Human Papillomavirus Vaccination Intention among Young Women in Chiang Mai, Thailand

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HPV is one of the most common causes of STD worldwide.

Risk factors of HPV infection includes

- Having first sexual intercourse at an early age
- Having multiple sexual partners
- Having sex with a partner who has had multiple sex partners
- Having vulnerable immune systems
HPV infection is considered as the greatest risk factor for developing cervical cancer.

HPV has multiple types, HPV 16 and 18 are commonly associated with dysplasia preceding the development of cervical cancers which are responsible for about 70% of all cervical cancer cases worldwide.
Cervical cancer is one of the leading causes of cancer deaths among women worldwide.

In Thailand, cervical cancer is the second most common cancer among women, with an age adjusted incidence range (29.2 per 100,000).

The incidence of cervical cancer in Thailand is relatively high comparing to other South East Asian countries and the world.
Figure 4: Incidence of cervical cancer compared to other cancers in women of all ages in Thailand

Annual crude incidence rate per 100,000
Thailand: Female (All ages)

Data sources:
Figure 6: Age-standardized incidence rates (ASR) of cervical cancer in countries of South-Eastern Asia

<table>
<thead>
<tr>
<th>Country</th>
<th>ASR (per 100,000 and year)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cambodia</td>
<td>27.4</td>
</tr>
<tr>
<td>Myanmar</td>
<td>26.4</td>
</tr>
<tr>
<td>Thailand</td>
<td>24.5</td>
</tr>
<tr>
<td>Laos</td>
<td>22.1</td>
</tr>
<tr>
<td>Malaysia</td>
<td>17.9</td>
</tr>
<tr>
<td>Indonesia</td>
<td>12.7</td>
</tr>
<tr>
<td>Philippines</td>
<td>11.7</td>
</tr>
<tr>
<td>Viet Nam</td>
<td>11.5</td>
</tr>
<tr>
<td>Brunei</td>
<td>11.2</td>
</tr>
<tr>
<td>Singapore</td>
<td>6.8</td>
</tr>
<tr>
<td>Timor-Leste*</td>
<td>No rates are available</td>
</tr>
</tbody>
</table>

Cervical cancer: Age-standardized incidence rate per 100,000 and year
World Standard. Female (All ages)

Rates per 100,000 women per year. ** No rates are available

Data sources:
IARC, Globocan 2008. Age-specific data from GLOBOCAN 2008 were obtained from IARC, personal communication.
For specific estimation methodology refer to http://globocan.iarc.fr/DataSources_and_methods.asp.
Figure 8: Age-specific incidence rates of cervical cancer in Thailand compared to estimates in South-Eastern Asia and the World

Rates per 100,000 women per year.
Data sources:
IARC, Globocan 2008. Age-specific data from GLOBOCAN 2008 were obtained from IARC, personal communication. For specific estimation methodology refer to http://globocan.iarc.fr/DataSource_and_methods.asp.
Annually 9,999 Thai women are diagnosed with cervical cancer and 5,216 will die from the disease.

73.8% of invasive cervical cancers in Thailand are attributed to HPVs 16 or 18.

The highest rates of HPV infection are found among sexually active adolescents and young adults under age 25.
Epidemiologic studies have estimated that 74% of annual HPV infections occur among young adults age 14-24 years.

Adolescents and young adults have biological needs that make them profoundly vulnerable to reproductive health problems.

Thailand has an adolescent and young adult population of 10.67 millions ages 15 to 24 years.
Thai adolescents have now become more sexually active, engaged in premarital sex, initiated sexual intercourse in their early age, encountered with unwanted pregnancies, and contracted STIs.
It is very crucial that women should participate in primary and secondary preventive measures.

Primary prevention of cervical cancer that is attributable to HPVs 16 and 18 is recently available through HPV vaccines.

Doctor recommends young women age 11-26 years before they initiate sexual intercourse to receive the HPV vaccine.
High acceptance of HPV vaccination or high interest in obtaining HPV vaccines has been reported among adolescents in many countries worldwide.

Little is known about HPV vaccine acceptability among Thai young adults.

One study was found, adolescents and young adults in Bangkok Thailand, 7 out of 299 students (2.3%) received HPV vaccines.
To date, little is known in Thailand about HPV-related knowledge and attitudes, and how these influence their HPV vaccine acceptability.
Objectives

1. To determine knowledge and attitudes of Thai young female adults regarding HPV, cervical cancer, and the intention to obtain the HPV vaccine
2. To predict the intention to obtain the HPV Vaccine
Expected Outcomes

Short-term
- Give health care providers important guidance on developing HPV and cervical cancer messages to adolescents and young adults
- Guide health care policy makers to implement program to prevent HPV infection in adolescents and young adults.

Long-term
- Reduce incidence rate of HPV infection and cervical cancer in Thailand
Design: cross sectional design

Population:
- Female students aged 18-24 years in Chiang Mai Thailand

Sample and sampling methods:
- Sampling- combination of convenience and snowball sampling
Approval from the institutional review board was obtained.

Contacted 4 universities to obtain student email list and permission to place survey website banners.

Send invitation email—weblink and website banners.

Interested students were linked directly from weblink and website banners.
Recruit more students using the snowball sampling.

- On the last page of web survey, students were encouraged to send the web survey link to other students.
- The study web-link banners were placed on a social network website, e.g., facebook and twitter.
Measures

1. Demographic characteristics
2. Health characteristics related to HPV and cervical cancer
3. Knowledge about HPV and cervical cancer
4. Attitudes toward HPV cervical cancer and vaccination
Demographic characteristics

- Age, religion, level of education, living status, parent’s household income, and marital status
Health Characteristics

- History of Pap smear screening practice and gynecological visit
- Risks of HPV infection
  - A number of questions asking sexual behavior
- HPV vaccination
- HPV vaccination intention
- Cues to actions
  - Getting recommendations to receive HPV vaccine
  - Family history of cervical cancer
Knowledge of HPV and cervical cancer

- 15 statements regarding HPV and cervical cancer
- Items were generated in Thai language by a comprehensive literature review and have been previously used in assessment of HPV and cervical cancer knowledge among Thai population.
- Scale was modified for use in this study.
1. HPV infection is contracted by sexual contact. (true)
2. People can transmit HPV to their partner(s) even if they have no signs of HPV infection. (true)
3. Having multiple sexual partners increases risk of HPV infections. (true)
4. Sex at an early age increases risk of HPV infection. (true)
5. Genital warts are caused by HPV infection. (true)
6. Most people with genital HPV have no visible signs or symptoms. (true)
7. HPV infection can be prevented by vaginal douching after intercourse. (false)
8. HPV infection can be treated by antibiotics. (false)
9. Smoking increases risk of cervical cancer. (true)
10. HPV infection can cause cervical cancer. (true)
11. Cervical cancer is commonly present with vaginal discharge or bleeding even in early stages of disease. (false)
12. Cervical cancer can possibly cause bleeding after sex. (true)
13. Pap smear is one of measures to prevent cervical cancer by detecting changes in the cervix early before they become cancerous. (true)
14. Pap smear is only indicated in women with vaginal discharge or bleeding. (false)
15. Unmarried women are not supposed to have the pap smear. (false)
Knowledge about HPV and Cervical Cancer Scale

- Response choices: true, false, or don’t know
- Scores range from 0 to 15—higher scores reflecting greater knowledge.
Thai-Human Papillomavirus Belief Scale (T-HPVBS)

- Developed for use in this study
- 12 items - Generated from literature review
- Health Belief Model Constructs
  - Perceived susceptibility of disease (2 items)
  - Perceived seriousness of disease (3 items)
  - Perceived benefits to HPV vaccination (3 items)
  - Perceived barriers to HPV vaccination (4 items)
Thai-Human Papillomavirus Belief Scale (T-HPVBS)

- Items were measured on a 4-point Likert scale ranging from strongly disagree to strongly agree.
- Responses were coded so that higher scores reflect stronger agreement with the statement.
1. I am at risk for contracting HPV.
   - [ ] Strongly disagree
   - [ ] Disagree
   - [ ] Agree
   - [ ] Strongly agree

2. I am at risk for getting cervical cancer.
   - [ ] Strongly disagree
   - [ ] Disagree
   - [ ] Agree
   - [ ] Strongly agree

3. Cervical cancer is a life-threatening disease.
   - [ ] Strongly disagree
   - [ ] Disagree
   - [ ] Agree
   - [ ] Strongly agree

4. If I have HPV infection, it would be disruptive to my health.
   - [ ] Strongly disagree
   - [ ] Disagree
   - [ ] Agree
   - [ ] Strongly agree

5. If I have cervical cancer, it would threaten a relationship with my boyfriend, husband, or partner.
   - [ ] Strongly disagree
   - [ ] Disagree
   - [ ] Agree
   - [ ] Strongly agree

6. Getting HPV vaccine will benefit my health.
   - [ ] Strongly disagree
   - [ ] Disagree
   - [ ] Agree
   - [ ] Strongly agree

7. HPV vaccine will protect people from getting cervical cancer.
   - [ ] Strongly disagree
   - [ ] Disagree
   - [ ] Agree
   - [ ] Strongly agree

8. The HPV vaccine will be effective in preventing HPV infection.
   - [ ] Strongly disagree
   - [ ] Disagree
   - [ ] Agree
   - [ ] Strongly agree

9. I am concerned that the HPV vaccine costs more than my parents or I can pay.
   - [ ] Strongly disagree
   - [ ] Disagree
   - [ ] Agree
   - [ ] Strongly agree

10. I think the HPV vaccine is unsafe.
    - [ ] Strongly disagree
    - [ ] Disagree
    - [ ] Agree
    - [ ] Strongly agree

11. It is hard to find a provider or clinic that has the vaccine available.
    - [ ] Strongly disagree
    - [ ] Disagree
    - [ ] Agree
    - [ ] Strongly agree

12. I feel embarrassed to get HPV vaccine because it's for a sexually transmitted infection.
    - [ ] Strongly disagree
    - [ ] Disagree
    - [ ] Agree
    - [ ] Strongly agree
Ten-point scale measuring intention to receive the HPV vaccine, which 0 indicates “no intention” and 10 indicates “strong intention”
Instrument Psychometric Properties

- **Validity (3 experts)**
  Content validity: Content Validity Index (CVI)

- **Reliability (Pilot in 30 students)**
  Stability: Correlation coefficient-2 week duration
  Internal consistency: Kuder-Richardson Formula 20 (KR-20) and Chronbach’s alpha coefficients
Instrument Psychometric Properties

- **Validity (3 experts)**
  - **Content validity**: Content Validity Index (CVI)
    - Knowledge of HPV and cervical cancer: 1.00
    - T-HPVBS: 0.97

- **Reliability**
  - **Stability**: Correlation coefficient-2
    - Knowledge of HPV and cervical cancer: 0.75
    - T-HPVBS: 0.71
  - **Internal consistency**: Chronbach’s alpha coefficients
    - Knowledge of HPV and cervical cancer: 0.86
    - T-HPVBS: 0.76
    - Perceived susceptibility subscale: 0.86
    - Perceived seriousness subscale: 0.78
    - Perceived benefits subscale: 0.82
    - Perceived barriers subscale: 0.59
A total of 391 young women participated in the study.

Of the 391 participants, 5 (1.2%) reported having received at least one shot of HPV vaccine.

These were excluded from further analysis, resulting in a final sample of 386 young women in this study.
### Demographic characteristics

<table>
<thead>
<tr>
<th></th>
<th>%</th>
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<tbody>
<tr>
<td><strong>Age</strong></td>
<td>20.63 Yrs</td>
</tr>
<tr>
<td></td>
<td>(SD 1.46; range 18–24)</td>
</tr>
<tr>
<td><strong>Single</strong></td>
<td>93.8%</td>
</tr>
<tr>
<td><strong>Buddhist</strong></td>
<td>96.9%</td>
</tr>
<tr>
<td><strong>Attending colleges/universities</strong></td>
<td>90.2%</td>
</tr>
<tr>
<td><strong>Parents’ monthly household income below 30,000 baht (approximately $1,000 US) per month.</strong></td>
<td>65.3%</td>
</tr>
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</table>
# Health Characteristics

<table>
<thead>
<tr>
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<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Having prior sexual activity</td>
<td>38.3</td>
</tr>
<tr>
<td>The mean age of first sexual intercourse</td>
<td>18.19 years (SD 1.91; range 13–24)</td>
</tr>
<tr>
<td>Number of partners in their lifetime</td>
<td></td>
</tr>
<tr>
<td>One to two partners</td>
<td>62.8</td>
</tr>
<tr>
<td>More than three partners</td>
<td>37.2</td>
</tr>
<tr>
<td>Condom use when having sex</td>
<td></td>
</tr>
<tr>
<td>Regularly</td>
<td>19.6</td>
</tr>
<tr>
<td>Never or rarely</td>
<td>52.7</td>
</tr>
<tr>
<td>Received sex education</td>
<td>97.4</td>
</tr>
<tr>
<td></td>
<td>%</td>
</tr>
<tr>
<td>--------------------------</td>
<td>----</td>
</tr>
<tr>
<td>Heard of HPV vaccines</td>
<td>45.9</td>
</tr>
<tr>
<td>Educational institutions</td>
<td>54.8</td>
</tr>
<tr>
<td>Internet</td>
<td>53.7</td>
</tr>
<tr>
<td>Public media</td>
<td>47.5</td>
</tr>
<tr>
<td>Health care providers</td>
<td>41.2</td>
</tr>
<tr>
<td>Brochures/posters</td>
<td>38.4</td>
</tr>
<tr>
<td>Family/friends</td>
<td>28.8</td>
</tr>
<tr>
<td>Received a recommendation from others</td>
<td>15.8</td>
</tr>
<tr>
<td>Health care providers</td>
<td>62.3</td>
</tr>
<tr>
<td>Friends</td>
<td>54.1</td>
</tr>
<tr>
<td>Someone they knew</td>
<td>39.3</td>
</tr>
<tr>
<td>Parents</td>
<td>31.1</td>
</tr>
</tbody>
</table>
The mean score of vaccination intention was 4.49 (SD, 3.39; range, 0–10). Using the mean score as the cutoff point, vaccination intention was categorized:

- High intention (n = 218; 56.5%)
- Low intention (n = 168, 43.5%)
The mean knowledge score regarding HPV and cervical cancer was 7.89 (SD, 3.99; range, 0–15). Eight respondents (2.1%) scored full marks, while 16 (4.3%) scored zero.

Older participants were more likely to have better knowledge about HPV and cervical cancer than younger women ($r = 0.28, p < 0.001$).

Participants who had heard of HPV vaccines had better knowledge about HPV and cervical cancer (mean, 9.92; SD, 3.11) than those who had never heard of HPV vaccines (mean, 6.11; SD, 3.83), $t(369.73) = -10.60, p < 0.001$. 
<table>
<thead>
<tr>
<th>Variables</th>
<th>SE</th>
<th>OR</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ever had sex</td>
<td>0.26</td>
<td>1.58</td>
<td>0.95–2.63</td>
</tr>
<tr>
<td>Ever heard about HPV vaccine</td>
<td>0.27</td>
<td>0.86</td>
<td>0.50–1.51</td>
</tr>
<tr>
<td>Received suggestion to get an HPV vaccination</td>
<td>0.38</td>
<td>2.72**</td>
<td>1.27–5.80</td>
</tr>
<tr>
<td>Knowledge of HPV and cervical cancer</td>
<td>0.03</td>
<td>1.03</td>
<td>0.95–1.09</td>
</tr>
<tr>
<td>Perceived susceptibility</td>
<td>0.09</td>
<td>1.48**</td>
<td>1.24–1.76</td>
</tr>
<tr>
<td>Perceived seriousness</td>
<td>0.08</td>
<td>0.87</td>
<td>0.73–1.02</td>
</tr>
<tr>
<td>Perceived benefits</td>
<td>0.09</td>
<td>1.44**</td>
<td>1.19–1.74</td>
</tr>
<tr>
<td>Perceived barriers</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vaccine cost</td>
<td>0.16</td>
<td>0.80</td>
<td>0.57–1.11</td>
</tr>
<tr>
<td>Vaccine safety</td>
<td>0.20</td>
<td>0.98</td>
<td>0.65–1.47</td>
</tr>
<tr>
<td>Availability of HPV vaccine clinics</td>
<td>0.20</td>
<td>1.19</td>
<td>0.80–1.76</td>
</tr>
<tr>
<td>Feel embarrassed to get an HPV vaccination</td>
<td>0.13</td>
<td>0.76*</td>
<td>0.57–0.99</td>
</tr>
</tbody>
</table>
Knowledge of HPV and cervical cancer among Thai young women in this study was moderate.

Half of the participants reported that they had not previously heard of the HPV vaccine.

Findings from this study have important implications for health education and policy in relation to HPV and vaccination.

Sexual health education curricula provide adequate public information on the HPV vaccine through various media channels.
Recommendation from significant others was a significant positive predictor of HPV vaccination intention.

Health care providers were the most commonly identified HPV vaccine recommenders.

Supported by Moreira et al. 2006a; Brewer and Fazekas 2007; Chan et al. 2007

This finding suggests the crucial role of health care providers and significant others when communicating with adolescents about the HPV vaccine.
Young women who perceived their susceptibility or risk of getting an HPV infection and cervical cancer were more likely to receive the HPV vaccine.

Supported by Di Giuseppe et al. 2008; Gerend and Barley 2009; Hsu et al. 2009

The perceived benefits of HPV vaccination was also a significant predictor of HPV vaccination intention.

Supported by Di Giuseppe et al. 2008; Gerend and Barley 2009

This finding suggests evidence-based interventions for maximizing perceived susceptibility to HPV and the perceived benefits of immunization against HPV.
Perceived embarrassment over receiving the HPV vaccine was negatively associated with likelihood of getting the vaccine.

This finding revealed a significant social stigma surrounding HPV vaccination among Thai young women.

Similar findings have been observed in other Asian cultures (Wong 2008; Wong 2010).

Culture might play an important role in the adoption of the HPV vaccine in Thai society, where premarital sex is considered unacceptable and public discussion of sexuality is inappropriate.