protection against other STIs (46.7 percent). However, most (90.3 percent) knew that HPV can cause cervical cancer and many (61.1 percent) knew that the HPV can cause genital warts (Table II).

Attitude toward obtaining the vaccine. The non-vaccinees had positive attitudes toward getting vaccinated against HPV (*M* = 36.12, *SD* = 5.6, with a possible range of 6-42). They believed that the HPV vaccination was good, useful, desirable, safe, favorable, and pleasant.

Subjective norm. The non-vaccinees also had a positive subjective norm (*M* = 17, *SD* = 3.1, with a possible range of 5-25). Many (73.5 percent) strongly agreed or agreed that significant others would want them to get vaccinated. More than half (63.0 percent) also believed that their doctor would support them in getting the vaccine. However, many (84.4 percent) did not feel under social pressure to get vaccinated against HPV, and 64.5 percent of them did not believe that most women are getting vaccinated against HPV (Table III).

Intention to obtain the vaccine. Among the 257 non-vaccinees, the intention to obtain the vaccine was strong ($M = 15.6$, $SD = 3.3$, with possible range 4-20). Many strongly agreed or agreed with the statements “I intend to get vaccinated against HPV” (77.0 percent) and “I expected to get vaccinated against HPV at some point” (79.7 percent). More than half strongly agreed or agreed with the statements “I have decided to get vaccinated against HPV” (62.3 percent) and “I plan to get vaccinated against HPV” (59.3 percent).

HPV vaccination. Out of 1,030 participants, 34 participants had received the HPV vaccine. Presuming that the 721 participants who were not aware of HPV and the HPV vaccine have also not been vaccinated, the overall vaccination among young women in this study was 3.3 percent.

Predictors of intention to vaccinate among non-vaccinees

Vaccination intention was significantly positively correlated to two indirect predictors – age ($r = 0.20$, $p = 0.01$) and HPV/HPV vaccine knowledge ($r = 0.24$, $p < 0.001$). It was also positively associated with attitudes toward vaccination ($r = 0.50$, $p < 0.001$) and subjective norm ($r = 0.48$, $p < 0.001$). When age and HPV/HPV vaccine knowledge were entered in the hierarchical multiple regression model alone, they significantly predicted the vaccination intention: $F(2, 237) = 10.8$, $p < 0.001$, adjusted $R^2 = 0.08$. When attitudes toward vaccination and subjective norm were added, the prediction model of the entire group was significantly improved: $F(4, 235) = 47.1$, $p < 0.001$, adjusted $R^2 = 0.44$ (Table IV).

Among 257 non-vaccinees, 249 provided the reasons why they had not got the vaccine. Some provided more than one reason – resulting in 278 rationale instances in total. The top three reasons were cost of the vaccine (55.4 percent), lack of knowledge/need for more information about the virus, vaccine, vaccine side effects; where to get vaccinated (17.6 percent); and low-risk perception (13.3 percent; e.g. not having sex, having one partner, and not practicing risky sexual behaviors). Other reasons (14.4 percent) included that having the vaccination is not a priority, no interest, new vaccine suspicion, limited clinics offering the vaccine, questioning the vaccine effectiveness, and misunderstanding that Pap/HPV test was needed before vaccination.

Knowledge statements	Correct	Incorrect	Do not know
1. HPV can cause genital warts	61.1	10.9	28.0
2. HPV can cause cervical cancer	90.3	2.3	7.4
3. Most people with genital HPV have no visible signs or symptoms	43.6	31.5	24.9
4. Using a condom can provide partial protection against HPV	64.2	18.7	17.1
5. I can transmit HPV to my partner(s) even if I have no HPV symptoms	58.4	19.5	22.2
6. Only sexually active women should receive the HPV vaccine	75.9	9.7	14.4
7. Women who received HPV vaccine do not need to get routine Pap smear/test	84.4	3.9	11.7
8. HPV vaccine protects against all sexually transmitted infections	46.7	23.7	29.6

Table II.
HPV/HPV vaccine knowledge: percentages of correct and incorrect/do not know answers

Subjective norms statements	Strongly agree (%)	Agree (%)
1. Most people who are important to me think that I should get vaccinated against HPV	38.5	35.0
2. It is expected of me that I get vaccinated against HPV	15.6	30.4
3. I feel under social pressure to get vaccinated against HPV	3.9	11.7
4. My doctor would support my getting vaccinated against HPV	26.8	36.2
5. Most women like me are getting vaccinated against HPV	11.3	24.2

Table III.
Percentages of subjects who strongly agree/agree to HPV/HPV vaccine subjective norms statements

Discussion

Genital HPV can be easily contracted through skin-to-skin contact during sexual activity. A recently published study reported that approximately a quarter of Thai women aged 20-37 were infected with any HPV type, and 14 percent of the women were infected by a high-risk HPV type[23]. The chance of getting infected also increases if the women initiate sexual intercourse at an earlier age and have multiple sexual partners[6, 23]. As Thailand has become more industrialized, the average age of first sexual intercourse has decreased from 20.5 in 2007[24] to 17.7 as the young women reported in this survey. This study also found that the average number of sexual partners in a lifetime was 1.75 by the time these women were in college. Most of these women also had not been tested for any STI including HPV and Pap test. Sadly, these factors will increase the chance of the young women contracting HPV and/or being diagnosed with cervical cell abnormalities in the future unless they complete a series of HPV vaccination.

This study found that HPV vaccination remains very low (3.3 percent) compared to a previous study published in 2012. This previous study conducted among a convenient sample of college women aged between 18 and 24 years found that only 1.2 percent of the participants received an HPV vaccine[17]. The HPV vaccination in Thailand was also lower than in Singapore. A recent study conducted at a tertiary institution reported that 9.8 percent of Singaporean women aged between 15 and 22 years had received an HPV vaccine[25]. A cross-sectional study conducted among medical and para-medical students in 2014 also showed better HPV vaccination rates in India; 6.8 percent of Indian college women and men had received the vaccine[26]. At the global level, it is estimated that 39.7 percent of targeted women (between 9 and 45 years) have been vaccinated worldwide[27]. HPV vaccination in Thailand has indeed fallen behind the international average.

Based on the theory of planned behavior[20], in order to increase HPV vaccination numbers, young women must have a high intention to obtain the vaccine. This study indicated that factors influencing intention include attitude toward obtaining the vaccine, subjective norm (perceived pressure from significant others in order to vaccinate), HPV/HPV vaccine knowledge, and age. Using the same theoretical framework, the study results are similar to prior studies conducted among young adults in Canada and America where the intention was predicted by the attitude and subjective norm[13, 28, 29]. In addition, a study conducted among Taiwanese undergraduate women reported that vaccination intention was associated with recommendations from others, vaccine cost, availability, and perceived disease severity, risks, and vaccination benefits[30]. In Thailand, the quoted prior study[18] found that the vaccination intention was predicted by recommendations from significant others, HPV knowledge, and perceptions of vaccination benefits and risks of contracting HPV. In terms of age, as young women get older and are exposed to more sexual health-related information, they may be more interested in receiving the vaccine.

Table IV.
Hierarchical multiple regression analysis summary for attitude toward HPV vaccination and subjective norms, controlling age and HPV knowledge, predicting intention to obtain HPV vaccine

Variables	<i>B</i>	SEB	β	<i>R</i> ²	ΔR^2
<i>Step 1</i>				0.08	0.08
Age	0.42	0.18	0.15*		
HPV knowledge	0.41	0.13	0.21**		
Constant	4.67	3.67			
<i>Step 2</i>				0.45	0.36
Attitude: getting vaccinated	0.24	0.03	0.40**		
Subjective norm	0.40	0.05	0.37**		
Constant	-10.28	3.11			

Notes: *n* = 240. **p* < 0.05; ***p* < 0.01

In order to effectively lower the cervical cancer prevalence in Thailand, secondary prevention strategies (i.e. Pap test screening and early treatment of abnormal cervical cells) alone are not sufficient. Primary prevention through HPV vaccination is critically needed. With the goal to increase the HPV vaccination in mind, it is essential to set up HPV vaccination interventions which are well tailored for the young female population. Lastly, while the financial cost has been the major prohibitive factor to add the vaccine on the national vaccination program[31], more evidence has shown that the vaccine is cost effective compared to the cost of HPV and anogenital cancer treatments and damage to the quality of life[32, 33]. In Thailand, the series of HPV vaccines cost between US\$ 180 and US\$ 340, while the gross national income per capita was approximately US\$ 3,900[33]. Relieving financial burdens of vaccination is necessary. Vaccination cost must be discussed at the national policy level to alleviate the cost burden on young women or parents.

Conclusion

The study used a convenience-based sample. Generalizability cannot be applied to all Thai young college women. Reporting bias might have taken place if the college women had strong feelings toward HPV/the HPV vaccine. Recalling bias or errors might occur when the participants tried to recall their sexual history. Despite these limitations, the findings from this study suggest some ideas to set up HPV vaccination interventions including the following:

- (1) Conducting a national, promotional campaign to raise awareness of HPV and the HPV vaccine: even though HPV knowledge is not a direct predictor of intention or vaccination uptake, the knowledge will correct misperception or belief related to HPV, which, in turn, influences the attitude toward obtaining the vaccine. HPV knowledge topics may include HPV infection consequences as well as signs and symptoms. It will also be important to emphasize that persons infected by HPV may not manifest any signs and symptoms and can still spread the virus to sexual partners. In addition, information regarding HPV vaccine effectiveness, safety, and availability should be explained. Vitrally, correction of misunderstanding that the vaccine provides protection against other STIs must be included in the awareness campaign.
- (2) Targeting the intervention toward both adolescent girls and young women: while it is recommended to vaccinate females once they enter adolescence and before they initiate sexual intercourse[1], young women in Thailand will still receive benefits from the vaccine since most of them started having sex later on at the age of 17-18.

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