

KNOWLEDGE AND ATTITUDE REGARDING HUMAN PAPILLOMAVIRUS, HUMAN PAPILLOMAVIRUS VACCINE AND CERVICAL CANCER, HUMAN PAPILLOMAVIRUS VACCINATION HISTORY AMONG FEMALE BACHELOR DEGREE STUDENTS AT CHULALONGKORN UNIVERSITY

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ABSTRACT: A cross sectional study was carried out in five simple random selected faculties in Chulalongkorn University, Bangkok, Thailand. The main purposes of this study were to evaluate the level of knowledge, attitude towards human papillomavirus vaccine and cervical cancer, to assess the rate of used and not used human papillomavirus vaccine and to identify the association between knowledge, attitude, socio-demographic and other factors to students used and not used human papillomavirus vaccine. There were a total of 400 female bachelor degree students in this study and data were collected by using self administered questionnaire and analyzed by percentage, arithmetic mean, standard deviation, chi-square and the level of statistic significance was set to be to be at the *p-value* of lesser than 0.05. The result showed that most of the participants (68.2%) had low knowledge regarding human papillomavirus, human papillomavirus vaccine and cervical cancer and the rate of used human papillomavirus vaccine among participants was 10.9%. Statistic analysis showed that students' knowledge is significantly associated with students' attitude and students' faculty ($p < 0.001$) and the practice of used vaccine among respondents is significantly associated with participant parents' income ($P < 0.001$).

Keywords: Human papillomavirus, Human papillomavirus vaccine, Cervical cancer

INTRODUCTION

Cervical cancer is the seventh most common cancer worldwide and the second most common cancer in females worldwide [1]. Cervical cancer is diagnosed in nearly half a million women each year worldwide and approximately 80% of them will die from the disease, the rate is higher in developing countries [2]. Risk factors of cervical cancer include human papillomavirus, young age at first sexual activity, multiple sexual partners, and high parity. Oncogenic types of Human papillomavirus are the primary cause of cervical cancer, the worldwide HPV prevalence in cervical carcinomas is 99.7 percent [3]. Human papillomavirus is one of the most common sexually transmitted infections, causes almost all cervical cancer globally [4]. According to Weena Thiangtam cervical cancer can be prevented at primary and secondary level, primary level focuses on avoidance of risk factors

which includes avoidance of sexual relations at an early age, avoid multiple sexual partners and use of vaccine against human papillomavirus infection, secondary prevention includes this includes the early detection of abnormal cells of cervix through screening test such as Pap smears, visual inspections with acetic acid (VIA) and Human Papillomavirus (HPV) DNA test.

Virtually all cases of cervical cancer globally are caused by infection with oncogenic types of HPV led to the development of prophylactic vaccines. Prophylactic human papillomavirus vaccine promise to be a key component in cervical cancer prevention [5] and also HPV vaccine is expected to reduce cervical cancer incidence [6] According to World Health Organization, for optimal effect of a vaccine a person should get vaccinated before the age of having sexual activity. Country specific factors will be important factor in determining the exact age for routine vaccination and the ages for the catch up vaccination. Although infection with HPV remains prevalence across the lifetime the

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incidence peak at age 20s which include many college students and despite being an important infection, awareness among general adult population in USA is limited [7]. The high prevalence of HPV infection among college age students and the fact that vaccine has optimal benefit when given prior to exposure to sexual activity, in which the median age at first sex among females is 20 years old according to report card of HIV prevention for girls and young women Thailand 2004, it seems clear that college students are target group whose knowledge regarding this HPV caused diseases and their prevention should be assessed. The general objective of this study was to evaluate the level of knowledge, attitude of human papillomavirus, human papillomavirus vaccine and cervical cancer. To assess the rate of used and not used human papillomavirus vaccine and to identify the association between knowledge, attitude, sociodemographic and other factors to students used and not used human papillomavirus vaccine among female bachelor degree students in Chulalongkorn University.

MATERIALS AND METHODS

This study was carried out in Chulalongkorn University, it is a cross sectional study which conducted on March, 2012. The study population consisted of female bachelor degree students at Chulalongkorn University from year 1 to year 4 of five faculties with a sample size of 400 students calculated by Yamane's simplified formulae from a total population of 4346 students which is total number of all students from randomly selected five faculties. A simple random sampling technique was used to select five faculties from all the faculties and again students were also randomly selected from each faculty.

Structured questionnaire was used to collect data, questionnaire comprised of five parts which include: part 1 Socio Demographic characteristics of respondents and respondent's parents, part 2 Risk behaviors of respondents, part 3 knowledge regarding human papillomavirus, human papillomavirus vaccine and cervical cancer, part 4 attitude regarding human papillomavirus vaccine and cervical cancer and part 5 practice of used and not used human papillomavirus vaccine. The developed questionnaire was distributed to public health staffs to validate the questionnaire and reliability of the questionnaire was tested using the Cronbach alpha reliability test.

For items regarding knowledge, respondents were asked to provide answers with options with incorrect, not sure and correct. All attitudes were

measured on a 5-point Likert scale with a score ranging from 1 to 5. For positive statement the score is 5 for strongly agree and 1 for strongly disagree and vice versa for negative statement.

The study was approved by the Ethical Review Committee for research involving human subjects, Health science group Chulalongkorn University. Data was collected at the end of the class at the University. The participation in the survey was voluntary also privacy and confidentiality were strictly protected.

Data analysis was conducted to answer the specific objectives of the study descriptive statistics such as frequency, percentage, mean and standard deviation were used to determine the level of knowledge regarding human papillomavirus, human papillomavirus vaccine, cervical cancer and the rate of history of vaccination. For relationship among variables Chi-square or Fisher exact test were used to determine the association between the independent variables and dependent variables. Binary logistic regression was also used to predict the outcome of interest that is the practice of used human papillomavirus vaccine. Data was analyzed and the statistic significant level was set to be at *p-value* lesser than 0.05.

RESULTS

All respondents were in the age range between 18 to 26 years old. Around 60% of all respondents are studying in year I and year III of the university. The faculties have been randomly selected and the number of students had been distributed in proportion to the total population of the respective faculty. The students from faculty of arts represent 24.8%, students from faculty of science represent 35.2%, students from faculty of law represent 19.8%, students from faculty of pharmacy represent 12% and student from faculty of veterinary represent 8.2% of the total population and almost all of the respondents (97.7%) of the study were single. 94% of the respondents denied having any relative or friends with cervical cancer. Almost all respondents (97.5%) denied having family people with cervical cancer (Table 1). For socio-demographic characteristics of respondents' parents 32% of the respondents' parents are engaged in government services, 37% of the respondents' parents are business men. Nearly half (48.7%) of the respondents parents earn between 50,000 to 100,000 Baht per month and 32.4% earns less than 50,000 Baht per month whereas less than twenty percent (18.9%) earns more than 100,000 Baht per month. Almost hundred percent of all respondents (99.7%) denied having mother with history of

Table 1 Socio-demographic characteristics of female bachelor degree students at Chulalongkorn University

Students' characteristics	Number of students	Percentage
Age group (years)		
18-20	195	50.1
21-23	179	46.0
24-26	15	3.9
Total	389	100.0
Class year		
1 st year	134	33.6
2 nd year	21	12.8
3 rd year	121	30.3
4 th year	70	17.5
More than 4 th year	23	5.8
Total	399	100.0
Faculty		
Art	99	24.8
Science	141	35.2
Law	79	19.8
Pharmacy	48	12.0
Veterinary	33	8.2
Total	400	100.0
Relationship status		
Single	390	97.7
Married/living together	4	1.0
Married/separated	5	1.3
Divorced	-	-
Widow	-	-
Living together/not married	-	-
Total	399	100.0
Relative or friends with cervical cancer		
Yes	20	5.6
No	334	94.4
Total	354	100.0

Table 2 Socio-demographic characteristics of participant's parents

Parents' characteristics	Number of parents	Percentage
Occupation		
Government service	131	32.0
Business men	149	37.0
Employee	51	12.8
Agricultural	9	2.2
Others	60	15.0
Total	400	100.0
Parents' income per month		
Less than 50,000 Baht	122	32.4
50,000-100,000 Baht	183	48.7
More than 100,000 Baht	71	18.9
Total	376	100.0
Mothers' history of cervical cancer		
Yes	1	0.3
No	394	99.7
Total	395	100.0
Family's people with cervical cancer		
Yes	10	2.5
No	385	97.5
Total	395	100.0

Table 3 Distribution of knowledge regarding human papillomavirus, human papillomavirus vaccine and cervical cancer

Level of knowledge	Number of students	Percentage
Low	273	68.2
Moderate	102	25.5
High	25	6.2
Total	400	100.0
Minimum = 0	Maximum=18	Mean=8.6

Table 4 Frequency of vaccination history among female bachelor degree students at Chulalongkorn University

History of HPV vaccination	Number of students	Percentage
Yes	42	10.9
No	342	89.1
Total	384	100.0

Table 5 Relationship between students' knowledge regarding human papillomavirus, human papillomavirus vaccine and cervical cancer and students' faculty

Students' Faculties	Knowledge			x ²	P-value
	Low	Medium	High		
Arts	80(29.3)	16(15.7)	3(12)	81.0	> 0.001
Pharmacy	12(4.4)	24(23.5)	12(48)		
Veterinary	14(5.1)	16(15.7)	3(12)		
Science	102(37.4)	36(35.3)	3(12)		
Law	65(23.8)	10(9.8)	4(16)		

cervical cancer (Table 2). Regarding risk behaviors of the respondents only close to five percent of all respondents reported to be sexually active, less than one percent of all respondents admitted to have history of sexually transmitted disease. Close to six percent of the respondents reported to use oral contraceptive pills or smoking.

Knowledge score was categorized as high, moderate and low level. High knowledge is considered when the respondents answered correctly more than 80% (>14 scores) of total questions and moderate level is considered when the respondents answered correctly between 60 to 80 % (11 to 14 scores) and low knowledge is considered when the respondent answered correctly less than 60% (<11 scores) [8]. The knowledge score ranged from 0 to 18. The mean knowledge score was 8.6. Majority of the respondents (68.2 %) had low knowledge level while only a quarter had moderate knowledge level and less than ten percent that is 6.2% of the respondents has high knowledge regarding human papillomavirus, human papillomavirus vaccine and cervical cancer (Table 3).

On the frequency of respondents who answered correctly to each question regarding knowledge of human papillomavirus, human papillomavirus vaccine and cervical cancer. Less than half of the respondents have heard of human papillomavirus before also less than half know that human papillomavirus is one of the causes of cervical

cancer. Nearly sixty percent (59.5%) of all respondents know that cervical cancer can be prevented with the use of vaccine. Less than half (41.5%) of all respondents know that human papillomavirus is a sexually transmitted disease and less than a quarter of all respondents know that vaccine has no serious side effects.

The attitude score range from 21 to 50. The mean score was found to be 38.48 and the standard deviation was 4.25. In this study attitude is categorized into three categories of negative attitude, moderate attitude and positive attitude by using the standard method that is mean +/- standard deviation. The score < mean - standard deviation (<34 scores) refer to negative attitude and the score within mean + standard deviation and mean - standard deviation refers to moderate attitude (35-42) and the score more than mean + standard deviation refers to positive attitude (>42 scores). Majority of the respondents (68%) have moderate attitude regarding human papillomavirus vaccine.

Only 10.9 % of all students reported to have used human papillomavirus vaccination (Table 4).

It was found that knowledge regarding human papillomavirus, human papillomavirus vaccine and cervical cancer is significantly associated with students' faculties and students' attitude regarding human papillomavirus vaccine and cervical cancer (Table 5 and Table 6). The result also showed that knowledge is associated with practice as respondents

Table 6 Relationship between students' knowledge regarding human papillomavirus, human papillomavirus vaccine and cervical cancer and students' attitude regarding human papillomavirus vaccine and cervical cancer

Knowledge	Attitude			x ²	P-value
	Negative	Moderate	Positive		
Low	46(18.6)	172(69.6)	29(11.7)	20.499	> 0.001
Moderate	7(7.4)	64(68.1)	23(24.5)		
High	2(9.1)	11(50.0)	9(40.9)		

Table 7 Relationship between parent's household income and students used and not used human papillomavirus vaccine

Parents' income per month	Practice of used vaccine			x ²	P-value
	no or less n (%)	3 times n (%)	Total n (%)		
Less than 50,000	107(93.9)	7(6.1)	114(100)	24.13	> 0.001
50,000-100,000	168(92.8)	13(7.2)	181(100)		
More than 100,000	48(72.7)	18(27.3)	66 (100)		

Table 8 Odd ratios and 95% confidence interval for predictors of practice of used and not used human papillomavirus vaccine

Variable	OR	SE	95% CI	P-Value
<i>Outcome : History of used and not used HPV vaccine</i>				
Student's sociodemographic characteristics				
Age	0.851	0.110	0.687-1.055	0.141
Class year				
Year 1	3.159	1.056	0.399-25.033	0.276
Year 2	3.500	1.102	0.404-30.342	0.256
Year 3	1.766	1.081	0.212-14.690	0.599
Year 4	2.897	1.091	0.341-24.568	0.330
Year 5				0.519
Faculty				
Art	1.219	0.465	0.490-3.035	0.670
Pharmacy	1.233	0.542	0.426-3.567	0.699
Veterinary	0.233	1.076	0.028-1.921	0.176
Science	0.677	0.467	0.271-1.689	0.403
Law				0.368
Parents' income				
Less than 50,000 Baht/Month	0.174	0.478	0.068-0.445	>.0001
50,000-100,000 Baht/Month	0.206	0.399	0.094-0.451	>.0001
More than 100,000 Baht/Month				>.0001
Students' risk behaviors				
Sexual activity	0.447	1.041	0.058-3.440	0.440
History of used oral contraceptive pills	1.832	0.577	0.591-5.675	0.294
History of smoking	1.832	0.577	0.591-5.675	0.294

with high knowledge score have high percentage of used vaccine however; this does not show any statistical significance.

Parents' income is significantly associated with students' practice of used human papillomavirus vaccine by both chi square test and binary logistic regression test at the *p-value* lesser than 0.001 (Table 7 and Table 8). This indicates that parents income predict the use of human papillomavirus vaccine among female bachelor degree students. As parents income increases the rate of students used vaccine also increases at *p-value* lesser than 0.001.

DISCUSSION

The study found that knowledge regarding human papillomavirus, human papillomavirus vaccine and cervical cancer was low among female bachelor degree students. Despite high prevalence of human papillomavirus infection among young women studies in western countries shown that adolescents and young women know very little about human papillomavirus infection [9]. Di Giuseppe on human papillomavirus and vaccination: knowledge, attitudes and behavioural intention in adolescents and young women in Italy, 2008 reported that

women's knowledge about human papillomavirus infection and cervical cancer was remarkably poor [10]. Raika Durosoy [11] mentioned that the mean knowledge score was remarkably poor and the vaccination rate was very low 0.4%, similar figures are observed in the Eastern population, rates are higher when the state covers for the vaccination. However, the article did stated that vaccine awareness was much better in Western populations, though timing of the surveys plays an important role. Before the licensing of the vaccines adults and adolescents had limit understanding regarding human papillomavirus was, however awareness and knowledge on HPV and its vaccine has increased after their introduction, especially in countries where women have less financial obstacle to get vaccine.

This study showed that knowledge is associated with practice however, it is not statistically significant. It does not mean that knowledge is not an important factor for students used and not used human papillomavirus vaccine but there may be other factors that hinder to apply knowledge into practice. It is also showed that attitude has no association with practice; however attitude has strong significant association with students' knowledge. The second finding is consistent with the one found by Wong and Sam [9] where they conducted study on ethnically diverse female university students' knowledge and attitude towards human papillomavirus, HPV vaccination and cervical cancer in public university located in Kuala Lumpur, Malaysia and found out that intention to receive HPV vaccine was significantly associated with the scores of knowledge of HPV and genital warts and knowledge of cervical screening and cervical cancer risk factors [9].

Only 10.9% of the respondents have used vaccine. The practice of used vaccine is significantly associated with parents' income. It is also associated with students knowledge score however; the latter does not show any statistic significance. Our findings show similarities with many other reviews however, timing of the survey and country specific timing of vaccine licensure should be considered. J.Y. Lai mentioned that despite the vaccine ability to prevent cervical cancer the rates of HPV vaccination are relatively low [12]. A CDC study reported in March 2010 that only 11 % reported receiving all three doses of vaccine [12]. The reasons for poor uptake of the vaccine could be due to several factors include cost of vaccination, limited access to health care providers among patients with lower socioeconomic background and

lack of knowledge of HPV as a causative agent of cervical cancer [12].

RECOMMENDATION

Public education is necessary since it is shown in this study that knowledge regarding human papillomavirus, human papillomavirus vaccine and cervical cancer is very low among respondents. Besides education policy to increase uptake of vaccination should also be implement at both national and university levels. Research on cost effectiveness of cervical cancer prevention with vaccine and expenditure on treatment could be considered in the future to emphasize the necessity of the vaccine.

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