Knowledge of Human papillomavirus (HPV) and attitudes towards HPV-vaccine among Thai female university students

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SAMMANFATTNING

**Introduktion:** Humant papillomvirus (HPV) är den vanligaste sexuellt överförbara infektionen och orsakar 529 000 fall av cervixcancer varje år. Numera finns vaccin mot HPV för att förebygga infektion. Kunskap om HPV påverkar attityder till HPV-vaccin och är därför en faktor som påverkar acceptansen av vaccinet.

**Syfte:** Syftet med studien var att undersöka kunskap om HPV och attityder till HPV-vaccin bland kvinnliga thailändska universitetsstudenter.

**Metod:** En deskriptiv tvärnittsstudie med en enkät. Ett ändamålsenligt urval användes. Urvalet bestod av studenter från två olika universitet i Bangkok, Thailand, och 192 av de 201 enkäter som besvarades användes.

**Resultat:** Det var 64.6% av deltagarna som hade hört talas om HPV. Av dessa var den vanligaste informationskällan vårdpersonal. Det var 42.6% som kände till HPV-vaccinet och 33 av 192 hade tagit vaccinet. Över 90% av deltagarna hade dålig eller måttlig kunskap om HPV. De flesta deltagarnas attitydnivå till HPV-vaccin var positiv (72.4%). I stort sett alla deltagare ville ha mer information om HPV och 88.5% ansåg att det var nödvändigt för dem att ta vaccinet.

**Slutsats:** Det fanns en del kunskapsluckor bland deltagarna, därför bör informationen till unga kvinnor förbättras och syfta till att öka motivationen att använda förebyggande metoder, så som att ta HPV-vaccinet.

**Nyckelord:** humant papillomvirus, kunskap, attityd, HPV-vaccin, unga thailändska kvinnor
ABSTRACT

Introduction: Human papillomavirus (HPV) is the most common sexually transmitted infection and causes 529,000 cases of cervical cancer every year. Nowadays, there are vaccines available to prevent infection. Knowledge of HPV influence the attitude towards the vaccine and is therefore a factor of accepting the vaccine.

Aim: The aim of this study was to examine the knowledge of HPV and attitudes towards HPV-vaccine among Thai female university students.

Method: Descriptive and cross-sectional study with quantitative method using a questionnaire. Purposive sampling was used. The sample consisted of students from two different universities in Bangkok, Thailand and out of the 201 students whom filled in the questionnaire, 192 questionnaires were used.

Result: There were 64.6% of the participants that had heard of HPV previously. Of these, the most common source of information was health professionals. The HPV-vaccine was known by 42.6% of the participants and 17.4% had taken the vaccination. Over 90% of the participants had a poor or moderate knowledge of HPV. In total, most of the participants in the sample were found to have a positive level of attitude towards the vaccine (72.4%). Almost all participants wanted to know more about HPV and the HPV-vaccine and 88.5% thought it was necessary for them to get the vaccination.

Conclusion: As some gaps in knowledge among the participants were shown, the information to young women should be improved and aim to increase the motivation towards the use of preventive methods, such as taking the HPV-vaccine.

Keywords: human papillomavirus, knowledge, attitude, HPV-vaccine, young Thai women
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1. INTRODUCTION

Human papillomavirus (HPV) is a worldwide spread virus and the most common sexually transmitted infection (STI). HPV is also the main cause of cervical cancer, which is the second most common cancer in the world among women, with about 529,000 new cases and about 274,000 deaths reported each year (World Health Organization [WHO], 2011). Other cancers such as anal, oral and penile cancer among others, are strongly associated with HPV as well (WHO/ICO Information Centre on HPV and Cervical Cancer (HPV Information Centre), 2010).

1.1 Human papillomavirus and cervical cancer

HPV consists of different types of virus strains, 70% of all cervical cancers are caused by HPV type 16 and 18 (WHO, 2011). The virus also causes condyloma (genital warts) through type 6 and 11, in all sexes. Most HPV infections do not give symptoms but sometimes they cause changes in the epithelium of the cervix, which can lead to cervical cancer. This is why regular check-ups with Papanicolaou (Pap) smear test is the best way to find abnormal cells early (WHO, 2007) and to prevent the development of cervical cancer.

Despite knowledge how to prevent HPV and the causes of HPV, about 274,000 deaths due to cervical cancer are reported every year and over 85% of them are in developing countries (WHO/ICO Information Centre on HPV and Cervical Cancer (HPV Information Centre), 2010). Unlike some industrialized countries, some developing countries have non-existing or less developed system for Pap smear check-ups. Many women are diagnosed with cervical cancer at a late-stage when the cancer often is more difficult to treat (WHO, 2007). In Thailand, cervical cancer is the second most common cancer among women and approximately 10,000 women are diagnosed with it every year and around 5,000 women dies yearly because of it. Thailand stands for nearly two percent (1.89 %) of all cervical cancer diagnoses in the world and the yearly incidence is expected to rise with almost 3,000 new cases in the following decade (WHO/ICO Information Centre on HPV and Cervical Cancer (HPV Information Centre), 2010). Pap
smear check-ups are available in Thailand for free every fifth year for women aged 35-60 years (Charakorn et al., 2011). In Sweden, an industrialized country, women above 23 years are tested with Pap smear every third year, cervical cancer is the 10th most common cancer and Sweden has among the lowest mortality rates in Europe (Castellsagué et al., 2013).

1.2 HPV transmission and sexual habits in Thailand

HPV is transmittable through sexual activity where mucous membrane touches other mucous membranes or the skin. A person can also require HPV through genital skin contact, which makes it easily transmittable. Most sexually active persons will get HPV during some time in their lives and the infection usually self-remits (Smittskyddsinstitutet, 2012; WHO, 2007).

When describing sexual habits in this paragraph, the focus will be on opposite sex intercourse. Through history, women in Thailand have had few sex partners during their lifetime due to marriages at a young age. In Thailand, the average age for the first sexual intercourse is around 18.2 years old for women and around 17.1 years old for men. This is starting to change and like men, more women are nowadays having sexual experiences before marriage and even though the most common sex partner for women are a spouse, the number of women having sex with casual partners are rising with the liberalization of sexuality among women. Despite this, women having sexual activity with casual partners is believed to be a small group of people. Men have, to a higher extent, sexual intercourse with more partners, both with casual partners, girlfriends and sex workers (Chamratrithirong, Kittisuksathit, Podhisita, Isarabhakdi & Sabaiying, 2007).

When it comes to protection, Saranrittichai, Sritanyarat and Ayuwat (2006) mean that the male adolescent is often the one to decide whether or not to use condom when having sexual intercourse, while the female adolescent have little to say about this matter. Furthermore, the use of condom is higher when having intercourse with a casual partner than with a girl/boyfriend (Chamratrithirong et al., 2007).
1.3 HPV-vaccine

Using condom might minimize the risk of contracting HPV during sexual intercourse (Winer et al, 2006), even if it might be hard to prove as there are many different factors affecting the efficacy of condoms, such as using them correctly (Steiner & Cates, 2006). The risk of contracting condyloma is reduced when using condom and the protection against chlamydia and HIV are of great gain, as they are factors influencing the development of cervical cancer. However, to prevent the infection ever occurring, receiving one of the HPV-vaccine is preferable for women. The reason for targeting women is that the gains of the vaccine are greater, which makes it more cost-effective. This is due to a higher incidence of HPV among women, and that more women suffer from the virus by greater morbidity and higher mortality rates. It is believed that if the vaccine is spread to more women, the incidence of cervical cancer will decrease (WHO, 2007). WHO (2007) mentions that it may be of importance to further investigate the incidence of HPV among men, especially among people living with HIV and in the group men who have sex with men, where the incidence of HPV is reported high.

To this date there are two approved prophylactic HPV-vaccines on the global market, one quadrivalent (against type 16, 18, 11, 6) and one bivalent (against type 16 and 18) (Chelimo et al., 2012). The vaccine is targeted to girls in the age around 11 due to the fact that tests of the vaccine show higher antibody levels in that age group (WHO, 2007). Studies also show that the infection incidence is highest right after sexual debut (WHO, 2007) and multiple sex partners is a risk factor for contracting HPV, therefore the vaccine should preferably be given before sexual debut (Chelimo et al., 2012). However, an older girl or a woman with a sexual history can still get protection from the vaccine as she might not have contracted the exact virus strains that the vaccine protects against (WHO, 2007). To get full protection, the vaccine must be taken in three doses and according to American Cancer Society, ‘catch-up’ vaccination for girls aged 13 to 18 is preferable (Chelimo et al., 2012). From 2010, all girls in Sweden between 10-12 years old are offered free HPV-vaccine as a part of the national immunization schedule (Smittskyddsinstitutet, 2012). Australia and United Kingdom have also implemented free vaccinations to adolescents through different vaccination programs and are additionally
offering ‘catch-up’ vaccination for the women (Chelimo et al., 2012). In Thailand however, the HPV-vaccine, with all three doses counted, costs around 8,000 THB (1786 SEK) (Termrungruanglert et al., 2012).

1.4 Knowledge of HPV and HPV-vaccine

The knowledge of HPV among women has been explored in several studies. A conclusion from a study conducted in Thailand by Charakorn and co-workers (2011) was that the knowledge of HPV and the HPV-vaccine was generally poor among Thai women. Only 40.1 % of their participants had heard of HPV previously. The study population mostly consisted of adult women with a mean age of 43.4 years old. In another study (Juntasopeepun, Davidson, Phianmongkhol, Srisomboon & Suwan, 2011) where participants were Thai women between 18 and 24 years old, the mean knowledge score was 7.89 (SD 3.99; range 0–15). The conclusion was that among these young women, the knowledge of HPV was moderate and greater efforts in health education are needed to improve the knowledge. They also found that less than half of their participants knew about the vaccine even though it had been accepted in Thailand for four years (Juntasopeepun et al., 2011). This might be a result from insufficient information according to Juntasopeepun and co-workers (2011).

Almost half of respondents (47.3%) in one study (Juntasopeepun et al., 2011) knew that most people with genital HPV have no visible symptoms and 29.7 % mistakenly believed that the infection could be treated by antibiotics. According to some studies, very few of the participants knew that HPV can be self-remitting (Charakorn et al., 2011; Tiro, Meissner, Kobrin & Chollette, 2007). Only about half of respondents in some studies (Charakorn et al., 2011; Juntasopeepun et al., 2011; Tiro et al., 2007) knew that HPV is a STI and can cause cervical cancer and 70.3 % of respondents in one of these studies (Tiro et al., 2007) were aware that HPV is a common infection. Less than half of women in the other two studies (Charakorn et al., 2011; Juntasopeepun et al., 2011) knew that genital warts are caused by HPV and more than half of respondents knew having multiple sex partners and sex at an early age increases risk of HPV infection.
Studies conducted in other countries also show low knowledge and/or low awareness of HPV among women (Dahlström et al., 2012; Di Guiseppe, Abbate, Liguori, Albano & Angelillo, 2008; Nøhr et al., 2008; Rashwan, Lubis & Ni, 2009; Tiro et al., 2007). In a study conducted in Italy, only 15.3% of the participants knew that the vaccine was available in the country even though 42.1% had heard of it (Di Guiseppe et al., 2008). The strongest correlation with ever having heard of HPV among Nordic women, were history of having genital warts and educational level. It was also shown that awareness of HPV increased significantly with higher age until around 24 years (Nøhr et al., 2008). A study conducted in Sweden (Dahlström et al., 2012) show that among the younger participants (18-30 years old), not only educational level but also gender and income were factors that correlates with knowledge of HPV. The majority of participants in this study, knew that HPV was a STI and that both men and women could get infected but most participants did not know or were uncertain that HPV could cause other cancers than cervical cancer. In this study, both men and women were participating (Dahlström et al., 2012).

1.5 Attitudes towards HPV-vaccine

During the years after the first vaccine got approved internationally in 2006 (WHO, 2008), there have been several studies exploring women’s attitude towards the vaccine. Many studies (Charakorn et al., 2011; Gerend & Shepherd, 2011; Tiro et al., 2007) show that higher education is significant to a positive attitude towards the vaccine and to a higher level of knowledge of HPV. Studies also show that knowledge of HPV is significant with acceptance of vaccine, meaning that knowledge gives a more positive attitude towards taking the vaccine (Charakorn et al., 2011; Juntasopeepun et al., 2011; Rashwan et al., 2009).

In a study conducted among university students in Malaysia (Wong & Sam, 2010) only 10.3% had heard of HPV vaccine, half of them got information from the newspaper and only 1.5% from health professionals. About 60% of those who had heard of the vaccine, knew that it is a protection against cervical cancer. Only 48% of participants in this study had intentions to receive the vaccine. The other half were mostly concerned about safety
and efficacy (50.9%), some did not think they had any risk of receiving HPV (41.5%) and some felt embarrassed to receive an STI vaccine (11.3%).

Another study conducted in Malaysia (Rashwan et al., 2009) show that 77.7% of the secondary school students who participated, were undecided or unwilling to take the vaccine. Mostly because they were concerned about the risks of taking it. This concern is shared by Thai adult women in another study (Charakorn et al., 2011), but in total 77.7% actually accepted the vaccine, most of them (70.3%) because of fear of cervical cancer. Prevention of cervical cancer was more significant to the intention of receiving the vaccine than safety concerns among college students in Korea (Kang & Moneyham, 2010). However, in the Malaysian study (Rashwan et al., 2009) the awareness of cervical cancer had no significance with acceptance of vaccine. In the study among Thai women (Charakorn et al., 2011), the expense was a major factor of rejecting the vaccination and according to Kang and Moneyham (2010) most of their participants (77.8%) thought the vaccine was too expensive. This study also show that the intention to get vaccinated was greater if a health professional had recommended it than if recommended by a parent or a friend (Kang & Moneyham, 2010).

2. THEORETICAL FRAMEWORK

Knowledge, attitude, practice (KAP) is a conceptual framework that investigate a population’s knowledge, their attitude and what their practice and behaviour look like, related to a certain topic. The framework can be used in three different ways; to investigate the knowledge, attitude and behaviour related to a disease or concept, to develop an intervention by looking at problems that may occur or as a tool to evaluate interventions (Vandamme, 2009).

By using the first objective it is possible to explore what people know about, for example, a certain disease, find out what they feel about the disease and what is being done about the disease. This way it is possible to get an overview of the severity of the disease, what knowledge that is needed and identify a way to improve the behaviour to decrease the disease (Vandamme, 2009). The knowledge and attitude a person carries, affects the actions and behaviours of that person. With a greater understanding of these components,
the information and intervention can be better suited to the specific population based on what they need (Kalyaperumal, 2004). As shown in Figure 1, KAP is used, in this study, as a way to explain how the knowledge of HPV and the attitudes towards the HPV-vaccine might affect the behaviour, such as taking the HPV-vaccine.

![Figure 1. KAP as used in this study](image)

3. RATIONALE OF RESEARCH

In order to make knowledge of HPV widespread and decrease number of deaths in cervical cancer, information about HPV and HPV-vaccine must be transferred to the masses, especially in countries such as Thailand with high incidence rates of cervical cancer. According to Charakorn and co-workers (2011), few studies have been made in order to see what knowledge of HPV and HPV-vaccine Thai women have. Therefore it was interesting to investigate the knowledge and attitudes among Thai female university students.

Before spreading information, it must be investigated how much knowledge exists and what factors that might affect it. With more information and understanding of what factors that might affect the behaviours among women, it can be explored what knowledge is needed and how the methods of health education and communication, as a part of intervention, can be improved. This will be of great value for nurses and other health professionals when targeting these issues and giving health information to young women. A reason to investigate the knowledge among students at university, and not
younger adolescents, is that it is more likely that they have been exposed to HPV as the average age of first sexual intercourse among Thai women is 18.2 years old (Chamratrithirong et al., 2007). Therefore it could be expected that these university students could have more knowledge than younger women, also higher education is shown to be significant with higher level of knowledge (Charakorn et al., 2011; Gerend & Shepherd, 2011; Tiro et al., 2007).

A study with similar sample (Juntasopeepun et al., 2011) has explored if their participants have an intention to receive the vaccine and which perceived benefits that influence the decision. It has not included evaluation of a positive or negative attitude. According to Ajen and Fishbein (Kang & Moneyham, 2010) a positive attitude towards the vaccine, increase the intention to receive the vaccine. Therefore it is interesting to investigate if there is a positive or negative level of attitude towards the vaccine that might affect the behaviour.

3.1 Aim
The aim of this study was to examine the knowledge of HPV and attitudes towards HPV-vaccine among Thai female university students since they are older than 18 years, likely to have been exposed to HPV and as women, targeted to receive the HPV-vaccine.

3.2 Research questions
1. What is the knowledge of HPV among Thai female university students in Bangkok?
2. What is the attitude towards HPV-vaccine among Thai female university students in Bangkok?

4. METHOD

4.1 Design
The study was descriptive and cross-sectional with quantiative method.
4.2 Setting

The study was carried out at different faculties/institutions at two universities in Bangkok, Thailand.

4.3 Sample

Purposive sampling was used in this study. Approximately 200 (N = 201) students were recruited to participate in the study. Nine students were excluded because the questionnaires were not completed or filled in correctly. A total number of 192 students were selected according to inclusion criteria. The inclusion criteria for participants were (1) young Thai women between 18 and 25 years old, (2) university students at a bachelor program, (3) able to speak, write and read Thai language, (4) living in or near Bangkok and (5) willing to participate in this study. Exclusion criteria for participants were (1) women younger than 18 or older than 25 years old, (2) not studying at a bachelor program, (3) not able to speak, write or read Thai language, (4) not living in or near Bangkok and (5) not willing to participate in this study.

4.4 Instrument

A questionnaire (Appendix B) related to HPV and HPV-vaccine, was developed for this study based on the questionnaires used by Caskey, Lindau and Alexander (2009) and Rashwan and co-workers (2009). The questions for the questionnaire were selected according to the aim of this study and Thai culture. The questionnaire consisted of three parts: the first part was a demographic overview with various questions, asking for parent’s educational level, age etc. This part consisted of non-parametric data with a nominal scale or an ordinal scale and this data was only used for describing the sample of this study.

In the second part, the participants were asked if they had ever heard of HPV and from what sources they got their information. This non-parametric variables were put in nominal scales. The second part also consisted of a nominal scale with ten items regarding the knowledge of HPV. Participants were able to choose from options “true”, “false” and “I don’t know”. The ten items consisted of statements such as “HPV can be cured by taking antibiotics” and “Using a condom can provide partial protection against
HPV. Statements 11, 12, 14, 16, 17, 18 and 20 were true and statements 13, 15 and 19 were false. A correct answer was given one mark and a wrong answer or “I don’t know” answer was given no mark. Scores were categorized as poor; 0-3 points, moderate; 4-6 points and high; 7-10 points (Rashwan et al., 2009). A knowledge summary score was made only for the participants who knew someone with HPV and/or ever had heard of HPV.

For measuring the attitudes towards the HPV-vaccine in the third part, a 10-item Likert scale was made. The variables were ranked from strongly agree, agree, disagree to strongly disagree. The answers of these ten items were coded depending on the values of the questions, which were either positive or negative. Questions 23, 24, 25 and 32 were valued as positive; therefore answers “Strongly agree” were coded as 4 and “Strongly disagree” were coded as 1. Questions 26-31 were valued as negative; therefore answers “Strongly agree” were coded as 1 and “Strongly disagree” were coded as 4. The composite score of the scale was given through summing item scores. A person who had a positive attitude towards the vaccine got a higher score than a person with a negative attitude towards the vaccine (Polit & Beck, 2009). An equation that is commonly used for calculating the level of scores was applied to calculate the level of attitudes in this study (Vanichbuncha, 2005). Scores from 10 to 20 were categorized as a negative level, 21-30 as a moderate level and 31-40 as a positive level. The participants were also asked whether they had heard of the HPV-vaccine and if they have taken the vaccination.

The questionnaire was translated from English into Thai by the bilingual main supervisor at Uppsala University, Sweden and it was translated back into English by a bilingual co-supervisor, at a university in Thailand.

After the proposal was approved by the Human Subject Committee of Faculty of Medicine Ramathibodi Hospital, Mahidol University, the questionnaires content validity was verified by two experts (one oncology nurse and one nurse specialized in cervical cancer). Revisions to the questionnaire were made after suggestions from the experts. The second part of the questionnaire had a content validity index (CVI) that was equal to 0.80 (Polit & Beck, 2009). The revised questionnaire was then tested for clarity and reliability.
with 30 participants who had similar criteria like the real sample and the Cronbach’s alpha was equal to 0.75 on the third part of the questionnaire (Polit & Beck, 2009).

4.5 Procedure

This study was carried out in cooperation between Department of Public Health and Caring Sciences at Uppsala University, Sweden and Ramathibodi School of Nursing, Faculty of Medicine Ramathibodi Hospital, Mahidol University in Bangkok, Thailand, through Minor Field Studies (MFS). This study was a part of a larger project conducted by faculty members of Ramathibodi School of Nursing, Faculty of Medicine Ramathibodi Hospital, Mahidol University in Bangkok, Thailand and a faculty member of the Department of Public Health and Caring Sciences at Uppsala University, Sweden.

Two universities in Bangkok, Thailand were recruited for this study. The co-supervisors in Thailand assisted in the recruitment of universities and participants. The institution director and the faculty deans of the universities were informed about the study and asked for permission to carry out the study. A randomized sample of ten faculties with bachelor programs were selected. An official letter was sent to the deans of every selected faculty and the director of the selected institution, for permission to collect data among students. A faculty member acted as a contact person and helped with the coordination of the students, such as arranging time for collecting the data. The researchers explained the details of this study and asked possible participants if they were willing to participate. The participants were then given both oral and written information in Thai, together with a Participant Information Sheet (Appendix A) and a Consent form. After a summary about the study, including purpose, subjective and procedure, the students had the opportunity to ask questions. The summary also included information about the rights of participation before the distribution of the questionnaire. They were then able to make a decision whether or not to participate and gave the researcher the Consent form. The researchers also took help from colleagues to collect data, who were informed about the study and procedure. In cases where the researchers were not available, the colleague gave the summary to the participants. The questionnaires were distributed in different classrooms settings and took approximately 15 minutes to complete. When the participants were finished they put the questionnaire in a blank envelope and handed
them back to the researchers, who placed the envelopes inaccessible to unauthorized, to guarantee confidentiality. The questionnaires were anonymous. The questionnaires were destroyed after the completion of the larger project, which this thesis was a part of. The consent forms will be saved according to official documents of research standards.

4.6 Data analysis

The data was analysed using a descriptive statistical analysis program including frequencies, mean score and standard deviation (SD). A codebook was made to enter data correctly into the program, and it was followed thoroughly when entering data. The submitted questionnaires were reviewed carefully for data cleansing, before entering data. After finishing entering data the researchers controlled the data in the program to verify that it was correct. The conducted data was then analysed. In order to present the sample and result in an organized arrangement, all numeric data of the questionnaire were presented as a frequency distribution in tables (Polit & Beck, 2009).

4.7 Ethical consideration

A proposal of the larger project that this study was a part of, was submitted to the Human Subject Committee at Faculty of Medicine Ramathibodi Hospital, Mahidol University in Thailand, for approval. After the approval, the co-supervisors in Thailand contacted the institution director and the faculty deans of the universities for permission to carry out the study, also an official letter was sent for permission to collect data among students. Both oral and written information regarding participation was presented for the students before answering the questionnaire. The participation was voluntary, all information was handled confidentially, the questionnaire was anonymous and participants were free to end the participation at any time, without completing the questionnaire. The results was only presented as a summary. The collected information was only used for the purpose of this study and a larger project conducted by faculty members of both Ramathibodi School of Nursing, Faculty of Medicine Ramathibodi Hospital at Mahidol University in Bangkok, Thailand and Department of Public Health and Caring Sciences at Uppsala University, Sweden (Vetenskapsrådet, 2002). Data will be destroyed after completion of the larger project.
5. RESULTS

5.1 Demographic characteristics

The mean age among participants was 19.03 (SD, 1.12; range 18-24). Most participants defined their religion as Buddhism (96.4%). A majority (72.4%) were studying their first year at university and most participants lived with friends (43.2%) or with parents/family (37.0%). The most common educational level was bachelor degree, among both fathers and mothers (32.6% and 31.4% respectively), followed by primary school (20.5% and 26.7% respectively). More than half of the participants had no partner and 93.2% had not had sexual intercourse with a partner. The demographic characteristics are shown in Table 1.
### Table 1. Demographic characteristics (N=192)

<table>
<thead>
<tr>
<th>Demographic characteristics</th>
<th>N (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Age</strong> (Mean = 19.03; SD = 1.12)</td>
<td></td>
</tr>
<tr>
<td>18</td>
<td>68 (35.4)</td>
</tr>
<tr>
<td>19</td>
<td>81 (42.2)</td>
</tr>
<tr>
<td>20</td>
<td>26 (13.5)</td>
</tr>
<tr>
<td>21</td>
<td>9 (4.7)</td>
</tr>
<tr>
<td>22</td>
<td>5 (2.6)</td>
</tr>
<tr>
<td>23</td>
<td>1 (0.5)</td>
</tr>
<tr>
<td>24</td>
<td>2 (1.0)</td>
</tr>
<tr>
<td><strong>Religion</strong></td>
<td></td>
</tr>
<tr>
<td>Buddhist</td>
<td>185 (96.4)</td>
</tr>
<tr>
<td>Catholic</td>
<td>2 (1.0)</td>
</tr>
<tr>
<td>Muslim</td>
<td>4 (2.1)</td>
</tr>
<tr>
<td>Protestant</td>
<td>1 (0.5)</td>
</tr>
<tr>
<td><strong>Year/s at university</strong></td>
<td></td>
</tr>
<tr>
<td>First year</td>
<td>139 (72.4)</td>
</tr>
<tr>
<td>Second year</td>
<td>41 (21.4)</td>
</tr>
<tr>
<td>Third year</td>
<td>6 (3.1)</td>
</tr>
<tr>
<td>Fourth year</td>
<td>6 (3.1)</td>
</tr>
<tr>
<td><strong>Living with</strong></td>
<td></td>
</tr>
<tr>
<td>Parents/family</td>
<td>71 (37.0)</td>
</tr>
<tr>
<td>Guardian</td>
<td>8 (4.2)</td>
</tr>
<tr>
<td>Friend</td>
<td>83 (43.2)</td>
</tr>
<tr>
<td>Cousin</td>
<td>3 (1.6)</td>
</tr>
<tr>
<td>Alone</td>
<td>26 (13.5)</td>
</tr>
<tr>
<td>Others</td>
<td>1 (0.5)</td>
</tr>
<tr>
<td><strong>Father’s educational level</strong></td>
<td></td>
</tr>
<tr>
<td>Primary school</td>
<td>39 (20.5)</td>
</tr>
<tr>
<td>Secondary school</td>
<td>11 (5.8)</td>
</tr>
<tr>
<td>High school</td>
<td>25 (13.2)</td>
</tr>
<tr>
<td>Diploma or vocational education</td>
<td>37 (19.5)</td>
</tr>
<tr>
<td>Bachelor degree</td>
<td>62 (32.6)</td>
</tr>
<tr>
<td>Master or doctoral degree</td>
<td>14 (7.4)</td>
</tr>
<tr>
<td>Others</td>
<td>2 (1.1)</td>
</tr>
<tr>
<td><strong>Mother’s educational level</strong></td>
<td></td>
</tr>
<tr>
<td>Primary school</td>
<td>51 (26.7)</td>
</tr>
<tr>
<td>Secondary school</td>
<td>18 (9.4)</td>
</tr>
<tr>
<td>High school</td>
<td>24 (12.6)</td>
</tr>
<tr>
<td>Diploma or vocational education</td>
<td>25 (13.1)</td>
</tr>
<tr>
<td>Bachelor degree</td>
<td>60 (31.4)</td>
</tr>
<tr>
<td>Master or doctoral degree</td>
<td>12 (6.3)</td>
</tr>
<tr>
<td>None</td>
<td>1 (0.5)</td>
</tr>
<tr>
<td><strong>Have a partner</strong></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>131 (68.9)</td>
</tr>
<tr>
<td>Yes</td>
<td>59 (31.1)</td>
</tr>
<tr>
<td><strong>Sexual intercourse with partner</strong> (N=190)</td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>177 (93.2)</td>
</tr>
<tr>
<td>Yes</td>
<td>4 (2.1)</td>
</tr>
</tbody>
</table>
5.1.1 Awareness of HPV and HPV-vaccine

Six out of ten participants (64.6%) had heard of HPV and the HPV-vaccine was known by 42.6% of participants. About ten percent knew someone with HPV and 17.4% had taken the HPV-vaccine. See Figure 2. The most common source of information about HPV was health professionals (37.0%), followed by the internet, television and/or a brochure. See Figure 3.

![Figure 2. Awareness of HPV and HPV-vaccine (N=192)](image-url)
The results showed that participants had a poor (51.6%) or moderate (43.2%) knowledge of HPV. The mean knowledge score of HPV was 4.37 (SD, 1.69; range 0-10) among participants who had heard of HPV and/or knew someone with HPV. See table 2.

Table 2. Levels of knowledge of HPV (N=192)

<table>
<thead>
<tr>
<th>Poor (score: 0-3)</th>
<th>N (%)</th>
<th>Moderate (score: 4-6)</th>
<th>N (%)</th>
<th>High (score: 7-10)</th>
<th>N (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>67 (34.9)*</td>
<td>4</td>
<td>33 (26.4)</td>
<td>7</td>
<td>6 (4.8)</td>
</tr>
<tr>
<td>1</td>
<td>4 (3.2)</td>
<td>5</td>
<td>29 (23.2)</td>
<td>8</td>
<td>2 (1.6)</td>
</tr>
<tr>
<td>2</td>
<td>12 (9.6)</td>
<td>6</td>
<td>21 (16.8)</td>
<td>9</td>
<td>2 (1.6)</td>
</tr>
<tr>
<td>3</td>
<td>16 (12.8)</td>
<td></td>
<td>10</td>
<td>0(0)</td>
<td></td>
</tr>
<tr>
<td>Total**</td>
<td>99 (51.6)</td>
<td>83 (43.2)</td>
<td>10 (5.2)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*There were 65 (33.9%) participants who had never heard of HPV nor knew anyone with HPV. Their total knowledge score = 0 automatically

**The mean knowledge score of HPV was 4.37 (SD, 1.69; range 0-10) among participants who had heard of HPV and/or knew someone with HPV

Figure 3. Source of information* (N=192)
*This was a multiple choice question

5.2 Knowledge of HPV among Thai female university students in Bangkok

The results showed that participants had a poor (51.6%) or moderate (43.2%) knowledge of HPV. The mean knowledge score of HPV was 4.37 (SD, 1.69; range 0-10) among participants who had heard of HPV and/or knew someone with HPV. See table 2.
About half of participants answered correctly that HPV can cause cervical cancer, none thought this statement was false. Forty-nine percent knew that HPV is a sexually transmitted disease and about half of participants were not sure. Most participants (94.8%) did not know whether or not HPV can be cured by taking antibiotics and most did not know (95.3%) that HPV can heal by itself. A majority (95.2%) answered “I don’t know” or mistakenly thought that cervical cancer is the most common cancer among women in Thailand and more than half of participants did not know that there is a simple vaginal test to find out if you have got HPV. A majority (53.6%) did not know that using a condom can provide partial protection against HPV. Most participants (62.0%) answered correctly that it is important for women to be screened for HPV. Almost 90% did not know that most people with genital HPV-infection rarely have visible signs or symptoms and about 80% did not know that HPV is very common. See table 3.

Table 3. Knowledge of HPV among young Thai women (N=192)

<table>
<thead>
<tr>
<th>Statement</th>
<th>True</th>
<th>False</th>
<th>I don’t know</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. HPV can cause cervical cancer [TRUE]</td>
<td>94 (49.0)</td>
<td>0 (0)</td>
<td>98 (51.0)</td>
</tr>
<tr>
<td>2. HPV is a sexually transmitted disease [TRUE]</td>
<td>94 (49.0)</td>
<td>7 (3.6)</td>
<td>91 (47.4)</td>
</tr>
<tr>
<td>3. HPV can be cured by taking antibiotics [FALSE]</td>
<td>36 (18.8)</td>
<td>10 (5.2)</td>
<td>146 (76.0)</td>
</tr>
<tr>
<td>4. HPV can heal by itself [TRUE]</td>
<td>9 (4.7)</td>
<td>78 (40.6)</td>
<td>105 (54.7)</td>
</tr>
<tr>
<td>5. Cervical cancer is the most common among women in Thailand [FALSE]</td>
<td>86 (44.8)</td>
<td>8 (4.2)</td>
<td>98 (51.0)</td>
</tr>
<tr>
<td>6. There is a simple vaginal test to find out if you've got HPV [TRUE]</td>
<td>71 (37.0)</td>
<td>6 (3.1)</td>
<td>115 (59.9)</td>
</tr>
<tr>
<td>7. Using a condom can provide partial protection against HPV [TRUE]</td>
<td>89 (46.4)</td>
<td>2 (1.0)</td>
<td>101 (52.6)</td>
</tr>
<tr>
<td>8. It’s important for women to be screened for HPV [TRUE]</td>
<td>119 (62.0)</td>
<td>0 (0)</td>
<td>73 (38.0)</td>
</tr>
<tr>
<td>9. Most people with genital HPV-infection have visible signs or symptoms [FALSE]</td>
<td>30 (15.6)</td>
<td>21 (10.9)</td>
<td>141 (73.4)</td>
</tr>
<tr>
<td>10. HPV is very common [TRUE]</td>
<td>40 (20.8)</td>
<td>8 (4.2)</td>
<td>144 (75.0)</td>
</tr>
</tbody>
</table>
5.3 Attitudes towards HPV-vaccine among Thai female university students in Bangkok

Most participants (81.3%) believed that their parents could pay for the vaccine and almost everyone (93.8%) would get the vaccine if it were for free. More than two thirds (71.9%) of the participants would pay for the vaccine if they could and 72.9% would not be embarrassed to ask their parents or guardians about the vaccine. A large amount of the participants (88.5%) believed it to be necessary for them to get the vaccination. Around 85% reported that they did not believe HPV vaccination of young people would encourage them to become sexually active and almost all of participants (95.3%) thought it would be necessary for them to protect themselves from other sexually transmitted diseases even if they got the HPV-vaccination. A majority (88.1%) reported that not only sexually active women should receive the vaccine. A significant amount of the participants (94.3%) thought their parents would allow them to get the vaccination and most participants (97.9%) wanted to get more information about HPV and HPV-vaccination. See table 4.

### Table 4. Attitudes towards HPV-vaccine among young Thai women (N=192)

<table>
<thead>
<tr>
<th>Item</th>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Agree</th>
<th>Strongly agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. I think my guardians could pay for the vaccine.</td>
<td>4 (2.1)</td>
<td>32 (16.7)</td>
<td>105 (54.7)</td>
<td>51 (26.6)</td>
</tr>
<tr>
<td>2. I would get the vaccine if it were for free.</td>
<td>2 (1.0)</td>
<td>10 (5.2)</td>
<td>51 (26.6)</td>
<td>129 (67.2)</td>
</tr>
<tr>
<td>3. I would pay for the vaccine if I could.</td>
<td>6 (3.1)</td>
<td>48 (25.0)</td>
<td>96 (50.0)</td>
<td>42 (21.9)</td>
</tr>
<tr>
<td>4. I would be embarrassed to ask my parents/guardians about vaccine.</td>
<td>49 (25.5)</td>
<td>91 (47.4)</td>
<td>41 (21.4)</td>
<td>11 (5.7)</td>
</tr>
<tr>
<td>5. It's not necessary for me to get the vaccination.</td>
<td>55 (28.6)</td>
<td>115 (59.9)</td>
<td>19 (9.9)</td>
<td>3 (1.6)</td>
</tr>
<tr>
<td>6. Vaccinating young people against HPV would encourage them to become sexually active.</td>
<td>61 (31.8)</td>
<td>103 (53.6)</td>
<td>25 (13.0)</td>
<td>3 (1.6)</td>
</tr>
<tr>
<td>7. If I get the vaccination, it's not necessary for me to be protected against other sexual transmitted infections.</td>
<td>122 (63.5)</td>
<td>61 (31.8)</td>
<td>5 (2.6)</td>
<td>4 (2.1)</td>
</tr>
<tr>
<td>8. Only sexually active women should receive the vaccine.</td>
<td>84 (43.8)</td>
<td>85 (44.3)</td>
<td>18 (9.4)</td>
<td>5 (2.6)</td>
</tr>
<tr>
<td>9. My parents would not allow me to get the vaccine.</td>
<td>91 (47.4)</td>
<td>90 (46.9)</td>
<td>10 (5.2)</td>
<td>1 (0.5)</td>
</tr>
<tr>
<td>10. I wish to get more information about HPV and HPV vaccination.</td>
<td>2 (1.0)</td>
<td>2 (1.0)</td>
<td>100 (52.1)</td>
<td>88 (45.8)</td>
</tr>
</tbody>
</table>
A majority of participants (72.4%) had a positive level of attitude towards the HPV-vaccine, none were rated as having a negative level. See table 5.

Table 5. Level of attitude (N=192)

<table>
<thead>
<tr>
<th>Attitude*</th>
<th>N (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Negative (score 10-20)</td>
<td>0 (0)</td>
</tr>
<tr>
<td>Moderate (score 21-30)</td>
<td>53 (27.6)</td>
</tr>
<tr>
<td>Positive (score 31-40)</td>
<td>139 (72.4)</td>
</tr>
</tbody>
</table>

*Mean score was 32.5 (SD 3.29; range 10-40)

6. DISCUSSION

There were 64.6% of the participants that had heard of HPV previously. Of these, the most common source of information was health professionals. The HPV-vaccine was known by 42.6% of the participants and 17.4% had taken the vaccination. Over 90% of the participants had a poor or moderate knowledge of HPV. In total, most of the participants in the sample were found to have a positive level of attitude towards the vaccine (72.4%). Almost all participants wanted to know more about HPV and the HPV-vaccine and 88.5% thought it was necessary for them to get the vaccination.

6.1 Result discussion

6.1.1. Knowledge of HPV among Thai female university students

The results showed that a majority of participants had heard of HPV but less (42.6%) had heard of HPV-vaccine and the results also showed that most participants had a poor or moderate knowledge of HPV, a comparable result with previous studies (Charakorn et al., 2011; Juntasopeepun et al., 2011; Dahlström et al., 2012; Di Guiseppe et al., 2008; Nøhr et al., 2008; Rashwan et al., 2009; Tiro et al., 2007). Many studies (Charakorn et al., 2011; Gerend & Shepherd, 2011; Tiro et al., 2007) show that higher education is significant to a higher level of knowledge of HPV and a Swedish study (Dahlström et al., 2012) show that not only educational level but also income is a factor that correlates with knowledge. Therefore, an explanation to the poor knowledge in this study could be that
most participants were studying their first year at university even though a university student could be considered to have a high education. It would be interesting to explore what factors that correlates with knowledge and if income would have been one of them. Insufficient information could also be a factor to low knowledge of HPV (Juntasopeepun et al., 2011), therefore it could be interesting to investigate what kind of information that is given.

The most common source of information in the present study was health professionals, which is supported by Juntasopeepun and co-workers (2011). However, as many as 36% of their participants had never heard of HPV. According to Nøhr and co-workers (2008), awareness of HPV increase significantly with higher age until around 24 years and the majority of participants in this study were either 18 or 19 years old. If the participants would have been older, there might have been a higher awareness of HPV.

Very few participants in this study knew that HPV can self-remit, which is also shown in other studies (Charakorn et al., 2011; Tiro et al., 2007). Neither did a majority know that a HPV-infection rarely show symptoms, this was also confirmed in another study (Juntasopeepun et al., 2012) where only about half of participants knew that a HPV-infection rarely shows symptoms. About half of participants in this study knew that HPV is a sexual transmitted infection which is accurate with results from other studies (Charakorn et al., 2011; Juntasopeepun et al., 2011; Tiro et al., 2007) but very few knew that HPV is very common. This was a low number compared to a study by Tiro and co-workers (2007) where the majority knew HPV is common. Half of the participants in this study knew that HPV can cause cervical cancer but 51% did not know this. This result is congruent with the result from several other studies (Charakorn et al., 2011; Juntasopeepun et al., 2011; Tiro et al., 2007).

Only 37.0% knew that there is a simple vaginal test to find out if you have got HPV but a positive result was that a majority knew it is important for women to be screened for HPV. To be able to decrease diagnosis of cervical cancer, and find abnormal cells early, regular check-ups with Pap smear is very important according to WHO (2007), as about 10.000 women are diagnosed with cervical cancer every year in Thailand (WHO, 2010).
and if women are not aware of Pap smear, the number of women diagnosed with cervical cancer might never decrease. In Thailand, Pap smear check-ups are available for free for women from when they are 35 years old (Charakorn et al., 2011), this could be an explanation why few of participants in this study were not aware of it as the participants mean age was 19.03 (SD, 1.12; range 18-24).

The lack of knowledge of HPV and the fact that more than half of participants were unsure if a condom can provide partial protection against HPV, is considered to be serious since HPV is the most common STI (World Health Organization [WHO], 2011) and cervical cancer is caused by HPV (WHO, 2011). It is essential that knowledge and awareness of HPV increases so that women will know how to prevent the infection from ever occurring and so that young women will have a safer sexual behaviour.

Most sexually active persons will get HPV during some time in their lives (Smittskyddsinstitutet, 2012; WHO, 2007) and the number of women in Thailand having sex with casual partners is rising (Chamratrithirong et al., 2007). The use of condom is higher when having intercourse with a casual partner than with a regular partner. However, it is shown that female adolescents in an opposite-sex relationship have little influence when it comes to condom use (Saranrittichai et al., 2006) and this is a serious problem in itself. In this study about 2.1% have had sexual intercourse, but the question has little to say about if they have a safer sexual behaviour. However, multiple sex partners is a risk factor for contracting HPV and using condom correctly might minimize the risk of contracting HPV, regardless, receiving one of the HPV-vaccine is preferable and women with a sexual history can still get protection from the vaccine (WHO, 2007).

6.1.2 Attitudes towards HPV among Thai female adolescents

Despite poor or moderate knowledge in this study, the attitude towards the vaccine was, over all, positive and a majority believed it was necessary for them to receive the vaccine. This result is supported by Charakorn and co-workers (2011) who found that despite a poor knowledge there was a high acceptability of the vaccine among women in Thailand. Even if a majority in this study thought that it was necessary for them to take the vaccination, around 26% thought it would be embarrassing to ask their parents/guardians
about the vaccine. Embarrassment is a factor Wong and Sam (2010) describes as factor affecting the willingness to receive the vaccine, but as a difference to this study, a larger amount of their participants believed that the vaccine was unnecessary for them.

Juntasopeepun and co-workers (2011) study also associate embarrassment with acceptability of the vaccine and associate this with stigma around sexually transmitted diseases in Thai culture. According to the National Research Council (2001), U.S. Department of Health and Human Service (USDHHS) and Brandt means that the stigma concerning STIs is a social factor that also affects the spread of STIs, another factor is the discomfort of talking about sex. This could result in a secrecy surrounding sexuality which makes it difficult talking about sex between both sex partners and between parents and their children, says USDHHS and the Institute of Medicine (National Research Council, 2001). It is not entirely absurd to believe that talking about sex could increase the knowledge about HPV, and could affect a woman’s or a girl’s decision of taking the vaccine. In Thai culture, the difficulties of talking about sex might be an aspect to consider, since few of the participants in this study had taken the vaccination.

In a study by Rashwan and co-workers (2009) the majority were undecided or unwilling to take the vaccine and the major concern was the risks of the vaccine. As education is shown to be a factor influencing the attitude (Charakorn et al., 2011; Tiro et al., 2007; Gerend & Shepherd, 2011) and the fact that the sample in the study by Rashwan and co-workers (2009) was secondary school students opposed to university students in this study, the different attitude might come from a higher educational level. Another reason for the different results might be that several years have passed since the study was conducted by Rashwan and co-workers (2009), which was shortly after the approval of the vaccine. The vaccine had, when this study was conducted, been on the market longer and it is more well-known. The side effects have been explored further which might lead to a higher acceptability and might make women feel safer when taking the vaccine.

Almost half of the participants in this study had heard about HPV and few had taken the vaccine. This is a higher proportion of participants, compared to another study conducted among young women in Thailand (Juntasopeepun et al., 2011), who found that very few
had taken the vaccine. Also, more participants in this study knew about the vaccine compared to the other study (Juntasopeepun et al., 2011).

One factor that previous studies (Charakorn et al., 2011; Kang & Moneyham, 2010) presented as something affecting the attitude towards the vaccine in a negative way, is personal economy. Charakorn and co-workers (2011) described the cost as a big factor for rejecting the vaccine. A similar result is reported by Kang and Moneyham (2010) where the participants thought that the vaccine was too expensive. In this study, some participants would not pay for the vaccine even if they could but a majority would get the vaccine if it was for free. However, most participants would pay for the vaccine themselves if they could and they believed their parents could pay. This can explain the positive level of attitude towards the vaccine in this study, because personal economy does not seem to be a factor that affects the attitude in a negative way. Despite the positive attitude, most of participants had not taken the vaccine. Therefore it might be assumed that other priorities are made by the participants and these would be interesting to investigate.

6.2 Discussion regarding Knowledge-attitude-practice (KAP)

Studies have shown that knowledge of HPV is significant with acceptance of the vaccine, meaning that knowledge gives a more positive attitude towards taking the vaccine (Charakorn et al., 2011; Juntasopeepun et al., 2011; Rashwan et al., 2009). As several years have gone by since the approval of the vaccine it might be assumed, based on KAP (Kalyaperumal, 2004; Vandamme, 2009), that the information has also increased during these years and along with this, the attitude have changed to a more positive one. This might lead to more women feeling that they need to take the vaccine which may increase the number of women actually getting the vaccination. The knowledge and attitude is in this way changing the behaviour of women (Kalyaperumal, 2004; Vandamme, 2009).

Even if the cost does not seem to be an obstacle to take the vaccine and results mention that most of participants thought it was necessary for them to take the vaccine, very few had actually taken it. It is interesting to investigate why not more women have taken the vaccine. If women would get more knowledge of HPV, such as that most sexual active
persons will get HPV, this might change the behaviour. It could also be interesting to evaluate similarities and differences of behaviour, such as going to get tested for STI, among young women who has a poor knowledge of HPV and those with higher knowledge. Furthermore, investigating what sexual behaviour young women have, could also help in order to evaluate what information that is needed in sexual education. There might be a need to give information about safer sexual behaviour, not only to young women but to every young student and adolescent. By investigating these different aspects that influence a woman’s choice, according to KAP (Kalyaperumal, 2004; Vandamme, 2009), interventional work can be improved.

The use of other theoretical frameworks such as the Health belief model (HBM) (Strecher & Rosenstock, 1997), could have been appropriate for this study. HBM describes factors influencing the will to carry out preventive activities, such as vaccination, to achieve a better health. However, this study did not examine factors that could influence the behaviour and KAP was therefore more suitable for this study, as both the knowledge and attitude was examined. It would be interesting to investigate further what affects women’s decision to take or not take the vaccine, since it is difficult to understand what those factors are.

6.3 Methodology discussion

The 201 participants in this study were collected through purposive sampling based on the inclusion and exclusion criteria. Purposive sampling is a convenient way to make sure that the sample is representative for the purpose of the study, however it is also built on the researchers’ subjective views and are not representative for the population (Polit & Beck, 2009). On the other hand, by choosing this method, the characteristics of the sample were, based on the criteria, the desired and can be considered homogenous. It is also worth mentioning that the sample could mistakenly be called purposive when it in fact is a convenient sample. However, in this study, a purposive strategy was used, which could be classified as a criterion sampling (Polit & Beck, 2009). One weakness of this study was that the awareness of external omission was non-existent, because the researchers were not always present during the data collection. The internal omission is however discussable, it could have been an internal omission because the wording of
some questions could have been difficult to understand, it might also have been some questions that some participants were unwilling to answer. This study recruited students at different faculties which could be sampling bias, as students from different faculties might have different knowledge depending on the characteristics of their education. The sample was a small part of all the young women studying at a bachelor program in Bangkok, therefore the result cannot be seen as representative for the whole population and it can only be applied to this study sample. This also concern the levels of attitude mentioned in this study. The standard of the attitude part needs to be tested with a larger number of randomized samples that comes from different groups, which means that the same levels in this study are not appropriate for a different sample. Therefore the levels of attitude cannot be compared with results from other studies.

Usage of a questionnaire has the positive aspects of being convenient and easy distributed to the participants, which is of great gain when time is restricted, as well as giving the participants more privacy and anonymity (Polit & Beck, 2009). There are, however some limits in this method. In the used questionnaire, the amounts of questions were limited. For example, there might be other factors influencing the participant’s attitude towards the vaccine that were not asked for in the questionnaire. To get a broader and deeper insight of women’s views, it would be interesting to use a qualitative method or to use a more extensive questionnaire.

The questionnaire was, before the study was conducted, tested for content validity by two experts in the area. Clarity and reliability was also tested with a sample of 30 participants with the same inclusion and exclusion criteria as the real sample. The result of these tests states that the questionnaire had a satisfying reliability and content validity index. According to Polit and Beck (2009) reliability coefficients should be higher than 0.70 which was the case. Even though, it might have been good to revise the questionnaire once more and for example revise the order of the questions to get a higher reliability (Polit & Beck, 2009). One distortion might be the language due to the fact that the questions have been translated to Thai language from English and the revisions of the questionnaire has been done in Thai. The interpretation of the questions may differ in different languages. Despite this, the translation of the questionnaire to the participant’s
mother language, was of great gain for the participant’s understanding of the questionnaire.

When constructing the questionnaire and analysing the data, the participants who answered “no” to the questions “Have you ever heard of HPV?” and “Do you know anyone who have HPV?”, were excluded from the knowledge score even if they filled in this part correctly. This was made in order to make sure that those who did not know anything would not guess and might guess the right answers, which would give a false outcome (Caskey et al., 2009). Statements with negations were avoided in as high extent as possible, to avoid misunderstanding.

During the gathering of the data, colleagues helped to collect the data, which means that the researchers were not always there to make sure that the process proceeded correctly. As the questionnaires mostly were distributed in a classroom setting, it was noticed that the participants sometimes talked to each other and looked at their table neighbours’ questionnaire. These factors might have affected the result to some extent. Answering certain questions, such as if you ever have had opposite sex intercourse, could be sensitive and the results might not be completely truthful. This must be taken into consideration when interpreting the results. It is possible that the number of participants that have had opposite sex intercourse is higher than what the results of this study show.

It would be interesting to investigate the knowledge of HPV and the attitude towards HPV-vaccine among even younger women as the vaccine is targeted to them and prevention work is important among adolescents. To examine other populations than women, such as men who have sex with men, would also be of great value as HPV-infection is reported high among this group and anal cancer caused by HPV is increasing (WHO, 2007).

7. NURSING IMPLICATION

Prevention is an important work of health care professionals and the vaccine is especially targeted to girls around the age of 11 (WHO, 2007). This study showed that many of the participants have not had sexual intercourse, which means that the vaccine might give a
full protection against HPV even if they are older than the target group. This might be something to consider as a nurse when meeting with young women.

The results in this study showed that there is a poor knowledge of HPV among Thai female university students, this includes how to prevent the infection from ever occurring to the characteristics and risks of HPV. Awareness of what knowledge is needed is an asset for nurses when addressing and adjusting the interventional work in order to fill in the knowledge gaps and improve the information. This is especially important as health care professionals are shown to play a big part as information providers and motivators. Nurses should also be aware of their own knowledge and stay updated on new information in the area. As sexually transmitted diseases and their preventive measures might be embarrassing to talk about for young women (Juntasopeepun et al., 2011; Wong & Sam, 2010), nurses should also put this into consideration when giving information. It might be of importance to adjust the ways of information to make sure it is suitable for the target group. Using media such as the internet and television could be helpful when spreading the information about HPV and HPV-vaccine, as these media are common sources of information according to this study. Having the correct information available in these media could help transferring information to young women.

That so many participants believed it was necessary for them to take the vaccine and wanted to know more about HPV and HPV-vaccine, along with seeing costs as a minor factor, is of great gain for nurses when giving information. It has been explored that women are more eager to take the vaccination if a health professional recommend it (Kang & Moneyham, 2010), therefore nurses could play a big role in this decision and help motivate women to receive the vaccine in order to minimize the incidence of HPV and cervical cancer.

Low knowledge and/or low awareness of HPV among women is seen in studies from other countries than Thailand (Dahlström et al., 2012; Di Guiseppe, Abbate, Liguori, Albano & Angelillo, 2008; Nøhr et al., 2008; Rashwan, Lubis & Ni, 2009; Tiro et al., 2007). The nurse’s role as an information source and a motivator is therefore important all over the world.
8. CONCLUSION

A majority of the Thai female university students participating in this study had a poor knowledge of HPV and even if most had a positive level of attitude towards the HPV-vaccine, few had taken it. There is a need to improve the poor knowledge among Thai female university students in order to change behaviour so that they will take the HPV-vaccine. As a step towards getting a lower incidence of cervical cancer and decrease number of deaths due to the disease, greater efforts in health education is needed. Not at least because most of the participants got their information from health professionals. The preventive work needs improvement, in order to do so, it could be relevant to evaluate what factors that affects the knowledge so that, not only young women, but all adolescents will get inspired to use preventive methods against cervical cancer and have a safer sexual behaviour.

9. ACKNOWLEDGEMENT

The authors of this thesis would like to thank everyone who has been involved in this study. We would like to thank Swedish Council for Higher Education for the Minor Field Studies scholarship, without the scholarship we would never have been able to do this study in Thailand. A great thank to all participants who were in this study. Furthermore we would like to give our warmest thanks to the main supervisor Pranee Lundberg, Associate Professor at Department of Public Health and Caring Sciences at Uppsala University, Sweden and co-supervisors Associate Professor Dr. Manee Arpanantikul and Lecturer Sarwitree Pornsirsiriruck at Ramathibodi School of Nursing, Faculty of Medicine Ramathibodi Hospital, Mahidol University in Bangkok, Thailand, who helped and guided us through this journey. We would also like to thank Assistant Professor Dr. Jariya Wittayasoporn, Director at Ramathibodi School of Nursing, Faculty of Medicine Ramathibodi Hospital, Mahidol University in Bangkok, Thailand, for allowing us to do the study and all staffs that assisted us to conduct the study. Lastly, but not least, a thanks to Mr. Khemarat Pongsophon, who made sure everything went smoothly.
REFERENCES


APPENDIX A

UPPSALA UNIVERSITET

Information letter

Hello!

We are two students from Sweden who are studying the Bachelor program in Science of Nursing at Uppsala University. We are here to do our final thesis about knowledge of HPV and attitudes towards HPV-vaccine among Thai female university students in Bangkok. In this study there will be a number of approximately 200 participants between 18 and 25 years old. If you choose to participate it will contribute to increase the information concerning the knowledge of HPV and attitudes towards HPV-vaccine among Thai female university students. This would be of great value for health professionals and us in order to increase understanding in these issues and for future development of intervention program for young women.

The aim of the study

The aim of this study was to examine the knowledge of HPV and attitudes towards HPV-vaccine among Thai female university students since they are older than 18 years, likely to have been exposed to HPV and as women, targeted to receive the HPV-vaccine.

If you choose to participate

The following pages consist of a questionnaire for you to fill in. It will take approximately 15 minutes to complete and your answers will be handled with confidentiality. In the first part, the questions concern demographic information. The second part concern knowledge of HPV and the last part is a section about attitudes towards HPV-vaccine. Your participation is voluntary and you may end the participation at any time, without completing the questionnaire. Answers will be used for this thesis and a larger project.

If you have any questions or thoughts, feel free to ask us!

Best wishes,

Solvind Hammar: solvind.hammar.1862@student.uu.se
Sandra Stridh: sandra.stridh.4744@student.uu.se
Main supervisor: Pranee Lundberg: pranee.lundberg@pubcare.uu.se
APPENDIX B

Knowledge of HPV and attitudes towards HPV-vaccine among Thai female university students.

The purpose of this study is to investigate the knowledge of HPV and attitudes towards HPV-vaccine among Thai female university students. This will be of great value for nurses and other health professionals to improve the methods of education and communication when targeting these issues and giving health information to young women. It is voluntary to participate and you may end participation at any time. All answers will be handled with confidentiality. Please answer every question.

Part I.

For the questions below, please mark the answer of your choice with “X”.

1. Age (years): …………..

2. Religion:
   - [ ] Not religious
   - [ ] Buddhist
   - [ ] Catholic
   - [ ] Muslim
   - [ ] Protestant
   - [ ] Others:………..

3. Which year in school are you now?
   - [ ] 10th
   - [ ] 11th
   - [ ] 12th

4. With whom do you live?
   - [ ] Parents/family
   - [ ] Friend/s
   - [ ] Relatives
   - [ ] Boyfriend/girlfriend
   - [ ] By myself
   - [ ] Other/s

5. What are your parents’ educational levels?
   - Mother: [ ] Primary school
   - [ ] Secondary school
   - [ ] High school
   - [ ] College/University
   - [ ] None
   - Father: [ ] Primary school
   - [ ] Secondary school
   - [ ] High school
   - [ ] College/University
   - [ ] None

6. Do you have a boyfriend/girlfriend?
   - [ ] No
   - [ ] Yes
7. Have you ever had opposite sex intercourse?

☐ No  ☐ Yes

**Part II.**

*For the questions below, please mark the answer of your choice with “X”.*

8. The human papillomavirus (HPV) can cause genital warts and some cancers. Before today, have you heard of HPV?

☐ No  ☐ Yes

9. From where did you get information about HPV? Mark one or two.

☐ Newspaper  ☐ Friend/s  ☐ Television

☐ Radio  ☐ Internet  ☐ Brochure

☐ Parents/family  ☐ Magazine  ☐ Public education

☐ Health professionals (doctor, nurse, midwife, etc.)  ☐ Not sure

10. Do you know anyone who has HPV?

☐ No  ☐ Yes

*Please mark “X” in each item for your answer. If you don't know, please do not guess; instead please mark the box “I don't know”.*

<table>
<thead>
<tr>
<th>Statements</th>
<th>True</th>
<th>False</th>
<th>I don't know</th>
</tr>
</thead>
<tbody>
<tr>
<td>11. HPV can cause cervical cancer.</td>
<td></td>
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<tr>
<td>12. HPV is a sexually transmitted disease.</td>
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<tr>
<td>13. HPV can be cured by taking antibiotics</td>
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<tr>
<td>14. HPV can heal by itself.</td>
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<td>15. Cervical cancer is the most common cancer among women in Thailand.</td>
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<tr>
<td>16. There is a simple vaginal test to find out if you've got HPV.</td>
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<tr>
<td>17. Using a condom can provide partial protection against HPV.</td>
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<tr>
<td>18. It’s important for women to be screened for HPV.</td>
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</tbody>
</table>
19. Most people with genital HPV-infection have visible signs or symptoms.

20. HPV is very common.

**Part III**

For the questions below, please mark the answer of your choice with “X”.

21. There are two globally licensed and approved vaccine available. The vaccine prevent HPV-infection and the total cost is approximately 8 000THB. Before today, have you heard of HPV-vaccine? (Also known as Gardasil® or Cervarix®):

   □ No  □ Yes

22. Have you taken the HPV-vaccination?

   □ No  □ Yes

Please mark “X” in each item for your answer.

<table>
<thead>
<tr>
<th>Item</th>
<th>Strongly agree</th>
<th>Agree</th>
<th>Disagree</th>
<th>Strongly disagree</th>
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<tbody>
<tr>
<td>23. I think my parents/guardians could pay for the vaccine.</td>
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<td>24. I would get the vaccine if it were for free.</td>
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<td>25. I would pay for the vaccine if I could.</td>
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<td>26. I would be embarrassed to ask my parents/guardians about vaccination.</td>
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<td>27. It's not necessary for me to get the vaccination.</td>
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<td>28. Vaccinating young people against HPV would encourage them to become sexually active.</td>
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<td>29. If I get the vaccination, it's not necessary for me to be protected against other sexual transmitted infections.</td>
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<td>30. Only sexually active women should receive the vaccine.</td>
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<td>31. My parents would not allow me to get the vaccine.</td>
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<td>32. I wish to get more information about HPV and HPV-vaccination.</td>
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</tbody>
</table>

Thank you for your participation! :)