KNOWLEDGE AND ATTITUDE ABOUT *HPV* VACCINE AMONG THE 4TH YEAR FEMALE NURSING STUDENTS AT HANOI MEDICAL UNIVERSITY

Nguyen Van Dang[1,2,✉], Nguyen Thi Nam Phuong[1]

[1]Hanoi Medical University

[2]Vietnam National Cancer Hospital

Vaccines against HPV have been found to be the most effective known method in preventing cervical cancer. University students and young adults have a high prevalence of genital HPV infection because of their risky sexual behavior, lack of knowledge of HPV infection, HPV vaccination and misconception about susceptibility. A cross-sectional descriptive research was conducted to assess knowledge, attitudes about HPV vaccine among 120 fourth - year female nursing students at Hanoi Medical University in 2023. The majority (75.8%) of students had good knowledge. Students who had never been in a relationship had worse knowledge of HPV vaccine than other students who have been or had been in a relationship. Students with income had better knowledge of HPV vaccine than students with no income (p < 0.05). The majority (66.7%) of students had a positive attitude With Kinh people had more positive attitude towards HPV vaccine (p < 0.05). Research showed that most of the 4th year female nursing students at Hanoi Medical University had good knowledge and a positive attitude towards the HPV vaccine. There was a significant association between knowledge of HPV and factors such as income, and relationship status. There was a significant association between attitudes and ethnicity.

Keywords: Knowledge, attitude, *HPV* vaccine.

I. INTRODUCTION

Worldwide, cervical cancer is one of the most common cancers in women with an estimated 604,127 new cases reported in 2020.[1] According to GLOBOCAN statistics in 2020, Vietnam has about 4,000 new cases of cervical cancer each year, with more than 2,000 deaths. The new incidence rate of cervical cancer in Vietnam in 2020 was 6.6 per 100,000 women, accounting for 2.3% of all cancers. The death rate was 3.4 per 100,000 people. Cervical cancer was the 4th most common malignant disease in Vietnamese women.[2] This high incidence was attributed to paucity of and inadequacy of screening programs as well as the unawareness of the disease in developing countries.[3]

Cervical cancer is by far the most common *HPV*-related disease. About 99.7% of cervical cancer cases are caused by persistent genital high-risk *Human papillomavirus* (*HPV*) infection.[4] Infections with *HPV* are mostly seen in young, sexually active females, with the highest prevalence in females under 25 years old. Commonly females are infected with human papillomavirus at the age of 20 years old.

Currently, vaccines against *HPV* have been found to be the most effective known method in preventing cervical cancer among women who have not previously been exposed to *HPV*.

Corresponding author: Nguyen Van Dang
Hanoi Medical University
Email: nguyenvandang@hmu.edu.vn
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However, several studies have found that early detection is disrupted by poor knowledge, incorrect behaviors and beliefs related to cervical cancer screening which may have an important impact on the women's decision to practice preventive measures against cancer of the cervix.[5]

University students and young adults have a high prevalence of genital *HPV* infection because of their risky sexual behavior, lack of knowledge of *HPV* infection and *HPV*-related diseases, and misconception about susceptibility. Studies conducted among university and college students had shown that the awareness of genital *HPV* infection ranges from 13% to 78%, while the awareness of the *HPV* vaccines ranges from 10% to 87%.[6] Female nursing students were also at risk, so being fully equipped with knowledge, building the right attitude and promoting appropriate behavior would help improve the quality of medical staff. Medical students in the future will become an example for the community. A survey of 1083 ethnically diverse Malaysian female students attending a public university located in Kuala Lumpur, Malaysia by Li Ping Wong et al. showed that for many respondents, this was their first exposure to information about *HPV* and *HPV* infection. Of the total participants, 21.7% (95% CI: 17.9 - 24.1%) had heard of *HPV*, and only 10.3% (95% CI: 7.7 - 12.3%) had heard of the *HPV* vaccine. Of those that had heard of the vaccine, the majority acquired knowledge about the vaccine from newspapers (49.3%), followed by friends (31.3%) and other public media (25.4% magazines, 20.9% television and 6.0% radio). Only 1.5% learned about the *HPV* vaccine from health care professionals. Participants of 21 years of age or older were more likely than younger participants to have heard of the *HPV* vaccine.[7] To date, there is limited published literature about this issue in Vietnam, so additional research is necessary. The purpose of this study was to evaluate the knowledge and attitudes toward *HPV* vaccination and cervical cancer of a sample of the fourth - year female nursing students at Hanoi Medical University in 2023.

II. MATERIALS AND METHODS

1. Subjects

120 fourth - year female nursing students at Hanoi Medical University participating to interviews from May to October 2023.

Inclusion criteria

4th year female nursing students, Hanoi Medical University; Students consented to be interviewed and agreed to participate in the study.

Exclusion criteria

The student with disabilities who cannot answer the questions; Students who provided incomplete answers to questionnaire.

2. Methods

Research design

A Cross-sectional descriptive study was selected.

Sample size and sampling

Convenient sampling technique was applied. The study selected 4th years female nursing students at Hanoi Medical University. There were 130 students who participated and completed the survey. Data from 10 participants were invalidated due to missing information. Therefore, the sample number was 120 participants.

Variables and measurement

Overall characteristics

Overall characteristics were collected from students, including ethnicity (Kinh and other), major (Advanced Program of Nursing and

Bachelor Nursing Program), relationship status (used to be or have been in a relationship, or never been in a relationship), monthly income (yes and no).

Knowledge, attitude about HPV vaccine instrument

This study used the available questionnaire about knowledge and attitude about the *HPV* vaccine composed of 6 items and, in each question, the correct answer will be given 1 point, and the wrong answer will be given 0 points. Finally, the student's knowledge will be calculated from the total score of all questions.

Knowledge about cervical cancer vaccines includes variables:

• Have heard of 3 types of cervical cancer vaccines

• Are there any reactions or side effects from *HPV* vaccination.

• Side effects may occur with cervical cancer vaccination.

• Cervical cancer vaccination will benefit future health.

• Cervical cancer vaccination for women at high risk.

• This vaccine is effective in preventing cervical cancer.

Attitude about cervical cancer vaccines includes variables:

• The price of the *HPV* vaccine is an obstacle for me/my family.

• I would be willing to get the *HPV* vaccine if I knew other people were getting them.

• I'm concerned that my family and friends will think I'm sexually active if I get the *HPV* vaccine.

• I'm worried about the side effects of the vaccine.

• I believe that the *HPV* vaccine will be very effective in preventing cervical cancer.

• I believe that the *HPV* vaccine will be very effective in preventing *HPV* infection.

The dependent variable is knowledge (good/not good) and attitude (positive/negative). The maximum total knowledge score is 6 points. Assessment of knowledge and attitude about cervical cancer vaccines is achieved if the total score is 3 or more (≥ 50% of the total score).

Data collection and analysis

Data collection was conducted using an online survey. We entered the overview of the project and the questionnaires on Google Forms then we re-examined the questionnaire. Subsequently, we sent this link to the survey to the monitors of two nursing classes, which continued to be sent to the 4th year female nursing student. The participants' submission of their completed surveys also indicated their consent to participate in the study. At the end of the survey period, the members of the group checked the quality of the information obtained, ensuring that it was sufficient and complied with the requirements.

Data analysis was done by using SPSS software version 22.0.

3. Research ethics

This study was a non-interventional research. Human rights and privacy were protected. All subjects in the study participated voluntary. The human right of the study subjects were protected as they had full knowledge about the research objectives and volunteered to participate. The data was analyzed and presented anonymously.

III. RESULTS

1. General characteristic

In terms of ethnicity, Kinh people represented approximately 85.8%. The number of students in the formal training system accounted for nearly 80%. In term of relationship status, most of the participants (40.8%) were in a romantic

relationship, 26.7% had been in a relationship and 32.5% never been in a romantic relationship. 70% of the students had no monthly income. 96.7% of the participants had heard of *HPV*. Most participants acquired information about *HPV* on the Internet (25.3%), from doctor, nurse or other medical professional (23.6%) and other sources 1.7%.

Table 1. General characteristic of participants

Variables	n (n = 120)	%
Ethnic group		
Kinh	103	85.8
Other	17	14.2
Type of training		
Advanced Program	25	20.8
Regular Program	95	79.2
Relationship status		
Ever been in a relationship	32	26.7
Being in a romantic relationship	49	40.8
Never been in a romantic relationship	39	32.5
Monthly income		
Yes	36	30
No	84	70
Heard about HPV		
Yes	116	96.7
No	4	3.3
Sources of information about HPV		
Doctor, nurse or another medical professional	83	23.6
Family or friends	70	19.9
Newspaper or magazine	53	15.1
TV or radio	51	14.5
Internet	89	25.3
Other	6	1.7

2. Knowledge and factors affecting knowledge about *HPV* vaccine

Study revealed that the majority (75.8%) of the 4th year female nursing students at Hanoi Medical University had good knowledge. And 24.2% of them did not have good knowledge.

Table 2. Association between factors and knowledge on *HPV* Vaccine

Variables	Total	General Knowledge		p-value
		Good knowledge (n = 91)	Not good knowledge (n = 29)	
Ethnic group (n, %)				
Kinh	103 (85.8)	80 (87.9)	23 (79.3)	0.247[a]
Other	17 (14.2)	11 (12.1)	6 (20.7)	
Type of training (n, %)				
Advanced Program	25 (20.8)	17 (18.7)	8 (27.6)	0.304[a]
Regular Program	95 (79.2)	74 (81.3)	21 (72.4)	
Relationship status (n, %)				
Ever been in a relationship	32 (26.7)	29 (31.9)	3 (10.3)	*0.006*[a]
Being in a romantic relationship	49 (40.8)	39 (42.9)	10 (34.5)	
Never been in a romantic relationship	39 (32.5)	23 (25.3)	16 (55.2)	
Monthly income (n, %)				
Yes	36 (30.0)	32 (35.2)	4 (13.8)	*0.028*[a]
No	84 (70.0)	59 (64.8)	25 (86.2)	
Heard about HPV (n, %)				
Yes	116 (96.7)	89 (97.8)	27 (93.1)	0.226[b]
No	4 (3.3)	2 (2.2)	2 (6.9)	

[a]*The p-value was calculated by using Chi-square test*

[b]*The p-value was calculated by using Fisher's exact test*

Among students with no good knowledge of *HPV* vaccine, students who had never been in a relationship had worse knowledge of *HPV* vaccine than other students who have been or had been in a relationship which was statistically significant ($p < 0.05$). The students with income have better knowledge of *HPV* vaccine than students with no income, which was statistically significant ($p < 0.05$). Kinh people had better knowledge about *HPV* vaccine than ethnic group (87.9% compared to 12.1%), but these were not statistically significant. Similarly, there was no association between knowledge and other general variables, such as type of training, heard about *HPV*. The students who heard about *HPV* have better knowledge than other students, but these are not statistically significant.

3. Attitude and factors affecting attitude about *HPV* vaccine

This study revealed that the majority (66.7%) of the 4th year female nursing students at Hanoi Medical University had a positive attitude, while 33.3% had a negative attitude.

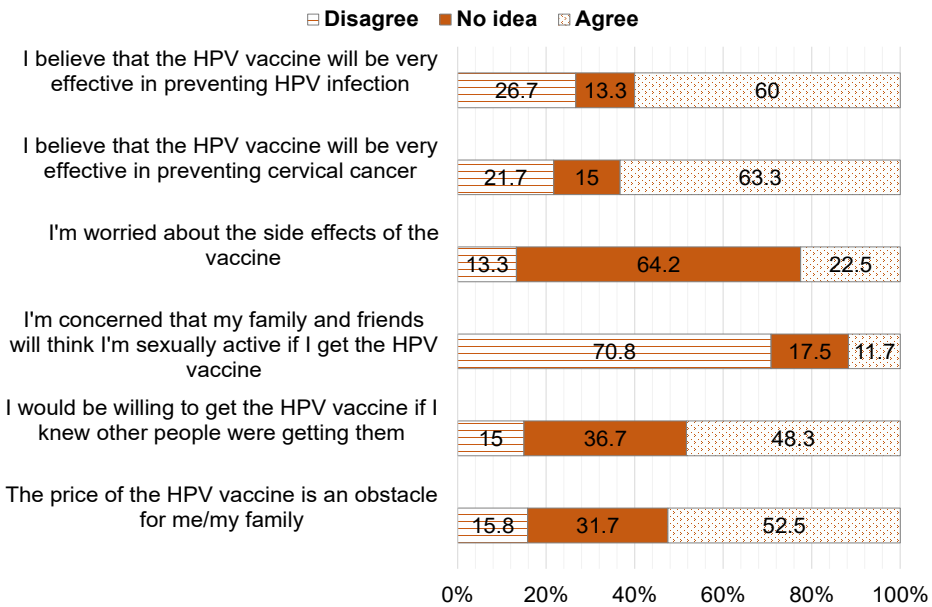

Chart 1. Attitude about *HPV* vaccine among the 4th year female nursing student

52.5% of participants found the price of the vaccine to be an obstacle. 48.3% were willing to get vaccinated if they knew others would also get vaccinated. 11.7% were afraid that others would think they were sexually active if they get vaccinated. About 1/5 of participants were still worried about the vaccine side effects. Most participants (about 60%) believed that vaccines would be very effective in preventing cervical cancer and *HPV* infection.

Table 3. Association between factors and attitude on *HPV* Vaccine

Variables	Total	General Attitude		p-value
		Positive (n = 80)	Negative (n = 40)	
Ethnic group (n, %)				*0.016*[a]
Kinh	103 (85.8)	73 (91.2)	30 (75.0)	
Other	17 (14.2)	7 (8.8)	10 (25.0)	
Type of training (n, %)				*0.751*[a]
Advanced Program	25 (20.8)	16 (20.0)	9 (22.5)	
Regular Program	95 (79.2)	64 (80.0)	31 (77.5)	
Relationship status (n, %)				*0.693*[a]
Ever been in a relationship	32 (26.7)	21 (26.2)	11 (27.5)	
Being in a romantic relationship	49 (40.8)	31 (38.8)	18 (45.0)	
Never been in a romantic relationship	39 (32.5)	28 (35.0)	11 (27.5)	

Variables	Total	General Attitude		p-value
		Positive (n = 80)	Negative (n = 40)	
Monthly income (n, %)				*0.398* [a]
Yes	36 (30.0)	26 (32.5)	10 (25.0)	
No	84 (70.0)	54 (67.5)	30 (75.0)	
Heard about HPV (n, %)				*0.407* [b]
Yes	116 (96.7)	78 (97.5)	38 (95.0)	
No	4 (3.3)	2 (2.5)	2 (5.0)	

[a]*The p-value was calculated by using Chi-square test*

[b]*The p-value was calculated by using Fisher's exact test*

Kinh people had a positive attitude about *HPV* vaccine, but other ethnic groups did not, which was statistically significant ($p < 0.05$). The students who have been or had been in a relationship had a more positive attitude than students who had never been in a relationship, but these were not statistically significant. Similarly, there was no significant association between attitude and other general variables, such as type of training, heard about *HPV*, and income.

IV. DISCUSSION

1. General characteristic

This study was conducted on a group of fourth-year female nursing students at Hanoi Medical University. Of these, there were 25 students enrolled in the advanced program, accounting for 20.8%, and 95 students enrolled in the regular program, accounting for 79.2%. Among the research subjects, most were of Kinh ethnicity, the rest were of other ethnicities. There was no significant ethnic difference found in the study, which matched with Wandee et al. 's report in Thailand.[8]

70% of students had no monthly income. 30% reported an average monthly income of more than 2 million VND. This fixed source of income came from part-time jobs such as tutoring, waitressing or sales.

The research results showed that the research subjects' knowledge about *HPV* vaccine was relatively goodat 75.8%. This result was higher than HB Geniti et al. conducted in Ethiopia on a group of female undergraduate medical students who reported 43.8%.[9] The reason might be due to the difference in the methodology and socio-economic conditions of the study participants. In addition, most of their study participants are in their pre-medicine and clinical year of study at the university. Besides, communication on reproductive health education has recently received more attention in Vietnam. Furthermore, the issue of *HPV* infection has been guided, deployed and implemented by the Ministry of Health in recent years in the community, so more or less students are informed and have better knowledge. In general, the subjects' knowledge about *HPV* vaccine is relatively good because the study subjects had an average age of 22, which is a very suitable age for learning and absorbing new knowledge.

Most subjects (96.7%) in our study had heard about *HPV*. The proportion that had heard about

HPV in our sample was relatively higher than that reported in a European study published that only 17.7% of university students had heard of *HPV*.[10] Slightly higher rates of awareness of *HPV*, approximately one-third, were reported from university students in the United States.[11] Awareness of *HPV* was reported to be higher after the release of the vaccine. In a recent study of female university students in Florida, United States, 78% reported having heard of *HPV*.[12] When we investigated the source of participants' awareness and knowledge, the most frequently chosen source was the Internet with nearly 90 students answering that this source contributed to their knowledge on the subject. This result is similar to the research results of Dr. Natasa Krsto Rancic et al. (2020), conducted in Serbia.[13]

Research showed that 74.2% had knowledge of at least one type of *HPV* vaccine. Our research results were higher than CC Makwe et al. in Nigeria.[14] According to CC Makwe et al., most (74.7%) of the respondents had never heard of the *HPV* vaccine. Likewise, about one-fifth (17.4%) of the students had heard of the *HPV* vaccine, of which 71.6% were not sure about the protectiveness of *HPV* vaccine in a study in Turkey.[15] Our study subjects heard more about *HPV* vaccine than previous studies, possibly because they were 4th-year students. These students, as professionals in the future's health sector, would take part in early diagnosis and screening programs against cervical cancer.

Our study showed that ever been or being in a relationship is significant to a good knowledge ($p < 0.05$). Likewise in Brazil, MS Wanderley et al. indicated celibate students scored lower on the knowledge of *HPV*-related topics.[16] This discrepancy might be caused by young people who had or had had romantic relationships were frequently more interested in reproductive health issues to ensure a healthy, long-lasting relationship and increase their knowledge of *HPV*.

In our study, it was found that there was no difference among students' knowledge levels according to their types of training. But Selda et al. found that knowledge levels of the female students from the faculty of medicine were higher compared to the ones from the midwifery, nursing, and paramedics departments.[15] This may due to that we only compared two groups of female nursing students from the regular program and the advanced program. In the curriculum, there was no difference in knowledge regarding *HPV* and the vaccine provided. If compared with the curriculum of medical students, especially general doctor students, the results might be different. From the literature, the knowledge levels of students from various medicine faculties concerning cervical cancer and *HPV* were high; and knowledge levels of students at the medicine department were higher than the ones at the midwifery/ nursing and paramedical departments.[17] Lower knowledge level scores of students from health colleges compared to the medicine faculty, and in midwifery and nursing departments might be due to the difference of the teaching curriculum.

Income or no income showed significant difference in our study ($p < 0.05$), as also reported by MS Wanderley et al.[16] The means of correct answers were significantly lower in the no income group. Thus, income can be a potential influencer in the students' access and incorporation and understanding of available information.

2. Attitude and factors affecting attitude about *HPV* vaccine

In our study, 80% of participants had a positive attitude about *HPV* vaccine but the H *HPV* PV vaccination rate of the 4th year female

nursing student at HMU was estimated to be 49.2%. This was lower than found in developed countries like Portugal and the United Kingdom, at about 80% and 81%, respectively.[18] This phenomenon could be related to vaccination subsidies, as countries that have set up an *HPV* vaccination program offering the vaccine at a low cost would have a high vaccination rate. Acceptance of the *HPV* vaccine might be influenced by factors affecting the decision-making process that individuals go through when deciding whether to be vaccinated. Several local studies had consistently suggested that the cost of the *HPV* vaccines was a major barrier to their acceptance by mothers and female adolescents.[19] Another study among health care students and professionals in Malaysia showed that only 15% of the participants would agree to get the *HPV* vaccination if it was provided for free, probably related to the inclusion of older participants.[20] This is also consistent with the result of our study, 52.5% of students in our study also said that the price of the *HPV* vaccine would be an obstacle for them or their families. A lower price might increase the intention to get vaccinated and the vaccination rate. Furthermore, the vaccination rate in our study was consistent with studies conducted in countries that did not have a vaccination subsidy program.

Apart from the concern over cost, the barriers to vaccination include uncertainty over the side effects of the vaccine. Although the *HPV* vaccine has been on the market for more than a decade and is proven safe, there is a persistent fear among patients and providers that it may cause serious side effects. This perception can be a barrier to physician recommendation.[21] The results showed that about 22.5% of the participants reported that they worry about vaccine side effects. Likewise, across the general population in mainland China, safety concerns, the lack of knowledge and the cost of vaccination were the main arguments given by students when asked about their hesitation towards *HPV* vaccination.[22]

In our study, a minority of participants (11.7%) agreed that they were concerned that friends and family would think they were sexually active if they received *HPV* vaccination, although its effect was not statistically significant on attitude. This finding was consistent with earlier findings; previous studies reported that emotions related to *HPV* infection, such as shame, anxiety, and depression, did not influence intentions to be tested or vaccinated for *HPV*.[22]

There was significant ethnicity and attitudes about *HPV* vaccination in our study ($p < 0.05$). The Kinh people had a more positive attitude than other ethnic groups. Cultural and religious factors could play a major role in attitudes towards vaccination. In most Arab countries, the discussion regarding STIs was considered a sensitive, often taboo topic.[23] This might result in low levels of knowledge and awareness regarding different aspects of these diseases. Additionally, this might negatively impact the recommendation of *HPV* vaccine uptake in the region. In our study, approximately two-thirds of the students intended on receiving the *HPV* vaccine and recommending the vaccine to others, which matched with findings from the other surveys done in Malaysia and China.[20,23] Factors associated with recommendation of the vaccine to others were students older than 22 years, medical students, alcohol use, moderate knowledge *HPV* infection/vaccine knowledge and positive attitude.

Limitation

This is only a cross-sectional descriptive study with a modest sample size. Furthermore, issues related to *HPV* and vaccines are

sensitive issues, so some subjects tend to answer incorrectly, leading to research errors.

V. CONCLUSION

Our research showed that most of the 4th year female nursing students at Hanoi Medical University had good knowledge and a positive attitude towards the *HPV* vaccine. The students have been or had been in a relationship and with income had better knowledge about *HPV* vaccine. Kinh students had a more positive attitude about *HPV* vaccine than other ethnic groups.

We recommend further study with a larger sample size of university students enrolling in diverse study majors to formulate intervention solution for the improvement of knowledge and behavior toward *HPV* and *HPV* vaccination.

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