

Improved Knowledge about HPV in Thai Women after Educational Intervention

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Abstract

The aim of this study was to evaluate whether the awareness and knowledge about human papillomavirus (HPV) and its association with human diseases could be improved after an educational intervention was given in 2 groups of Thai women. The participants included 370 and 348 participants in the ≤ 25 -year-old group and the >25 -year-old group, respectively. After the questionnaire composed of 15 knowledge and 2 awareness questions had been given to each participant, a knowledge brochure was distributed, then the knowledge was reassessed. Paired-T test was used to evaluate the knowledge before and after the intervention. Mean knowledge scores were increased in the ≤ 25 -year-old (4.35 ± 4.39 to 12.32 ± 3.1) and the >25 -year-old (4.82 ± 4.33 to 13.22 ± 2.35) groups. Statistically significant difference was found in both groups. The >25 -year-old group had significantly higher mean knowledge score after the intervention than that of the ≤ 25 -year-old group (13.22 ± 2.35 VS 12.32 ± 3.1). Most of the participants had the improved knowledge about the characteristics and pathogenesis of HPV. If proper educational intervention was given, the awareness and knowledge about HPV and HPV vaccines could be improved among female Thai participants. Therefore, giving knowledge about HPV should be considered as a public health strategy in health promotion for all Thai women.

Keywords: Educational intervention, Human papilloma virus, Knowledge, Thai

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Introduction

HPV infection is considered to be a sexually transmitted disease. It can be spread from one person to another person through anal, vaginal and oral sex or

through skin-to-skin contact during sexual activity.^{1,2} It has been found that during 2013–2014, the prevalence of any and high-risk genital HPV in women aged 18–69

years was 39.9 % and 20.4 %, respectively.³ Low-risk HPV infection can lead to wart-like lesions of the skin, anogenital region and oral mucosa. High-risk HPV infection can lead to cervical cancer. HPVs also contribute to the emergence of oral benign and malignant lesions.⁴ Oral potentially malignant disorders (OPMD) including oral leukoplakia, erythroplakia and erythroleukoplakia are also associated with the presence of HPV.⁵ Studies have reported the prevalence rates of HPV-associated OPMD to range from 0 % to 85 %. HPVs 16 and 18 have been identified in leukoplakia.⁵

Knowledge and awareness of human papillomavirus and its association with benign and malignant lesions was investigated in several groups of population especially in Asia. A previous study in Thailand by Charakorn *et al.* demonstrated that 40.1 % of Thai women aged 17-72 years old never heard about HPV and only 38.5 % heard about HPV vaccines.⁶ Since there were few reports regarding knowledge and awareness of HPV and its association with human diseases among women aged 12 and above in Thailand, therefore, the objective of this study was to evaluate the knowledge and awareness of HPV and its association with human diseases in 2 groups of Thai women including the women aged equal to or younger than 25 years old (≤ 25 -year-old group) and the women older than 25 years old (> 25 -year-old group).

Materials and Methods

Ethical consideration

The study protocol was approved by the Faculty of Dentistry/Faculty of Pharmacy Mahidol University Institutional Review Board (MU-DT/PY-IRB2016-DT028).

Study populations

This study recruited convenience samples to participate in this survey. All participants were Bangkok residents. These participants included students in a high school, patients who sought treatment at the Faculty of Dentistry, Mahidol University and some participants from some public locations such as the Bangkok Mass Transit System (BTS). The study subjects were divided into 2

groups according to the ages of the participants in the educational and working fields, 370 women in the < 25 -year-old group (aged between 12-25 years old) and 348 women in the > 25 -year-old group (aged 26 to 70 years old). Inclusion criteria were participants who were Thai women who lived in Bangkok and could read and write Thai (if the participants could not read, but they wanted to take part in this study, the researcher read all the questions and wrote all the answers for them). Exclusion criteria were participants who had a problem in communication or disagreed to participate in this study.

Data collection

The questions were separated into 3 sections including; part 1 participant's demographic data; part 2 awareness questions about HPV and HPV vaccines and how they can get the information regarding knowledge about HPV and; part 3 fifteen knowledge questions about HPV infection, HPV and its association with human diseases and HPV vaccines (Table 1). The participants options to answer were yes, no or don't know. The content validity of the test was evaluated by three selected experts. All questions were agreed upon by the experts with the Index of Item Objective Congruence (IOC) ≥ 0.5 .⁷ Cronbach's alpha of 0.824 assessed the internal consistency reliability of the test. Study design was represented in the following diagram (Fig. 1).

Data analysis

Data were analyzed using the Statistical Package for the Social Sciences (SPSS) for Window Version 18.0 (SPSS Inc., Chicago, IL, USA; licensed for Mahidol University) with statistical significance of $p < 0.05$. Numbers, percentage, mean and SD were used to describe participants' characteristics and awareness of HPV and HPV vaccines. Percentage was used to describe proportion of participants who answered correctly in each knowledge question. *T*-test was used to compare the mean knowledge scores between the 2 age groups and paired *t*-test was used to compare the mean knowledge scores before and after educational intervention in each group. Chi-square test was used to determine the differences in the variables between participants.

Table 1 Fifteen knowledge questions used in the study.

| Statement (correct answer) |
|---|
| 1. HPV can be transmitted through oral, vaginal and anal sexual conduct. (Yes) |
| 2. Men will not have any opportunities to be infected with HPV. (No) |
| 3. Women can be infected with HPV if they have sex when they were young. (Yes) |
| 4. Having multiple partners increases the risk of getting HPV. (Yes) |
| 5. Use of condoms during sexual intercourse can reduce the risk of HPV infection. (Yes) |
| 6. Persons who are infected cannot eradicate HPV and will finally have cancer. (No) |
| 7. HPV can lead to genital warts. (Yes) |
| 8. HPV is the virus that can cause cervical cancer. (Yes) |
| 9. HPV can cause oral cancers. (Yes) |
| 10. HPV can cause other oral lesions which are not oral cancers. (Yes) |
| 11. The HPV vaccine can prevent only some types of HPVs. (Yes) |
| 12. HPV vaccines will be effective after the first sexual intercourse. (No) |
| 13. HPV vaccines are effective in any age groups. (No) |
| 14. HPV vaccines can eradicate HPV in persons who are already infected. (No) |
| 15. Injection of HPV vaccine only once will be sufficient for the protection of HPV infection. (No) |

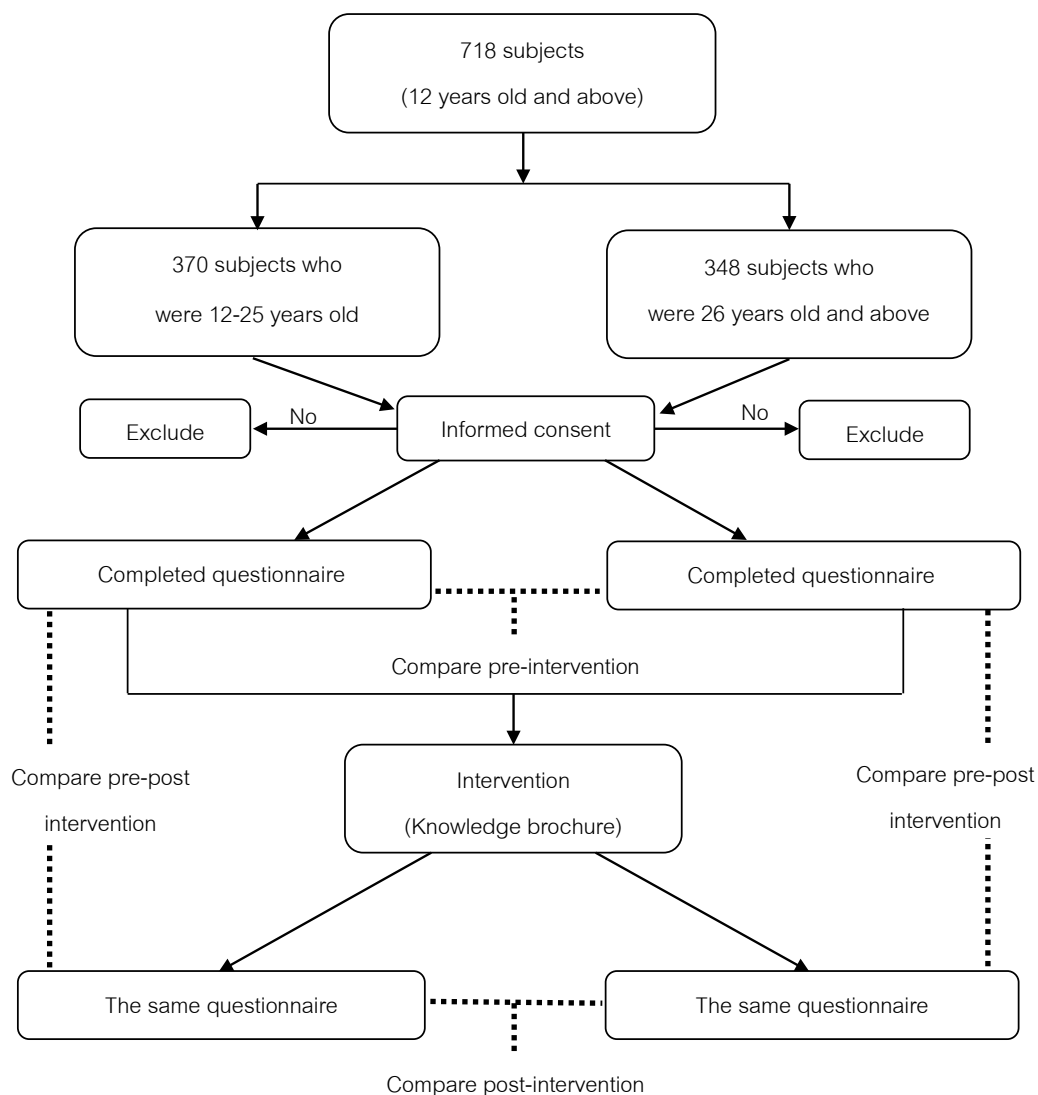


Figure 1 Study design diagram

Results

Participant characteristics

The demographic data of the participants were shown in Table 2. The mean age in the ≤ 25 -year-old group was 18.1 years old (SD=3.38). Most participants in the ≤ 25 -year-old group were high school students (66.76 %) and single (99.19 %). On the other hand, the mean ages in the > 25 -year-old group was 40.5 years old (SD=11.33). Most of them graduated from universities with Bachelor's degree (58.62 %) and were single (56.32 %).

Regarding history of sexual debut, 36 (9.73 %) and 204 (58.62 %) of the participants from the ≤ 25 -year-old and > 25 -year-old reported that they had had sex before (Table 2). Most of the participants in both groups never received HPV vaccine and most of them in the ≤ 25 -year-old group never undergone a pap smear. Approximately half of the participants in the > 25 -year-old group used to undergo pap-smear in the past.

Table 2 Demographic data of the participants.

| Characteristics | ≤ 25 -year-old group (n=370) | | > 25 -year-old group (n=348) | |
|------------------------------------|--------------------------------------|---------|-----------------------------------|---------|
| | Number | (%) | Number | (%) |
| Age (Years) | | | | |
| 12-20 | 280 | (75.68) | | |
| 21-25 | 90 | (24.32) | | |
| 26-30 | | | 83 | (23.85) |
| 31-40 | | | 121 | (34.77) |
| 41-50 | | | 61 | (17.53) |
| 51-60 | | | 58 | (16.67) |
| 61-70 | | | 25 | (7.18) |
| Education attainment | | | | |
| Primary school | 1 | (0.27) | 4 | (1.15) |
| Secondary school | 247 | (66.76) | 12 | (3.45) |
| Diploma | 9 | (2.43) | 24 | (6.90) |
| Bachelor's degree | 103 | (27.84) | 204 | (58.62) |
| Higher than Bachelor's degree | 10 | (2.70) | 104 | (29.88) |
| Marital status | | | | |
| Single | 367 | (99.19) | 196 | (56.32) |
| Married | 2 | (0.54) | 127 | (36.50) |
| Divorced/Separated/Widowed | 1 | (0.27) | 25 | (7.18) |
| Have you ever: | | | | |
| Had sexual debut | | | | |
| Yes | 36 | (9.73) | 204 | (58.62) |
| No | 319 | (86.22) | 80 | (22.99) |
| Did not answer | 15 | (4.05) | 64 | (18.39) |
| Received HPV vaccines | | | | |
| Yes | 71 | (19.19) | 44 | (12.64) |
| No | 243 | (65.68) | 291 | (83.62) |
| Not sure | 56 | (15.13) | 13 | (3.74) |
| Undergone pap smear testing | | | | |
| Yes | 8 | (2.16) | 186 | (53.45) |
| No | 307 | (82.97) | 137 | (39.37) |
| Not sure | 55 | (14.87) | 25 | (7.18) |

Awareness about HPV and HPV vaccines

Awareness about HPV and HPV vaccines was acquired by assessing participants' responses to the questionnaire. Table 3 demonstrated the number and percentage of participants who heard about HPV and HPV vaccines. Approximately 16 % from the ≤25-year-old group and 40 % from the >25-year-old group heard about HPV. Approximately 29 % from the ≤25-year-old

group and 54 % from the >25-year-old group heard about HPV vaccines. There was significant difference of both awareness about HPV and HPV vaccines between the 2 age groups ($P < 0.001$). More than half of the participants in the ≤25-year-old group never heard about HPV and HPV vaccines whereas less than half of the >25-year-old group never heard about them.

Table 3 Awareness about HPV and HPV vaccines.

| Statement | Total (N=718) | | | ≤25-year-old (1) group (n=370) | | | ≤25-year-old (1) group (n=370) | | | Chi-Square (1)-(2) |
|--|------------------|---------------|----------------------|-----------------------------------|---------------|----------------------|-----------------------------------|---------------|----------------------|-----------------------|
| | Yes (%) | No (%) | Don't Know (%) | Yes (%) | No (%) | Don't Know (%) | Yes (%) | No (%) | Don't Know (%) | |
| 1. Have you ever heard of the human papillomavirus (HPV) before? | 198 (27.6) | 383 (53.3) | 137 (19.1) | 59 (15.9) | 241 (65.1) | 70 (19) | 139 (39.9) | 142 (40.8) | 67 (19.3) | < 0.001* |
| 2. Have you ever heard of the HPV vaccines before? | 295 (41.1) | 320 (44.6) | 103 (14.3) | 107 (28.9) | 203 (54.9) | 60 (16.2) | 188 (54) | 117 (33.6) | 43 (12.4) | < 0.001* |

* Significant difference

Knowledge about HPV

Knowledge about HPV, HPV infection and its association with human diseases were assessed in 718 participants. Table 4 demonstrated that participants in both the ≤25-year-old and the >25-year-old groups had very little knowledge about HPV and HPV vaccine before the intervention. Similar mean knowledge scores in the ≤25-year-old (4.35 ± 4.39) and the >25-year-old (4.82 ± 4.33) groups were observed. After educational

intervention was given, the mean knowledge scores were increased significantly in both groups ($p < 0.001$). In addition, the >25- year-old group had significantly higher mean knowledge score compared to that of the ≤25-year-old group. Most of the participants did not know whether HPV can cause oral cancer or not. Moreover, they did not know whether HPV can cause other oral lesions which are not oral cancers (Table 5).

Table 4 Mean knowledge scores in the ≤25-year-old and the >25-year-old groups before and after the intervention.

| | Total (N=718) Mean±SD | ≤25-year-old group (n=370) Mean±SD | >25-year-old group (n=348) Mean±SD | p-values (≤25-year-old VS >25-year-old groups) |
|--|-----------------------------|--|--|--|
| Before | 4.58±4.36 | 4.35±4.39 | 4.82±4.33 | 0.148 |
| After | 12.76±2.80 | 12.32±3.1 | 13.22±2.35 | <0.001* |
| p-values (before vs after intervention) | <0.001* | <0.001* | <0.001* | |

* Significant difference

Table 5 Participants who answered correct answers regarding the role of HPV in causing oral lesions.

| Statement (correct answer) | Total (N=718) | | | ≤25-year-old group (n=370) | | | >25-year-old group (n=348) | | |
|---|------------------|--------------|-------------------|-------------------------------|--------------|-------------------|-------------------------------|--------------|-------------------|
| | Yes (%) | No (%) | Don't Know (%) | Yes (%) | No (%) | Don't Know (%) | Yes (%) | No (%) | Don't Know (%) |
| 9. HPV can cause oral cancers. (Yes) | | | | | | | | | |
| Before intervention | 151 (21.03) | 33 (4.60) | 534 (74.37) | 91 (24.60) | 11 (2.97) | 268 (72.43) | 60 (17.24) | 22 (6.32) | 266 (76.44) |
| After intervention | 654 (91.09) | 26 (3.62) | 38 (5.29) | 327 (88.38) | 16 (4.32) | 27 (7.30) | 327 (93.97) | 10 (2.87) | 11 (3.16) |
| 10. HPV can cause other oral lesions which are not oral cancers. (Yes) | | | | | | | | | |
| Before intervention | 100 (13.93) | 38 (5.29) | 580 (80.78) | 51 (13.78) | 27 (7.30) | 292 (78.92) | 49 (14.08) | 11 (3.16) | 288 (82.76) |
| After intervention | 571 (79.53) | 61 (8.49) | 86 (11.98) | 267 (72.16) | 43 (11.6) | 60 (16.22) | 304 (87.36) | 18 (5.17) | 26 (7.47) |

Discussion

We conducted this study to investigate the knowledge and awareness of HPV, HPV infection and HPV vaccines in a group of Thai women residing in Bangkok. We separated these participants into 2 groups since we would like to know whether teenagers and adolescents in our study knew about HPV and HPV vaccine. In addition, we added an intervention by having our participants read the brochure about HPV and its association with human diseases and the prevention of HPV infection then asked the participants to answer these questions again. Hence, we knew that the poor knowledge and awareness were from the lack of information and not from the participants' ignorance.

When the awareness of HPV and HPV vaccines was investigated, the awareness was low in the ≤25-year-old group, but was moderate in the >25-year-old group (Table 3). Despite the high prevalence of HPV, numerous studies have shown consistently that awareness of this disease is limited. Overall, 27.6 % and 41.1 % of the women in our study heard about HPV and HPV vaccines respectively (Table 3). Young participants tended to know less about HPV and HPV vaccines with 15.9 % and

28.9 %, respectively compared to older participants with 39.9 % and 54 % knowing about HPV and HPV vaccines. This result was the same as many studies in Europe and Asia. A systematic review in Europe reported that the awareness of HPV among adolescents aged 13-20 years was moderately low ranging from 5.4-66 % and the awareness of HPV vaccine was very low as well.⁸

Knowledge about HPV, HPV infection and its association with human diseases was assessed in 718 participants. Table 4 demonstrated that participants in both the ≤25-year-old and the >25-year-old groups had very little knowledge about HPV and HPV vaccine before the intervention. Similar mean knowledge scores in the ≤25-year-old (4.35 ± 4.39) and the >25-year-old (4.82 ± 4.33) groups were observed. After the intervention by giving a brochure of HPV and HPV vaccine information, the >25-year-old group had significantly higher mean knowledge score than that of the ≤25-year-old group (13.22 ± 2.35 VS 12.32 ± 3.1). In addition, statistically significant difference was found between before and after the intervention in both groups. Most of the participants had improved knowledge about the characteristics of

HPV and how the HPV infected human. Interestingly, when the questions regarding the knowledge about the role of HPV in causing oral diseases were considered, both participants from the ≤ 25 -year-old and the >25 -year-old groups did not know that HPV can cause oral diseases including oral cancers (Table 5). Nevertheless, after educational intervention, the knowledge was improved. Therefore, dentists, as one of the health care professionals, should give knowledge to their patients regarding the role of HPV in causing oral diseases.

The awareness of HPV in our participants (27.6 %) were lower compared to the previous studies conducted in Thailand. The study in 2011 by Charakorn et al. reported that approximately 40 % of Thai women attending the gynecology clinic aged 17-72 years old had heard about HPV.⁶ However, The HPV vaccine awareness was similar in our study (41.1 %) compared to the study conducted by Charakorn (40 %). In another study in 2012, Juntasopeepun et al. conducted a study regarding the knowledge of HPV in the university students aged 18-25 years old. Fifteen knowledge questions were used to evaluate the knowledge of HPV and its association with human diseases and the number of questions was the same as in our study. The mean knowledge score was 7.5 ± 3.8 out of 15.⁹ In comparison to the participants in our ≤ 25 -year-old group, the score was only 4.35 ± 4.39 out of 15⁹ which was lower than that study.

Conclusion

Awareness of HPV is poor in both the ≤ 25 -year-old and the >25 -year-old groups. Awareness of HPV vaccine is higher in the >25 -year-old group compared to that of the ≤ 25 -year-old group. Knowledge about HPV, HPV infection and its association with human diseases is poor in both groups. Only few participants know that HPV

can cause benign and malignant oral lesions. After the information was given to the participants, higher knowledge scores were observed. This suggests that although these women have little knowledge about HPV and HPV vaccines, gaining more information may help them to understand more about these viruses. Public awareness and knowledge about HPV and HPV vaccine should be given to Thai women for a better prevention of HPV infection.

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