

**Factors Associated with the HPV Vaccination
among Child-bearing Aged Women in Hanoi,
Vietnam**

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ABSTRACT

Factors associated with the HPV vaccination among child-bearing aged women in Hanoi, Vietnam

Introduction: Cervical cancer is of a great global health challenge, especially less developed parts of the world where witnessed at least 80% of CC incidence and mortality as well. Since launching in 2006, the human papillomavirus (HPV) vaccine has created a tremendous opportunity for prevention of cervical and several HPV-related cancers. Therefore, the study primarily aims to increase the accessibility and utilize of HPV vaccines in Vietnam. Thus, our main objective is to identify the difficulties in HPV vaccination accessibility among Vietnamese women of child-bearing age in Hanoi, Vietnam. We then have 3 specific objectives as below: Firstly, to examine the level of knowledge of cervical cancer and HPV vaccines among child-bearing aged women in Hanoi, Vietnam. Secondly, to identify the current coverage and willingness to receive HPV vaccines among child-bearing aged women in Hanoi, Vietnam. Thirdly, to determine the existed barriers for accessibility of HPV vaccination in Hanoi, Vietnam.

Methods: We used data from the community-based intervention study for improving awareness and utilization of HPV vaccination among reproductive-aged women in Hanoi, Vietnam in 2016. A total of 807 women who were pregnant or had infants aged less than 12 months were finally recruited using a convenient multistage random sampling method. Pearson's chi-square test and

Fisher's exact test were used to comparing awareness of cervical cancer and HPV vaccines by districts. The Cochran-Mantel-Haenszel test was additionally utilized to investigate the association between our concern variables (knowledge, attitude, and intention), while controlling for a residency status.

Result: Our study has demonstrated a strong association between the level knowledge of CC as well as HPV vaccines and an intention to receive HPV vaccination among women of child-bearing aged in both urban and rural areas. Our findings further highlight several key factors that associated with the HPV vaccination. Among these important predictors, the knowledge level of CC and HPV vaccines that were alarmingly insufficient are strongly associated with an HPV vaccination intention. Also, cost and low accessibility in rural area were found as obstacles for the promotion of HPV vaccination.

Conclusion: Our findings, thus, underscore the initial need to develop a well-designed educational program on CC as well as HPV vaccines in Vietnam and other countries of a similar situation.

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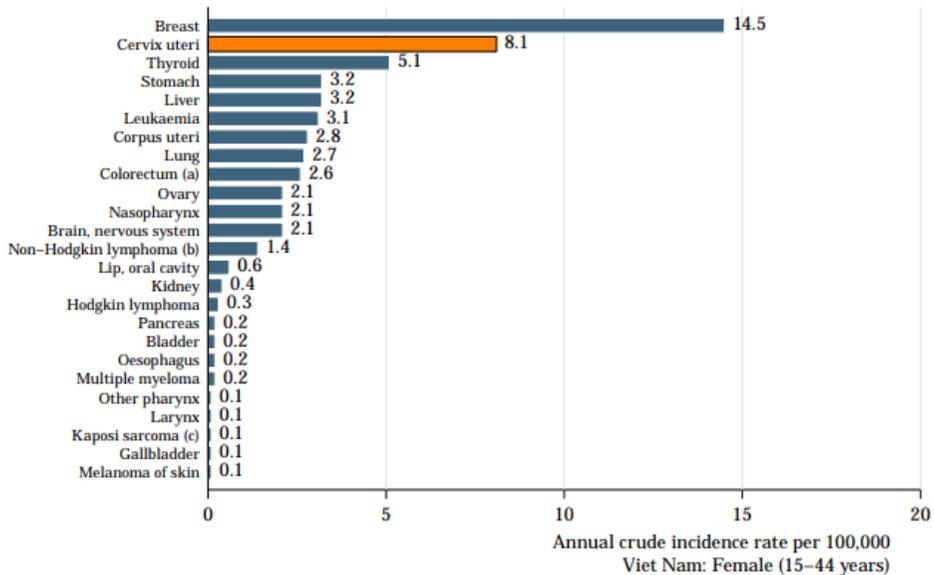
1 Introduction

1.1 Cervical cancer burden in Vietnam

Cervical cancer ranks the fourth most common cancer happening among women worldwide and the second rank in the developing regions (1). It remains an enormous burden of global health, affecting over 530,000 women and 270,000 deaths annually. More importantly, there were nearly 84% and 87% of these incidence and mortality, respectively, occurring in less developed parts of the world (1, 2).

In Asia, cancer of the cervix uteri is the 3rd leading cause of female cancer and the 2nd most common in 15-44-year-old women (1, 3). With an estimated of nearly 300,000 new cases and about 150,000 deaths annually, it accounted for almost 60% of cervical cancer internationally (3). To this day, the majority of cervical cancer cases were dramatically increased in Asian women from their 40s to the peak in their 50s (3).

As in other nation, more than 5,000 new cases and roughly 2,500 deaths due to cervical cancer occur annually in Vietnam, making the fourth leading cause of female cancer (4). According to the Vietnamese ministry of health, with the age-specific rates of nearly 15.0/100,000 women, an increasing trend for cervical cancer has been observed recently (5). By a rank of the second most common cancer and the 6th leading cause of death, women of reproductive age becomes one of the highest risk for cervical cancer throughout of Vietnam (4).



Source: Human Papillomavirus and related diseases report: Vietnam 2017

Figure 1-1 Comparison of age-specific cervical cancer to age-specific incidence of other cancers among women 15-44 years of age in Vietnam (estimates for 2012).

Since it stands for one of alarming issues of cancer death globally, numerous efforts are conducted to deeply understand about its etiology, risk factors as well as possible prevention methods. At present, several factors consisting of use of tobacco, early onset of sexual contact and multiple sexual partners were solidified as the key risks and cause of cervical cancer (2). Among all of them, HPV infection has been proposed as a necessary cause of an invasive cervical cancer since nearly all cancer cases of cervix are attributable to its infection (2). This virus will be discussed further in the following part.

Together with the introduction of cervical cancer screening and HPV vaccination, cancer of cervix is currently known as a deadly but preventable non-

communicable epidemic (6). In developed countries, a screening test has been recommended for detecting most precancerous lesions and early cervical cancer. Cervical cancers, then, can be prevented up to 80% and easily treated, making a result of decreasing the mortality rate in these regions (2). In contrast, almost cervix cancer cases in developing nations were identified and treated at late stages. Far more than facilities or technology, people was found as the root obstacle for a successful prevention program of cervix cancer in such low-resource nations (7).

1.2 Human papillomavirus

Human Papillomavirus (HPV) is a family of over 150 virus strains that is the most commonly viral infection in more and less economically developed nations alike (2). Its infection can be acquired shortly through vaginal, anal, and even oral right after the skin-to-skin genital contact (2). It is predicted that at least 80% of sexually active people will be acquired this infection at some points in their lifetime, making the most common sexually transmitted infection all over the world (2, 8). To date, the global HPV infection rates were estimated at a range of over 5% in advanced regions and up to 30% in non-developed nations (9, 10). However, most of HPV infection cases are harmless and can clear up by itself, sometimes, conversely, it does not go away and several high-risk HPV types can be a root of some serious diseases including cancer (2).

Most notably, up to 70% cervical cancer cases, 90% oropharyngeal cancer and 80% anal cancer were evidenced to be attributed to HPV strains 16

and 18 (11-13). Several HPV strains 31, 33, 45, 52, 58 are considered as high-risk types since they are additionally found in numerous HPV-related cancers (8-10). On the contrary, low-risk HPV types such as HPV 6 or 11 were also observed in the majority of HPV infection (2). Even though most of them pose no serious health problem, its predominant infection is noticed globally. Several reports revealed that up to 85% of genital warts were caused by HPV types 6 and 11, making a global health care burden for society (11, 14).

In Vietnam, the overall prevalence of HPV infection fluctuated between 5.6% and 9.3% among married women aged 18-69 in 5 metropolitan cities in 2012 (15). With the same study samples, Vu's study found that with the range from 3.1% to 7.4%, HPV 16 and 18 were the most common HPV infection among reproductive-aged females (16). Similar findings also presented in other projects conducting in several cities in Vietnam (17-20). The lack of public's understanding about visible signs of HPV infection and the ease of its transmission could lead to the high prevalence of HPV infection worldwide.

1.3 Human Papillomavirus vaccination

Since the launch of HPV vaccination in Australia in 2006, it creates a golden opportunity as a life-saving intervention for millions of women to prevent several frequent high-risk types of HPV. The vaccine efficacy was proved since 95% effective prevention for cervix lesions has been well-documented (2, 11, 21, 22). All three kinds of vaccines, namely Cervarix, Gardasil and Gardasil 9, are currently marketed for protecting against infection with HPV 16 and 18. Some of

them additionally protect against several high-risk HPV strains as well as HPV types 6, 11.

According to WHO estimated for May 2017, the HPV vaccine was combined with the national immunization programs in 71 nations in the world (22). It is recommended for girls and women at the age of 12 through 26 years, and for boys in some highly industrialized countries (2). A two-dose schedule was implemented for girls 9 through 14 years of age, and three shots for those who are older (2, 22). It is highly recommended to administer prior to exposure to HPV for ensuring the working best of vaccines, the HPV vaccination, thus, should be ideally taken prior to sexually active (2, 22).

Vietnam was chosen as one in four countries for PATH (the Program for Advancement through Health and Education) projects of introduction of the HPV vaccines started in 2007 (23). This formative project supported for generating a HPV vaccine delivery strategy for based on existed setting and took account of possible obstacles that could affect this effective delivery system. After that, Cervarix and Gardasil, two brands of HPV vaccine, were propelled in a pilot project in Vietnam in 2011. By the subsidization at \$5 per HPV vaccine dose, the coverage among 14-year-old girls was reached to over 94% in 2 piloted populations (24). It is anticipated to create an outstanding evidence for Vietnamese governments considering the incorporation HPV vaccines into the existed national immunization program.

Nevertheless, after completing these piloting HPV vaccination programs for almost 10 years, the HPV vaccine is not integrated into the routine

vaccination schedule. 3 doses of HPV vaccines are currently paid by themselves and recommended for all girls and women at the age of 9-26 years. Compared with the global average cost for three-shot series of about \$400, the price of around \$150-\$195 in Vietnam has been exceedingly low. This expensive vaccine, however, is enormously high for almost Vietnamese citizens when its payment could occupied nearly one tenth of the income per capital per year of roundly \$2170 in 2016 (25). Therefore, parental concern due to lack of knowledge and HPV vaccine costs, stated by an official in Health education, could stand for the chief barriers for the prevalent utilization of HPV vaccination (23). Understanding the awareness, knowledge, behavior in each specific culture could be necessary to establish a forthcoming prevention program.

1.4 Factors associated with HPV vaccination

The uptake of HPV vaccination is highly variable throughout the world. A meta-analysis in 2017 showed that the HPV vaccination uptake in Canada varied from around 12% to nearly 90% (26). Besides, the low rates of HPV vaccination were found out in almost non-developed parts of the world (27-31). Remarkably, several studies reported the extremely small percentage of less than 5% for HPV vaccines coverage (32-36).

Nevertheless, most women proved a high intention to receive HPV vaccines for themselves (37-44). In Southeast Asia, the figure was not noticeably different, at two-thirds women also expressed the high intention to get HPV vaccination (36, 45, 46). Further, nearly 50% of students, parents and teachers

willing to vaccinated in Thailand and India (47, 48).

To explain the enormous gap between the intention and reality mentioned above, earlier studies highlighted that HPV vaccines cost turn out to be one of chief obstacles to promote HPV vaccination program (36, 39, 48-51). Conversely, in almost highly developed parts of the world, when the HPV vaccination program was integrated into their immunization program, the free-of-charge vaccines are provided nationally, making no economic burden for their citizens. Meanwhile, the contrast situation was observed in the less developing regions. The proportion of intention dropped out if they have to co-payment or deductible for taking HPV vaccination (36, 38). Less than a half of participants would pay for the HPV vaccine in Zambia, Thailand and China (40, 47, 52). Some studies conducted in Southeast Asia found that if vaccination was free or exceedingly low (around \$5), the acceptance for vaccination against HPV was extremely high (53-56).

Moreover, a diversity of associations for the uptake of HPV vaccination had been cited in the literature. One of the most citations is the link between knowledge levels of cervical cancer/HPV/HPV vaccination and vaccine uptake. The high knowledge levels were positively associated with being vaccinated in various populations of any age group such as reproductive-aged women, adolescents or teenagers (27, 31, 39, 51, 57-61).

Additionally, higher vaccination rates were reported among older women in several studies (27, 40, 48, 62). However, some opposite findings were reported that younger women were found to be higher acceptance for HPV

vaccine than older one (36, 55, 63-65). This difference may be due to the fact that it was not possible to determine whether vaccination occurred at which age of their lifetime. In reality, the age at the time of survey's collection was carried out in most of studies, thus, it may lead to the different findings mentioned above. Furthermore, the HPV vaccine intention may be affected by the difference in income levels, vaccine prices as well as an integration of HPV vaccines into the routine immunization programs in each nation.

Regarding several demographic factors, race and ethnicity also had strongly impact to the acceptance of HPV vaccination. Several studies showed that Black and Hispanic women were negative correlates of HPV vaccination even in highly industrial regions (27, 33, 60, 66-68). Researchers conducted among ethnicity in China and Malaysia were also of the same findings for a low attendance of HPV vaccination among this vulnerable group (45, 69, 70). Numerous aspects might play an important role in these racial and ethnic disparities, including differences in attitudes toward vaccination and preventive care, propensity to seek and accept vaccination, variations in likelihood that providers recommend vaccination, regional factors, and differences in quality of care received by racial/ethnic populations.

1.5 Knowledge of cervical cancer and HPV vaccine

There are a variety of researches examining the level of knowledge about cervical cancer/ HPV/ HPV vaccination among various communities. Together with the development of modern communication, the spread out of information

become widely, easily and quickly. In the early 21st century, more than half of women had not heard of HPV as well as an association between HPV infection and cervical cancer (38, 43, 68, 71-73). In recent time, the overwhelming percentage of people, however, had an awareness of cervical cancer was cited in various researches (36, 44, 54, 70, 74-76).

The variability of knowledge levels then has been reported depending on each single study location and population. While health professionals tend to attain high CC/HPV vaccines knowledge levels (40, 77, 78), adolescents, students, female parents and low-income citizens had limited understanding about these issues (38, 46, 53, 60, 79-81).

The same situation was witnessed when HPV vaccine was been initially approved in 2006, almost people were not aware of this vaccine even in industrialized nations (82). After that, however, awareness about the presence of its vaccine increased dramatically together with the propelling of introduction of HPV vaccination worldwide (70, 77, 83).

Nevertheless, the average level of knowledge of HPV vaccine still extremely low in most developing nations (33, 35, 44, 54, 68, 73, 74, 80, 81). Remarkably, the poor knowledge levels of cervical cancer and HPV vaccination was underscored among women who are mainly play as a gatekeeper of the family's health and a key source of health information (67, 84). As other had cited, mothers are an important source of psychosocial and instrumental support in adolescents' vaccine uptake, and they serve as the primary decision-makers on the HPV vaccine receipts for themselves and their children as well (48, 72, 84,

85). In addition, the limited knowledge about cervical cancer and its prevention was observed even among the high-risk group for HPV infection like female sex workers (54, 86). Therefore, their knowledge, attitude, willingness and ability to pay for vaccination meaningfully impact the vaccine uptake for their whole family members (41, 51, 58, 85, 87).

Various factors also found to be associated with poor knowledge levels. Several researches have shown significantly differences between age, ethnic and education level and the level of cervical cancer knowledge (27, 41, 81, 86). In contrast, other findings were of an opinion that young women tend to have poor knowledge level of CC, HPV vaccines and low perceived susceptibility as well (51, 88, 89). Furthermore, HPV vaccines knowledge difference was also found in the disparities of education and health insurance in previous researches (27, 51, 62, 84, 86).

1.6 Rational of research

Cervical cancer is of a great global health challenge, especially less developed parts of the world where witnessed at least 80% of CC incidence and mortality as well (1, 2). Safety sexual intercourse, getting an HPV vaccine and CC screening are the well-recognized ways to prevent, detect early and successful treatment of this cancer. Regarding HPV vaccination, since launching in 2006, the safe and availability of HPV vaccine creates a life-saving intervention for millions of women throughout the world. The dramatically downward trends in cervical cancer incidence rates were found in most developed

parts of the world, where the HPV vaccination program has been covered nationwide (90). In contrast, women in low- and middle-income regions must wait many years for accessing to this vaccination, even they were most likely to die of such disease.

Of same situations, cervical cancer ranks the second leading female cancer among women at the age of 15 to 44 in Vietnam (4). At this point of time, a CC screening that can detect cancer early, only offers opportunistically in Vietnam when this test is either offered by a health professional or required by individuals during a health consultancy. Therefore, there are no agencies that support the recipients in paying for this expensive test. Beside, in 2016, according to the United Nations in Vietnam, the proportion of male using condom was extremely low with less than 12% (91). Turning to HPV vaccination, the Pilot program for HPV vaccine program was implemented in 2008, nevertheless, until now it has not been covered into the national immunization program. In the context of low-resource nation for the prevention of cervical cancer, together with obstacles from price, gender and recommendation age for vaccination against HPV, parents' decision for vaccination also came to be one of the biggest barriers for the promotion of this vaccination (71, 92). Therefore, assessing the knowledge of cervical cancer and HPV vaccine as well as the coverage rate of HPV vaccination among females between the ages of 15 and 49 has been largely lacking in Vietnam.

For these reasons mentioned above, a study is needed to investigate the following concerns: How many reproductive-age women with adequate

knowledge of cervical cancer/HPV vaccines are there in Hanoi, Vietnam? Can its knowledge be a predictor of HPV vaccination intention? What is the current status and intention for receiving HPV vaccine among women of child-bearing age? Is there a huge gap of knowledge level, HPV vaccine uptake and willingness to take HPV vaccination among residents living in rural areas vs those in city zones? What are the factors associated with HPV vaccination or willingness to take HPV vaccines? And finally, how is the local accessibility for HPV vaccination in health clinics in Hanoi, Vietnam? Understanding these matters of concerns is critical to design and implement successful vaccination programs for propelling the acceptance of HPV vaccination into the society and minimizing this disease burden.

1.7 Study objectives

The study primarily aims to increase the accessibility and utilize of HPV vaccines in Vietnam. Thus, our main objective is to identify the difficulties in HPV vaccination accessibility among Vietnamese women of child-bearing age in Hanoi, Vietnam. We then have 3 specific objectives as below:

1. To examine the level of knowledge of cervical cancer and HPV vaccines among child-bearing aged women in Hanoi, Vietnam.
2. To identify the current coverage and willingness to receive HPV vaccines among child-bearing aged women in Hanoi, Vietnam.
3. To determine the existed barriers for accessibility of HPV vaccination in Hanoi, Vietnam.

2 Method

2.1 Study design and study population

Data was employed from a project funded by Pfizer, an American pharmaceutical company, namely “Vaccination accessibility for child-bearing age women in low- and middle-income countries in Southeast Asia period 2016-2018”. A multi-country, pre- and post-evaluation and community-based randomized control trial carried out for improving awareness and utilization of several vaccine types (Rubella, Influenza, Tetanus, Hepatitis B and HPV) among reproductive-aged women. The Vietnamese data collected in a pre-evaluation was utilized in this thesis.

The capital Hanoi was chosen as a location for the research in Vietnam. With 6.13% of HPV infection among women aged 15-69 in 2010, Hanoi was one of 5 cities that had the significantly increasing cervical cancer rate in recent years (93, 94). Furthermore, the huge gap for the level of education, monthly income and other resources between city and rural areas in such city should be taken into account also.

An observational cross-sectional questionnaire with a convenient multistage cluster sampling method was applied in this study. Firstly, 2 districts, representative for residence status, were randomly chosen, namely Dong Da (for urban area – 401.7 thousand pp-2017) and Ba Vi (for rural one – 267.3 thousand pp-2017). Secondly, 2 health communes were selected for study location selection if they met the following conditions: 1) experiencing Influenza A, or

Rubella epidemic in the last 5 years; 2) willing to participate in the study with high commitment; and 3) Having local vaccination policies and vaccines available in each site. Finally, the list of all women who are pregnant or just had baby in the last 12 months at the time of the survey was set up from the relevant local agencies. Since this project is covered not only HPV vaccination but also other vaccines (Influenza, Hepatitis B, Tetanus and Rubella), it could be better to choose a representative community that is interested in all mentioned vaccines. For this reason, women who be in gestation or recently had an infant will be of broad concerns about these vaccination, and that is why they were recruited in our survey. Eligible participants then were chosen by the health staffs who were responsible for each cluster in a communal unit.

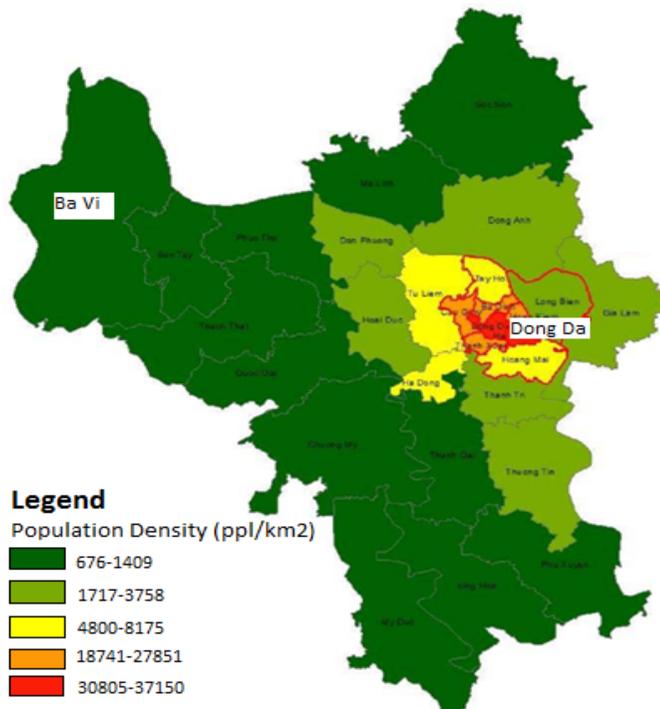


Figure 2-1 A map of Hanoi and study population

2.2 Sample size

For the sample size calculations, the level of significance is set to 0.05, the power to 95% and a two-sided test was utilized. There was none of the study measuring the coverage of HPV vaccination or other interested vaccination (Influenza, Hepatitis B, Tetanus or Rubella) among reproductive-aged women in Vietnam, so we set up $p=0.5$ for maximum variability of the population. The maximum permissible error (Δ) was 0.05 for the acceptable tolerance.

$$n = Z_{(1-\alpha/2)}^2 \frac{p(1-p)}{\Delta^2}$$

Based on the equation above, the sample size should be 384 women. An increase of 10% of sample was added in case the participant refused or absent during the collection period. The final sample size, thus, was 400 women in each district, and 800 in total. Participants, then, were selected in 2 communal health units in Dong Da and Ba Vi from a list of 975 and 470 eligible women, respectively. The interview response rate was >95% for both districts. In reality, 807 respondents were recruited.

2.3 Participants

Participants of this pre-evaluation study were adult women of reproductive age. All women were listed by village health workers and communal health center staff who are responsible in managing vaccination in their communities. These potential women were recruited in this study if they meet the following inclusion criteria:

- Women at the age of 18 to 49 years at the time of the survey

- Currently living in the selected communes for at least one year and presence during the recruitment times.
- Had pregnancy at any gestational age or having their baby delivered within the last 12 months (from April 16th,2015 to April 15th, 2016)
- Agreed to participate in this project

Women were excluded from this quantitative study if they do not meet any of the inclusion criteria above.

2.4 Survey method and questionnaire

At the top of the survey, there was a highlighted clarification to eligible women about the survey's purpose and all other related ethical considerations under the survey. They then were screened via a short questionnaire to make sure of meeting with all inclusion criteria mentioned above. The verbal inform consents then were provided and asked for the agreement, before moving to the detailed questionnaire. Finally, data were collected through face-to-face interviews conducted by a professional researcher. It was took place in either a health commune when our subjects accessed to for usual vaccination or subjects' home when they did not. Each participant was taken about 30-40 minutes for the interview and received a gift (50,000 VND) as their time spent in this study.

A self-administered, structured questionnaire asking about knowledge, attitude and practice of the accessibility to and utilization of vaccines was delivered to eligible women. This questionnaire was built based on a guideline for preventing infectious diseases of Vietnamese Ministry of Health as well as

relevant references from National institute of Hygiene and Epidemiology. It then was reviewed and consulted by 05 experts before actual implementation. Our questionnaire was covered demographic information, health service accessibility and utilization, and knowledge, attitude and practice of vaccination utilization and intention (Appendix 2: Questionnaire in English version).

2.5 Data management and statistical analysis

At the beginning of analysis, data cleaning was done by checking the completed questionnaires for possible errors and missing values by the supervisor in each field during the data collection. Every single supervisor supervised for at least 6 interviewers in each commune. In accordance with the coding in the original version of the questionnaire, all fulfilled questionnaires, then, were entered into EpiData version 3.1 (EpiData Association, Denmark) by 2 people independently to make sure of all data accuracy. The detail description of all variables using in this thesis was presented in Table 2-1.

Table 2-1 Variables and indicators

Variables	Description	Classification
Demographic information		
Age	Age at the survey time (solar calendar)	Divided 3 groups (≤ 25 , 26-30 and >30 years old)
Marriage status	The marital status of respondents	Living with spouse/ without spouse
Child-birth status	Types of participants selected according to the inclusion criteria	Pregnant or having infants (0-12 months)
Residential status	Type of residence in the survey location	No/temporary residence or permanent residence

Variables	Description	Classification
Educational attainment	Response at highest level of education	High school or lower: and <=12 grade Colleges or higher: vocational students, undergraduate university, master or PhD degree.
Occupation	The jobs that respondents spent most of time	Blue collar/Peasants: sales, service and craft workers, skilled labors, machine operators, peasants White collar: managers, professionals, experts, engineers, office workers Others: students, unemployed, housewife
Household monthly income	Calculated tab by taking the total gross household monthly income divided by the total number of family members living together.	The MOLISA standard 2012 was utilized for this classification. (MOLISA stands for Ministry of Labour, Invalids and Social Affairs) Normal: Household income >=1,300,000 VND Poor and near poor: Household income <1,300,000 VND
Health insurance card	An insurance form applied in the majority of health care sectors in Vietnam	Yes or No/No response
Self-reported health status	The 5-scale for self-evaluation of their health	Good: Good or Very good Normal or not good: Normal, Bad or Very bad
Knowledge about cervical cancer		
Heard about CC	Heard any information about CC	Yes/No
Detail information about CC Asking only for who had heard of CC (Participants will get 1 point)	CC is an inherited disease	True (0 point) False (1 point) Unknown/ No response (0 point)
	CC is caused by a virus	True (1 point) False (0 point) Unknown/ No response (0 point)
	CC is an infectious disease	True (0 point) False (1 point)

Variables	Description	Classification
for each right answer. If a question have multiple correct answers, it will be assigned 1 point for at least 1 correct answer.)		Unknown/ No response (0 point)
	Population at high CC risk	1 point if pointing out at least an answer bellow Women, ever birth giving women/ Elder people/ Unfaithful people/ Women with poor gynecological hygiene behavior Unknown/ No response: 0 point
	Signs of cervical cancer	1 point if pointing out at least an answer bellow Abnormal vaginal bleeding/ Unusual discharge from the vagina/ Urinary incontinence/ Bleeding after intercourse/ Pain during sexual intercourse/ Back pain Unknown/ No response: 0 point
	Cervical cancer be prevented	True (1 point) False (0 point) Unknown/ No response (0 point)
	HPV vaccine is one of the most effective way to prevent cervical cancer (asking only for who cite that CC can be prevented)	True (1 point) False (0 point) Unknown/ No response (0 point)
Summarize scores	All individual answers to practice questions were computed to obtain total mean scores for 7 detail questions of CC. The higher the knowledge score, the more knowledgeable the participant is regarding CC.	Dividing into 2 groups depending on the mean score as previous researches (95, 96): Good: Higher than mean score Not good: Less than mean score Besides, we further consider the distribution of these summarize scores (Appendix 1: Supplement material) to find out a most appropriate cut-off point for categorical decision.
Knowledge of HPV vaccines		
Heard about HPV vaccines	Heard any information about HPV vaccines	Yes/No

Variables	Description	Classification
<p>Detail information about HPV vaccines Asking only for who had heard of HPV vaccines (Participants will get 1 point for each right answer. If a question have multiple correct answers, it will be assigned 1 point for at least 1 correct answer.)</p>	HPV vaccines includes 3 shots in Vietnam	True (1 point) False (0 point) Unknown/ No response (0 point)
	HPV vaccines should be taken at the age 9-26	True (1 point) False (0 point) Unknown/ No response (0 point)
	Women who ever have sexual activities can take HPV vaccines	True (1 point) False (0 point) Unknown/ No response (0 point)
	HPV should be tested before taking the HPV vaccination for women ever had intercourse (Asking only for who mention that HPV vaccines can be taken for sexually active women)	True (1 point) False (0 point) Unknown/ No response (0 point)
	Sign effect of HPV vaccines	1 point if pointing out at least an answer bellow Redness or swelling/ Fever (mild or moderate)/ Headache Unknown/ No response: 0 point
Summarize scores	<p>All individual answers to practice questions were computed to obtain total mean scores for 5 detail questions of HPV vaccines.</p> <p>The higher the knowledge score, the more knowledgeable the participant is regarding HPV vaccines.</p>	<p>Dividing into 2 groups depending on the mean score as previous researches (95, 96): Good: Higher than mean score Not good: Less than mean score</p> <p>Besides, we further consider the distribution of these summarize scores (Appendix 1: Supplement material) to find out a most appropriate cut-off point for categorical decision.</p>
Attitude toward HPV vaccination	Self-assess their attitude about vaccination	<p>Positive: Necessary/ Very necessary to take HPV vaccination</p> <p>Neutral or negative: Neutral/Unnecessary/ Very unnecessary to take HPV vaccination</p>

Variables	Description	Classification
Current status for HPV vaccines		
HPV vaccines rate	Have taken at least 1 dose of HPV vaccine	Yes/ No
Willingness to take HPV vaccines	The intention to receive HPV vaccine among who never take this vaccine BEFORE and AFTER getting information about its prices	Yes/ No
Accessibility of vaccination services		
Providing HPV vaccine in your local health services	The available of HPV vaccines in the local area	No Yes Unknown/ No response
The frequently used local vaccination services	The most frequently health services that participants access	Commune health station District/province/central hospital District/province preventive health center Private/international clinics/hospital Center for Immunization services Others
Lack of vaccines in frequent using services mentioned above	Whether that health center in unavailable situation of providing vaccine	No Yes, at least 1 time Do not remember/ No response
Quality of vaccines in frequent using services mentioned above	Self-reported for the vaccines quality	Good Normal or not good Unknown/ No response

The descriptive analysis was utilized to assess for all socio-demographic variables. Either Pearson's chi-square test or Fishers Exact test (where the expected count for any particular cell is less than 5), then, was employed for a bivariate analysis of all categorical variables. The Cochran-Mantel-Haenszel test was additionally utilized to investigate the association between our concern

variables (knowledge, attitude, and intention), while controlling for a residency status. A p-value of less than 0.05 was considered to indicate statistically significant. Logistic regression analysis was made use of to evaluate the association between the willingness to take HPV vaccines and socio-demographic, knowledge and attitude factors as well; the odds ratios (ORs) and 95% confidence intervals (CIs) were calculated. These regression investigates were separately examined by residency statement as well. All statistical analyses were performed using the STATA software version 14 (Stata Corp. L.P., College Station, TX).

2.6 Ethical consideration

This project was received an ethical approval from the Institutional Ethical Review Board of Institute for Preventive medicine and Public Health, Hanoi Medical University in Hanoi, Vietnam (No 184/HMU IRB). After approval, data collection was took place in April, 2016 till June of this year. All participants were in agreement with the verbal inform consents where they can get full description of the survey's objectives, the voluntary and confidentiality principle of this survey, the procedure, potential benefits for individual and communities. Only those who agree and sign this form were involved in further steps of this survey. Participants had right to refuse or withdraw at any stage without any prejudice, which would not affect their relationship with both the research team and health service providers at the locality as well.

3 Result

3.1 Background information of the study participants

Table 3-1 shows the general characteristic of participants. Of 807 respondents, about two-thirds were under 30 years old, however, more young women in rural areas (Ba Vi) took part in our survey than in urban (Dong Da). Lower education level and being a blue-collar or peasants were observed in non-metropolitan, as a result, most of rural participants reported in the poverty situation. The coverage of health insurance, therefore, was higher among urban participants, even though there was no difference in health status regardless of living location.

Table 3-1 Participant demographic characteristics

Variables	Overall		Metropolitan		Non-metropolitan	
	n	%	n	%	N	%
Total	807	100.0	400	49.6	407	50.4
Age						
<=25 years old	222	27.5	64	16.0	158	38.8
26-30 years old	302	37.4	156	39.0	146	35.9
>30 years old	283	35.1	180	45.0	103	25.3
Marriage status						
With spouse	801	99.3	398	99.5	403	99.0
Without spouse	6	0.7	2	0.5	4	1.0
Child-birth status						
Having infants (0-1 years)	609	75.5	299	74.8	310	76.2
Pregnant	198	24.5	101	25.2	97	23.8

Variables	Overall		Metropolitan		Non-metropolitan	
	n	%	n	%	N	%
Residential status						
Permanent residence	706	87.5	320	80.0	386	94.8
No/Temporary residence	101	12.5	80	20.0	21	5.2
Educational attainment						
College or higher	424	55.5	322	80.5	102	25.1
High school or lower	383	47.5	78	19.5	305	74.9
Occupation						
White-collar	252	31.2	213	53.3	39	9.6
Blue-collar/ Peasants	284	35.2	16	4.0	268	65.9
Others	271	33.6	171	42.7	100	24.5
Household monthly income per person*						
Moderate or higher	598	74.1	382	95.5	216	53.1
Poor or near poor	209	25.9	18	4.5	191	46.9
Health insurance card						
Yes	509	63.1	316	79.0	193	47.4
No/No response	298	36.9	84	21.0	214	52.6
Self-reported health status						
Good	502	62.2	255	63.8	247	60.7
Central or not good	305	37.8	145	36.2	160	39.3

*Household income per person was categorized into either moderate if its income $\geq 1,300,000$ VND or poor/near poor for the rest.

Blue collar/Peasants: sales, service and craft workers, skilled labors, machine operators, peasants

White collar: managers, professionals, experts, engineers, office workers

Others: students, unemployed, housewife

3.2 To examine the level of knowledge of cervical cancer and HPV vaccines among child-bearing aged women.

Figure 3-1 shows the proportion of participants who had heard of CC. Although the overwhelming majority of respondents were aware of CC, more

than one-fifth rural women did not heard about it prior to this survey. Women in metropolitan city were more likely to be aware of CC than those in rural areas ($p < 0.001$).

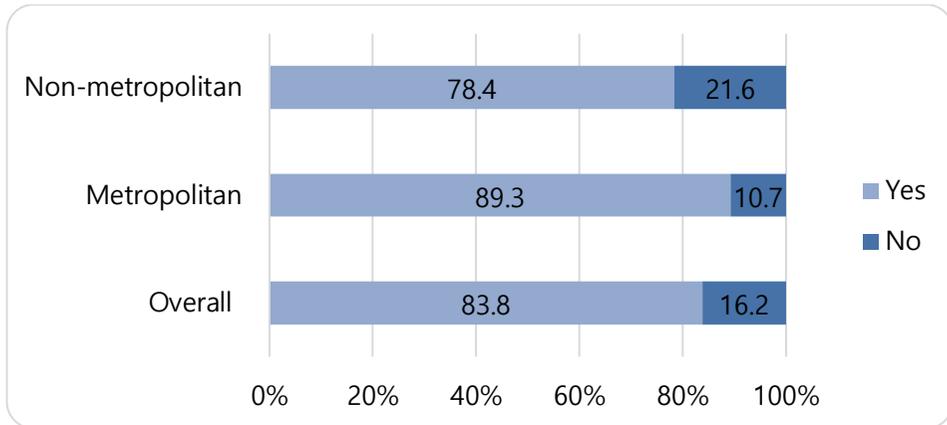


Figure 3-1 Heard of cervical cancer

Demographics of women's awareness of CC are shown in Table 3-2. Women of the older age group, having infants were more likely to be aware of CC. A statistically significant association was further found between an awareness of cancer of cervix and those had higher education, household income, and attained health insurance as well. The association between the awareness of cervical cancer and child-birth status, education level, household monthly income and health insurance are significantly difference in the different levels of residency status.

Table 3-2 Characteristic of participants who are aware of CC

Variable	Overall (n=807)	Metropolitan (n=400)	Non- metropolitan (n=407)	p-value (Mantel- Haenszel)
Total	83.8	89.3	78.4	
Age				
<=25 years old	79.3	85.9	76.6	0.96
26-30 years old	87.4	91.7	82.9	
>30 years old	83.4	88.3	74.8	
<i>p-value</i>	0.04	0.40	0.24	
Marriage status				
With spouse	83.9	89.5	78.4	0.32
Without spouse	66.7	50.0	75.0	
<i>p-value</i>	0.25	0.07	0.87	
Child-birth status				
Having infants (0-1year)	85.2	89.3	81.3	0.04
Pregnant	79.3	89.1	69.1	
<i>p-value</i>	0.049	0.96	0.01	
Residential status				
Permanent residence	84.1	90.9	78.5	0.06
No/Temporary residence	81.2	82.5	76.2	
<i>p-value</i>	0.45	0.03	0.80	
Educational attainment				
College or higher	92.2	92.9	90.2	<0.001
High school or lower	74.4	74.4	74.4	
<i>p-value</i>	<0.001	<0.001	0.001	
Occupation[#]				
White-collar	91.3	91.1	92.3	0.22
Blue-collar/Peasants	75.7	75.0	75.8	
Others	85.2	88.3	80.0	
<i>p-value</i>	<0.001	0.12	0.06	

Variable	Overall (n=807)	Metropolitan (n=400)	Non- metropolitan (n=407)	p-value (Mantel- Haenszel)
Household monthly income per person*				
Moderate or higher	89.3	90.3	87.5	<0.001
Poor or near poor	67.9	66.7	68.1	
<i>p-value</i>	<0.001	0.002	<0.001	
Health insurance card				
Yes	88.6	90.8	85.0	<0.001
No/No response	75.5	83.3	72.4	
<i>p-value</i>	<0.001	0.049	0.002	
Self-reported health status				
Good	85.5	89.4	81.4	0.12
Central or not good	81.0	89.0	73.8	
<i>p-value</i>	0.095	0.89	0.07	

Blue collar/Peasants: sales, service and craft workers, skilled labors, machine operators, peasants

White collar: managers, professionals, experts, engineers, office workers

Others: students, unemployed, housewife

*Household income per person was categorized into either moderate if its income $\geq 1,300,000$ VND or poor/near poor for the rest.

Table 3-3 shows the overall knowledge of cervical cancer after excluding 131 women who had never heard of CC before. In general, over 40.0% had wrong basement knowledge of CC such as it causes by a virus, not an inherited and non-communicable disease. More importantly, a haft of respondents did not know any signs of CC. However, most of participants knew that this cancer is preventable disease and HPV vaccines is the most effectiveness prevention way.

Table 3-3 Knowledge of cervical cancer by residency status among who were aware of cervical cancer

Variables	Overall (n=676)		Metropolitan (n=357)		Non- metropolitan (n=319)		p-value
	n	%	n	%	n	%	
Cervical cancer is an inherited disease							
True	171	25.3	101	28.3	70	21.9	0.16
False	388	57.4	195	54.6	193	60.5	
Unknown/ No response	117	17.3	61	17.1	56	17.6	
Cervical cancer is caused by a virus							
True	213	31.5	147	41.2	66	20.7	<0.001
False	303	44.8	122	34.2	181	56.7	
Unknown/ No response	160	23.7	88	24.6	72	22.6	
Cervical cancer is an infectious disease							
True	134	19.8	72	20.2	62	19.4	0.83
False	442	65.4	235	65.8	207	64.9	
Unknown/ No response	100	14.8	50	14.0	50	15.7	
Population at high cervical cancer risk							
Women, ever birth giving women	512	75.7	258	72.3	254	79.6	0.03
Elder people	21	3.1	16	4.5	5	1.6	0.03
Unfaithful people	106	15.7	54	15.1	52	16.3	0.68
Women with poor (gynecological) hygiene behavior	153	22.6	53	14.9	100	31.4	<0.001
Point out at least 1 right group	566	83.7	293	82.1	273	85.6	0.22
Unknown/ No response	110	16.3	64	17.9	46	14.4	

Variables	Overall (n=676)		Metropolitan (n=357)		Non- metropolitan (n=319)		p-value
	n	%	n	%	n	%	
Signs of cervical cancer							
Abnormal vaginal bleeding	227	33.6	75	21.0	152	47.7	<0.001
Unusual discharge from the vagina	175	25.9	66	18.5	109	34.2	<0.001
Urinary incontinence	64	9.5	10	2.8	54	16.9	<0.001
Bleeding after intercourse	153	22.6	29	8.1	124	38.9	<0.001
Pain during sexual intercourse	118	17.5	36	10.1	82	25.7	<0.001
Back pain	52	7.7	8	2.2	44	13.8	<0.001
Point out at least 1 signs	331	49.0	122	34.2	209	65.5	<0.001
Unknown/ No response	345	51.0	235	65.8	110	34.5	
Cervical cancer can be prevented							
True	618	91.4	323	90.5	295	92.5	0.15
False	14	2.1	11	3.1	3	0.9	
Unknown/ No response	44	6.5	23	6.4	21	6.6	
HPV vaccine is one of the most effective way to prevent CC*							
True	554	89.6	295	91.3	259	87.8	0.32
False	51	8.3	23	7.1	28	9.5	
Unknown/ No response	13	2.1	5	1.6	8	2.7	

*Among people said that cervical cancer can be prevented

CC knowledge score were calculated by summing the number of correctly answers as shown in table 3-4, this score, therefore, could range from 0-7. 676 participants who aware of CC reported for a mean CC knowledge score of

4.60±1.43 over a possible 7. Non-metropolitan females showed the higher mean scores than urban ones and this difference was statistically significant.

Table 3-4 Summary scores for knowledge of cervical cancer

Scores	Overall		Metropolitan		Non-metropolitan		p-value
	n, mean	%, SD	n, mean	%, SD	n, mean	%, SD	
Mean (SD)	4.60	1.43	4.51	1.46	4.71	1.39	
Good ($\geq 5/7$ right answers)	402	59.5	197	55.2	205	64.3	0.02
Not good ($< 5/7$ right answers)	274	40.5	160	44.8	114	35.7	

Figure 3-2 shows the percentage of women who had heard about HPV vaccines. Almost a third had never heard of this vaccine prior to their participation in our study. More noticeable, more than 40.0% rural women had not heard of HPV vaccines, and a significantly difference about heard of its vaccines was seen among rural respondents and urban citizen.

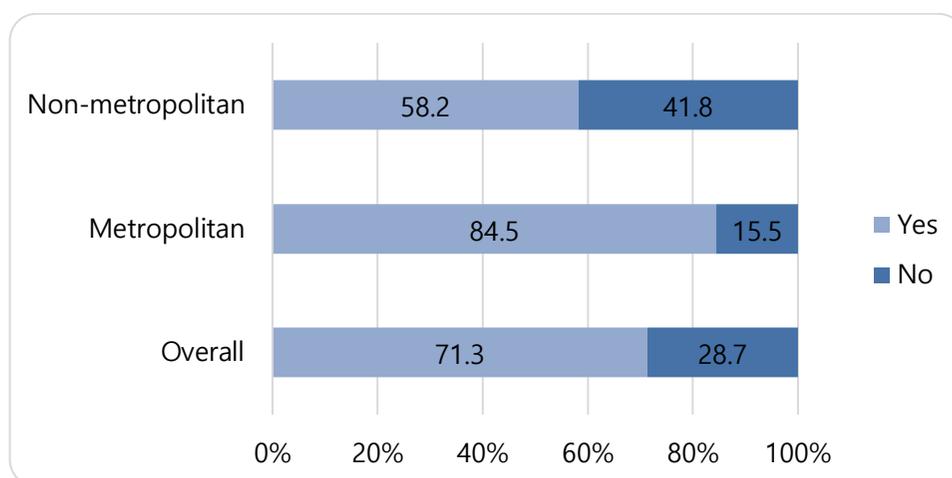


Figure 3-2 Heard of HPV vaccines

The socio-demographic factors of respondent for the awareness of HPV vaccines against HPV were shown in Table 3-5. Women in older age group, had less than 12-months infants, attained higher education level and higher household income, had health insurance and reported good overall health status were more likely to be aware of this vaccine. The association between the awareness of HPV vaccines and child-birth status, residential status, education level, occupation, household monthly income, health insurance and self-reported health status are significantly difference in the different levels of residency status.

Table 3-5 Characteristic of participants who are aware of HPV vaccination

Variable	Overall (n=807)	Metropolitan (n=400)	Non- metropolitan (n=407)	p-value (Mantel- Haenszel)
Total	71.3	84.5	58.2	
Age				
<=25 years old	59.5	76.6	52.5	0.07
26-30 years old	75.5	85.3	65.1	
>30 years old	76.0	86.7	57.3	
<i>p-value</i>	<0.001	0.15	0.08	
Marriage status				
With spouse	71.3	84.7	58.1	0.99
Without spouse	66.7	50.0	75.0	
<i>p-value</i>	0.80	0.18	0.49	
Child-birth status				
Having infants (0-1 year)	73.2	85.6	61.3	0.02
Pregnant	65.2	81.2	48.5	
<i>p-value</i>	0.03	0.29	0.03	

Variable	Overall (n=807)	Metropolitan (n=400)	Non- metropolitan (n=407)	p-value (Mantel- Haenszel)
Residential status				
Permanent residence	71.2	86.6	58.6	0.03
No/Temporary residence	71.3	76.3	52.4	
<i>p-value</i>	0.99	0.02	0.58	
Educational attainment				
College or higher	84.4	88.5	71.6	<0.001
High school or lower	56.7	68.0	53.8	
<i>p-value</i>	<0.001	<0.001	0.002	
Occupation[#]				
White-collar	87.3	89.7	74.4	0.004
Blue-collar/Peasants	56.7	75.0	55.6	
Others	71.6	79.0	59.0	
<i>p-value</i>	<0.001	0.009	0.08	
Household monthly income per person*				
Moderate or higher	76.8	84.6	63.0	0.04
Poor or near poor	55.5	83.3	52.9	
<i>p-value</i>	<0.001	0.89	0.04	
Health insurance card				
Yes	77.6	86.1	63.7	0.007
No/No response	60.4	78.6	53.3	
<i>p-value</i>	<0.001	0.09	0.03	
Self-reported health status				
Good	75.1	85.9	64.0	0.003
Central or not good	64.9	82.1	49.4	
<i>p-value</i>	0.002	0.31	0.004	

[#]Blue collar: sales, service and craft workers, skilled labors, machine operators

White collar: managers, professionals, experts, engineers, office workers

Others: students, unemployed, housewife

*Household income per person was categorized into either moderate if its income $\geq 1,300,000$ VND or poor/near poor for the rest.

Table 3-6 shows the participants' knowledge of HPV vaccines among women who were aware of it. Our data revealed that a majority of our respondents was lack of HPV vaccines knowledge. More than 60.0% of them did not know the number of HPV shots taking in Vietnam, the ideally age for receiving vaccines and any sign effects of HPV vaccination. Further, the level of HPV vaccines knowledge was significantly lower among non-metropolitan women.

Table 3-6 Knowledge of HPV vaccine by residency status among who were aware of this vaccine

Variables	Overall (n=575)		Metropolitan (n=338)		Non- metropolitan (n=237)		p-value
	n	%	n	%	n	%	
HPV vaccines include 3 shots in Vietnam							
True	96	16.7	91	26.9	5	2.1	<0.001
False	143	24.9	83	24.6	60	25.3	
Unknown/No response	336	58.4	164	48.5	172	72.6	
HPV vaccines should be taken at the age 9-26							
True	218	37.9	129	38.2	89	37.6	<0.001
False	159	27.7	113	33.4	46	19.4	
Unknown/No response	198	34.4	96	28.4	102	43.0	
Women who ever have sexual activities can take HPV vaccines							
True	263	45.7	154	45.6	109	46.0	<0.001
False	160	27.8	112	33.1	48	20.3	
Unknown/No response	152	26.5	72	21.3	80	33.7	
HPV should be tested before taking the HPV vaccines for sexually active women*							
True	210	79.9	126	81.8	84	77.1	0.13
False	34	12.9	21	13.6	13	11.9	
Unknown/No response	19	7.2	7	4.6	12	11.0	

Variables	Overall (n=575)		Metropolitan (n=338)		Non- metropolitan (n=237)		p-value
	n	%	n	%	n	%	
Side effect of HPV vaccines[#]							
Point out at least 1 side effect	95	16.5	59	17.5	36	15.2	0.001
No side effects	98	17.0	73	21.6	25	10.6	
Unknown/No response	382	66.5	206	60.9	176	74.2	

*Among people said that sexually active women can take HPV vaccine

[#]Side effects: Soreness, redness or swelling, Fever (mild or moderate), headache.

Table 3-7 illustrates the generation of HPV vaccine knowledge scores by summarizing the number of correctly answers for each respondent. Knowledge about HPV vaccine was poor with a mean score, on a 5-point scale, was 1.53 ± 1.35 in total. The difference between citizens' and rural females' knowledge score was found to be statistically significant using a p-value of 0.04.

Table 3-7 Summary scores for knowledge of HPV vaccines

Scores	Overall		Metropolitan		Non- metropolitan		p- value
	n, mean	%, SD	n, mean	%, SD	n, mean	%, SD	
Mean (SD)	1.53	1.35	1.65	1.37	1.36	1.30	
Good ($\geq 2/5$ right answers)	286	49.7	180	53.3	106	44.7	0.04
Not good ($< 2/5$ right answers)	289	50.3	158	46.7	131	55.3	

3.3 To determine general attitude toward HPV vaccination

Figure 3-3 shows the attitude toward HPV vaccines. About four in five respondents expressed a positive attitude for vaccination against HPV. Urban females, however, had more negative attitude toward HPV vaccination than rural ones, and it is statistically significant difference.

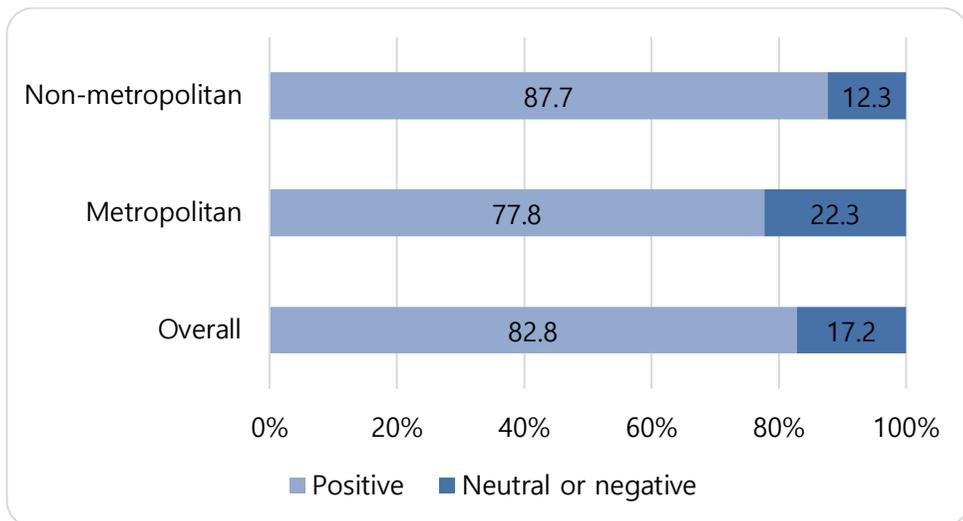


Figure 3-3 Attitude toward HPV vaccination

Table 3-8 indicates the demographic variables for participants' attitude toward HPV vaccination. Generally, around 80% of them, regardless to different sub-groups of socio-characteristic, had positive attitude for vaccination of HPV. Besides, a significant association was found between residential status and attitude of this vaccination. The association between the positively attitude for HPV vaccination and residential status and household monthly income are significantly difference in the different levels of residency status.

Table 3-8 Characteristic of participants who have positively attitude toward HPV vaccination

Variable	Overall (n=807)	Metropolitan (n=400)	Non- metropolitan (n=407)	p-value (Mantel- Haenszel)
Total	82.8	77.8	87.7	
Age				
<=25 years old	82.0	71.9	86.1	0.70
26-30 years old	85.8	82.1	89.7	
>30 years old	80.2	76.1	87.7	
<i>p-value</i>	0.19	0.20	0.62	
Marriage status				
With spouse	82.8	77.9	87.6	0.94
Without spouse	83.3	50.0	100.0	
<i>p-value</i>	0.97	0.34	0.45	
Child-birth status				
Having infants (0-1 years)	83.1	77.3	88.7	0.73
Pregnant	81.8	79.2	84.5	
<i>p-value</i>	0.68	0.68	0.27	
Residential status				
Permanent residence	84.6	80.3	88.1	0.008
No/Temporary residence	70.3	67.5	81.0	
<i>p-value</i>	<0.001	0.01	0.33	
Educational attainment				
College or higher	81.8	78.0	94.1	0.10
High school or lower	83.8	76.9	85.6	
<i>p-value</i>	0.46	0.85	0.02	

Variable	Overall (n=807)	Metropolitan (n=400)	Non- metropolitan (n=407)	p-value (Mantel- Haenszel)
Occupation[#]				
White-collar	82.1	79.8	94.9	0.38
Blue-collar/Peasants	84.9	62.5	86.2	
Others	81.2	76.6	89.0	
<i>p-value</i>	0.49	0.25	0.28	
Household monthly income per person*				
Moderate or higher	82.8	78.0	91.2	0.02
Poor or near poor	82.8	72.2	83.8	
<i>p-value</i>	1.00	0.56	0.02	
Health insurance card				
Yes	83.1	78.2	84.6	0.09
No/No response	82.2	76.2	91.2	
<i>p-value</i>	0.75	0.70	0.04	
Self-reported health status				
Good	83.5	78.0	85.6	0.43
Central or not good	81.6	77.2	89.1	
<i>p-value</i>	0.51	0.85	0.30	

[#]Blue collar: sales, service and craft workers, skilled labors, machine operators

White collar: managers, professionals, experts, engineers, office workers

Others: students, unemployed, housewife

*Household income per person was categorized into either moderate if its income $\geq 1,300,000$ VND or poor/near poor for the rest.

3.4 To identify the current coverage of HPV vaccines among child-bearing aged women.

Table 3-9 shows the current uptake of HPV vaccines. Based on data gathered, less than 5.0% had taken at least a dose of HPV vaccine in total. Of which, most vaccinated women were in urban areas, while only 2 people were in rural zones. The mean age among vaccinated women was nearly 28 year-old. Of

those taking HPV vaccination, almost two thirds took HPV vaccines in Preventive center or Center for Immunization services. In addition, nearly 20.0% did not complete 3 shots of HPV vaccines.

Table 3-9 Current coverage of HPV vaccines

Variables	Overall		Metropolitan		Non-metropolitan		p-value
	n	%	n	%	n	%	
HPV vaccines rates (n=807)	38	4.7	36	9.0	2	0.5	<0.001
Age (mean±SD)	27.9±2.5		28.0±2.5		26.5±2.1		
Where to take vaccines (n=38)*							
Commune center	4	10.5	4	11.1	0	0	
Hospital	3	7.9	2	5.6	1	50.0	
Preventive center	5	13.2	4	11.1	1	50.0	
Private	2	5.3	2	5.6	0	0	
Immunization clinics	24	63.1	24	66.6	0	0	
Number of completed dose (n=38)*							
3 doses	31	81.5	30	83.3	1	50.0	
2 doses or less	7	18.5	6	16.7	1	50.0	

*Among who took HPV vaccines

Table 3-10 shows the current coverage of HPV vaccine according to socio-demographic factors. Vaccinated women were mostly at the age of 26-30, had their children and permanent residential status. The utilization of this vaccines was mainly found among women attained college or higher education level and had health insurance. None vaccinated women who were blue-collar/peasants and had poor/near poor household income was found in our study.

The better knowledge of both CC and HPV vaccines women get, the more likely they receive these vaccines.

Table 3-10 Characteristic of participant by vaccination status

Variables	Overall	Vaccinated		Non-vaccinated		p-value
	n	n	%	n	%	
Total	807	38	4.7	769	95.3	-
Age						
<=25 years old	222	6	2.7	216	97.3	<0.001
26-30 years old	302	26	8.6	276	91.4	
>30 years old	283	6	2.1	277	97.9	
Marriage status						
With spouse	801	38	4.7	763	95.3	N/A
Without spouse	6	0	0	6	100.0	
Child-birth status						
Having infants (0-1 years)	609	28	4.6	581	95.4	0.79
Pregnant	198	10	5.1	188	94.9	
Residential status						
Permanent residence	706	31	4.4	675	95.6	0.31 ^e
No/Temporary residence	101	7	6.9	94	93.1	
Educational attainment						
College or higher	424	37	8.7	387	91.3	<0.001
High school or lower	383	1	0.3	382	99.7	
Occupation[#]						
White-collar	252	26	10.3	226	89.7	N/A
Blue-collar/ Peasants	284	0	0	284	100.0	
Others	271	12	4.4	259	95.6	
Household monthly income per person*						
Moderate or higher	598	38	6.4	560	93.6	N/A
Poor or near poor	209	0	0	209	100.0	

Variables	Overall	Vaccinated		Non-vaccinated		p-value ^e
	n	n	%	n	%	
Health insurance card						
Yes	509	34	6.7	475	93.3	<0.001 ^e
No/No response	298	4	1.3	294	98.7	
Self-reported health status						
Good	502	29	5.8	473	94.2	0.07
Central or not good	305	9	3.0	296	97.0	
Knowledge of CC^s						
Good	402	28	7.0	373	93.0	0.04
Not good	274	9	3.3	265	96.7	
Knowledge of HPV vaccines^s						
Good	286	27	9.4	259	90.6	0.003
Not good	289	10	3.5	279	96.5	
Attitude toward HPV vaccines						
Positive	668	34	5.1	634	94.9	0.26
Neutral/ negative	139	4	2.9	135	97.1	

[#]Blue collar: sales, service and craft workers, skilled labors, machine operators

White collar: managers, professionals, experts, engineers, office workers

Others: students, unemployed, housewife

*Household income per person was categorized into either moderate if its income $\geq 1,300,000$ VND or poor/near poor for the rest.

^eFisher's exact test

N/A: Not applicable

^sFor those who had heard about CC/HPV vaccines only

3.5 To identify the willingness to take HPV vaccines among child-bearing aged women.

Figure 3-4 shows the proportion of non-vaccinated women willing to take HPV vaccines before and after knowing its price. The huge percentage of our respondents expressed a highly intention to take this vaccine, especially women in rural areas (over 90.0%). Nevertheless, after recognizing the current

price of HPV vaccines, their intention dropped out swiftly to about one-fifth reported overall and only 4.4% rural areas.

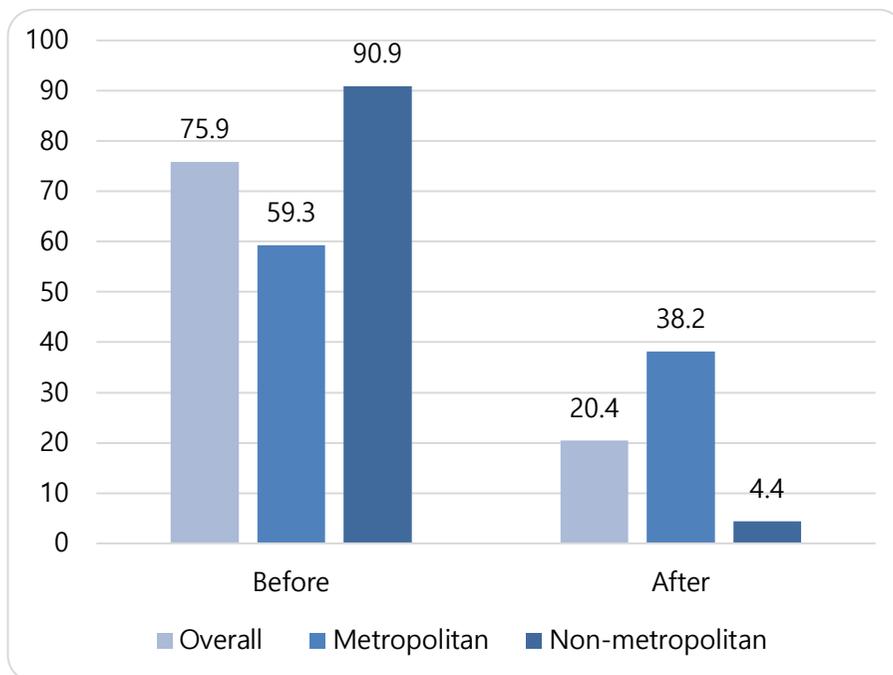


Figure 3-4 Willingness to take HPV vaccines before/after recognizing the HPV vaccines price

Table 3-11 shows the willingness to receive HPV vaccines. Older women, having infants, permanent residence and higher household income showed the higher intention to vaccinate. Higher willingness was seen among women with good knowledge of CC and positive attitude for its vaccines. However, rural females those were lack of HPV vaccines knowledge showed higher intention to vaccinate against HPV. The association between the willingness to receive HPV vaccines and household monthly income and are significantly difference in the different levels of residency status.

Table 3-11 Demographic difference of Intention of HPV vaccination

Variable	Overall (n=769)	Metropolitan (n=364)	Non- metropolitan (n=405)	p-value (Mantel- Haenszel)
Total	75.9	59.3	90.9	
Age				
<=25 years old	83.3	66.1	89.8	0.61
26-30 years old	75.7	58.0	91.7	
>30 years old	70.4	58.1	91.3	
<i>p-value</i>	0.004	0.51	0.84	
Marriage status				
With spouse	75.9	59.1	91.0	0.84
Without spouse	83.3	100.0	75.0	
<i>p-value</i>	0.67	0.24	0.27	
Child-birth status				
Having infants (0-1 years)	77.3	62.3	90.6	0.13
Pregnant	71.8	50.6	91.8	
<i>p-value</i>	0.13	0.049	0.73	
Residential status				
Permanent residence	77.2	59.5	90.6	0.88
No/Temporary residence	67.0	58.9	95.2	
<i>p-value</i>	0.03	0.93	0.48	
Educational attainment				
College or higher	68.7	60.6	92.0	0.29
High school or lower	83.3	54.6	90.5	
<i>p-value</i>	<0.001	0.34	0.65	

Variable	Overall (n=769)	Metropolitan (n=364)	Non- metropolitan (n=405)	p-value (Mantel- Haenszel)
Occupation[#]				
White-collar	65.5	60.1	92.1	0.82
Blue-collar/Peasants	87.0	43.8	89.6	
Others	73.0	60.0	93.9	
<i>p-value</i>	<0.001	0.43	0.42	
Household monthly income per person*				
Moderate or higher	73.4	59.3	96.3	<0.001
Poor or near poor	82.8	61.1	84.8	
<i>p-value</i>	0.007	0.88	<0.001	
Health insurance card				
Yes	73.3	60.4	92.2	0.25
No/No response	80.3	55.6	89.7	
<i>p-value</i>	0.03	0.43	0.38	
Self-reported health status				
Good	75.5	59.7	90.2	0.86
Central or not good	76.7	58.8	91.9	
<i>p-value</i>	0.70	0.88	0.57	
Knowledge of CC^s				
Good	83.7	68.6	95.5	<0.001
Not good	67.9	51.0	85.4	
<i>p-value</i>	<0.001	0.001	<0.001	
Knowledge of HPV vaccines^s				
Good	81.1	71.8	92.4	<0.001
Not good	72.3	47.6	90.0	
<i>p-value</i>	0.005	<0.001	0.42	

Variable	Overall (n=769)	Metropolitan (n=364)	Non- metropolitan (n=405)	p-value (Mantel- Haenszel)
Attitude toward HPV vaccines				
Positive	82.7	69.2	93.2	<0.001
Neutral/ negative	44.4	27.1	74.0	
<i>p-value</i>	<0.001	<0.001	<0.001	

#Blue collar/Peasant: sales, service and craft workers, skilled labors, machine operators, peasant

White collar: managers, professionals, experts, engineers, office workers

Others: students, unemployed, housewife

*Household income per person was categorized into either moderate if its income $\geq 1,300,000$ VND or poor/near poor for the rest.

[§]For those who had heard about CC/HPV vaccines only

Table 3-12 demonstrates the associated factors with HPV vaccination intention (before getting information about its prices) for unvaccinated women among each subgroup. Overall, Women who lived in the countryside, had lower education attainment, blue-collar/peasant, not cover by health insurance have higher intention for receiving HPV vaccines. In contrast, those who were of an older age and were temporary residence are less likely to receive HPV vaccines.

Among metropolitan group, who had adequate knowledge of CC and HPV vaccination as well as positively attitude toward vaccination were more likely to have high intention to receive HPV vaccination.

Regarding non-metropolitan group, those who had higher knowledge of and positive attitude for HPV vaccination were more likely to vaccinate. However, the poorer household income they had, the less willingness they have for vaccination against HPV.

Table 3-12 Univariate logistic for willingness to take HPV vaccination

Variables	Overall		Metropolitan		Non-metropolitan	
	OR	95% CI	OR	95% CI	OR	95% CI
Location (Metropolitan=ref)	6.81	4.58 – 10.14				
Age (<=25 years old=ref)						
26-30 years old	0.62	0.40 – 0.98	0.71	0.37 – 1.35	1.26	0.57 – 2.76
>30 years old	0.48	0.31 – 0.74	0.71	0.38 – 1.32	1.19	0.50 – 2.79
Residence status (Permanent residence=ref)	0.60	0.38 – 0.96	0.98	0.58 – 1.65	2.07	0.27 – 15.87
Educational attainment (College or higher=ref)	2.26	1.60 – 3.19	0.78	0.47 – 1.29	0.83	0.37 – 1.87
Household monthly income (Moderate or higher=ref)	1.74	1.16 – 2.61	1.08	0.41 – 2.86	0.22	0.10 – 0.49
Health insurance card (No=ref)	0.67	0.47 – 0.96	1.22	0.74 – 2.01	1.36	0.68 – 2.70
Self-reported health status (No good=ref)	0.94	0.66 – 1.32	1.03	0.67 – 1.59	0.81	0.40 – 1.65
Knowledge of cervical cancer (Not good=ref)	2.42	1.71 – 3.42	2.10	1.37 – 3.22	3.59	1.69 – 7.63
Knowledge of HPV vaccines (Not good=ref)	1.64	1.16 – 2.32	2.80	1.81 – 4.32	1.35	0.65 – 2.83
Attitude toward HPV vaccines (Neutral or negative=ref)	5.95	4.00 – 8.86	6.05	3.52 – 10.40	4.85	2.28 – 10.32

OR: odd ratio; CI= confidence interval; ref=reference

The multivariate logistic for willingness to take HPV vaccination (before knowing its prices) among non-vaccinated women is displayed in Table 3-13. Strong correlation was noted between location and willingness to take HPV vaccines. Poor or near poor household income was also significantly lower intention for receiving HPV vaccination, especially those lived in rural area. The higher willingness was seen among those have good knowledge of CC and HPV vaccines and positively attitude.

Table 3-13 Multivariate logistic for willingness to take HPV vaccination*

Variables	Overall		Metropolitan group		Non-metropolitan group	
	aOR	95% CI	aOR	95% CI	aOR	95% CI
Location (Metropolitan=ref)	10.53	5.58 – 19.86				
Age (<=25 years old=ref)						
26-30 years old	0.75	0.44 – 1.29	0.47	0.23 – 0.99	1.50	0.64 – 3.54
>30 years old	0.79	0.47 – 1.35	0.57	0.28 – 1.15	1.35	0.53 – 3.48
Residence status (Permanent residence=ref)	1.37	0.78 – 2.38	1.37	0.75 – 2.51	3.72	0.40 – 34.44
Educational attainment (College or higher=ref)	1.03	0.62 – 1.71	0.81	0.44 – 1.49	1.68	0.65 – 4.33
Household monthly income (Moderate or higher=ref)	0.48	0.26 – 0.90	1.48	0.48 – 4.58	0.21	0.09 – 0.52
Health insurance card (No=ref)	1.08	0.68 – 1.71	1.09	0.60 – 1.97	1.05	0.49 – 2.25

Variables	Overall		Metropolitan group		Non-metropolitan group	
	aOR	95% CI	aOR	95% CI	aOR	95% CI
Self-reported health status (No good=ref)	0.84	0.56 – 1.26	0.96	0.59 – 1.56	0.62	0.29 – 1.32
Knowledge of cervical cancer (Not good=ref)	1.72	1.14 – 2.61	1.44	0.88 – 2.36	2.46	1.08 – 5.63
Knowledge of HPV vaccines (Not good=ref)	1.60	1.06 – 2.42	1.89	1.17 – 3.04	0.89	0.39 – 2.02
Attitude toward HPV vaccines (Neutral or negative=ref)	4.37	2.73 – 6.98	5.25	2.89 – 9.52	3.62	1.51 – 8.66

aOR: adjusted odd ratio; CI= confidence interval; ref=reference

*Adjusted for all variables in the model

3.6 To determine the barriers for accessibility of vaccination in local health centers

Table 3-14 shows the current accessibility of vaccination in Vietnam. About 90% rural female did not know whether HPV vaccine is provided in their local health services. Nearly two thirds of participants often access to commune health center for overall vaccination, especially in rural areas (over 90%). When asking about the quality of vaccination in the health location that they often utilize, most of them expressed that they trusted about quality and quantity of vaccines that these health services provided.

Table 3-14 The accessibility of vaccination in Hanoi, Vietnam

Variables	Overall		Metropolitan		Non-metropolitan		p-value
	n	%	n	%	n	%	
Providing HPV vaccine in your local health services							
No	398	49.3	65	16.3	333	81.8	<0.001
Yes	329	40.8	292	73.0	37	9.1	
Unknown/No response	80	9.9	43	10.7	37	9.1	
The frequently used local vaccination services							
Commune health center	577	71.5	173	43.3	404	99.3	<0.001
District/province/central hospital	12	1.5	11	2.7	1	0.3	
District/province preventive health center	88	10.9	87	21.8	1	0.2	
Private/international clinics/hospital	27	3.4	26	6.5	1	0.2	
Center for Immunization services	94	11.6	94	23.5	0	0	
Others	9	1.1	9	2.2	0	0	
Had ever experienced lack of vaccines situation*							
No	671	83.2	300	75.0	371	91.2	<0.001
Yes, at least 1 time	97	12.0	80	20.0	17	4.2	
No remember/ No response	39	4.8	20	5.0	19	4.6	
Self-assessed about the quality of vaccines*							
Good	669	82.9	303	75.8	366	89.9	<0.001
Normal or not good	103	12.8	79	19.7	24	5.9	
Unknown/No response	35	4.3	18	4.5	17	4.2	

*Asking for the vaccination services that respondents frequently utilize

4 Discussion

This is the first study to quantitatively investigate potential factors associated with the HPV vaccination among women of child-bearing age in Vietnam, where cervical cancer remains a major public health concern. Our study has demonstrated a strong association between the level knowledge of CC as well as HPV vaccines and an intention to receive HPV vaccination. However, as our findings have noted, a limited understanding of CC and HPV and an extremely low vaccination coverage rate were witnessed presently. Therefore, tailored interventions are needed to initially increase the public's knowledge regarding cervical cancer and its vaccination.

The awareness of both CC and vaccines of HPV were much higher among urban citizens than rural ones. It may be due to the fact that thanks to the huge evolution of mass media in metropolitan cities, urban citizens then frequently receive information from a range of communication channels. Further, the prevention services seem to be more highly-developed with a diversity of vaccination facilities in these big cities than in the countryside as proven in the table 3-14. Therefore, metropolitan people have a tendency to be aware of this cancer and its vaccines when accessing or being attracted from these prevention departments. The fact that nearly all of rural women often access to communal health centers for overall vaccination, thus, the education programs can take place in this location to widely enhance the public's awareness in this specific zone.

In terms of CC knowledge, a moderate level with a mean of 4.60 ± 1.43

over 7 questions found in our survey was much higher than the findings depicted in previously reports (42, 45, 51, 52, 60, 79-81, 86). This could be partly explained by the conducted time of each study. Recently, in accordance with the widespread coverage of broadcasting programs as well as the Internet globally, spreading information will be easier than ever. Further, we are of the opinion that the involving of reproductive-aged females could be another part of this explanation. This population might have a better knowledge because of playing the foremost role of health keepers for their families.

When it comes to the HPV vaccines, the majority of our respondents were lack of its knowledge with a mean total score of 1.53 (SD=1.35) out of a possible score of 5. Likewise, this extremely low mean score was revealed in earlier researches in several parts of the world (33, 35, 49, 51, 53, 80, 81, 84, 97, 98). Furthermore, our mean score was enormously low among rural women, same with Lee 2010 where two-thirds of their participant who lived in the low-income areas knew nothing about HPV vaccine and CC (38). In contrary to our finding, conversely, the population study consisted only of high educational students were highlighted the higher level of knowledge than the one we observed (27, 48, 59, 70, 99). This difference may be accounted for by the selection of participants in each single study. Different from these previously studies above, we covered both rural women with low educational attainments and those had high education levels in metropolitan cities.

Taking these findings together, a comprehensive education campaign about HPV vaccines such as the number of required HPV vaccines shots,

recommendation ages or some possible undesirable effects is needed. A recent Korea study found that raising awareness of HPV vaccines sometimes produces heightened fear and anxiety in the society (100), driven in part by these and other misconceptions, so this education program will need to be planned carefully. Perhaps this finding sheds some light as to why many urban residents, who got various HPV vaccines information from a diversity of channels have low or no intention for receiving this vaccine.

The different findings were observed for knowledge of CC and HPV vaccines by metropolitan status in our study. There are several possible explanation for these discoveries. First of all, it may be due to the difference in the educational and communication programs in each areas. These programs may be focus on the information about HPV vaccines in urban fields where there is various prevention services existing. Meanwhile, concentrating on disease, particularly cervix cancer, was applied in rural field. It may lead to the fact that most of urban participants may heard about CC through the educational programs for HPV vaccines in these prevention clinics (the CC awareness was higher), but they did not get CC knowledge in detail as rural women (CC knowledge scores were lower). Another notable finding was that, compared to urban citizens, the number of people gaining access to improved sanitation and clean water has risen but still much lower in the countryside in Vietnam (101). As a result, the bigger proportion of rural women who are dealing with the poor hygiene condition suffer from gynecology disease and cervix cancer than those in metropolitan areas. Our explanation also was confirmed in table 3-3 where the statement:

“women with poor hygiene behavior, who will be at risk for CC” was cited by a third of rural females and only less than 15% urban ones. Additionally, higher CC knowledge can be thought to be a reflection of the higher rate of CC among non-metropolitan women that demonstrated elsewhere (102, 103). Again, this is further highlighted by the fact that in conjunction with the evolvement of prevention departments in metropolitan cities, not only vaccination against HPV but also general vaccination seem to be more publicized in these areas in comparison with rural zones. For that reason, our urban respondents then also gained more knowledge about this vaccine of HPV than those from the countryside.

The current coverage of HPV vaccination rate was 4.7% for whole participants, of which only 2 vaccinated females in rural areas. This is lower than what was obtained in similar studies in the highly industrial countries like Australia (92), Germany (28), Greece (27, 31) or Korea and Hong Kong in Asia (30, 100). It may be explained by the fact that the existence of comprehensive national immunization program for HPV vaccines in these highly industrialized income countries may have resulted in a higher level of vaccination rate. Conversely, the result of our study is consistent with several other studies alerting the insufficiency of a nationwide HPV vaccination program for HPV (32-36, 48). Turning to a situation in Vietnam, disappointingly, starting from 2008, a government-implemented demonstration program provided various solid evidences covering all aspects needed for a formative HPV vaccination program. Even though the feasibility of HPV vaccination delivery in Vietnam was proven,

the national program for HPV vaccination in Vietnam is still in processing. Furthermore, cultural and other differences between these countries and those in Asia are likely to be associated with different uptake of HPV vaccination.

Additionally, in comparison with the HPV vaccines coverage (0.5%) in the countryside, this proportion was much higher in metropolitan fields (9%). One of the biggest justification is that in these metropolitan areas, citizens can effortlessly get in touch with prevention services providing in numerous healthcare departments (as shown in table 3-14). Therefore, it is undoubted that since almost all of them were aware of the vaccine against HPV, had payment capacity, and knew the available of vaccination in their local health center, urban residents, correspondingly, had higher HPV vaccines coverage. Conversely, the vast percentages of our rural females were not aware of this vaccines and whether HPV vaccines can be provided in their local health center. As a result, the immensely tiny number of them vaccinated against HPV were detected. Further, it had been proven in our findings that 2 non-metropolitan women received the vaccination of HPV in higher level of healthcare systems (District hospital/Preventive center).

In addition, differences between the metropolitan vs non-metropolitan status in our report of the coverage of HPV vaccination might also be explained by differences in the socio-demographic profiles of women sampled. Based on our present findings, women with low levels of household income were least likely to take HPV vaccines. It can be supported the fact that nearly half of rural females reported low household monthly profits. Meanwhile, three quarters urban

citizens were in moderate income level at least. Our results further underscored the predictor of HPV vaccination uptake by health insurance card. Being in possession of this health insurance could lead to the frequent accessibility to the health care center. Health insurance holders, then, will have greater chance to receive more information and recommendations from health providers, and as a result, be vaccinated engage in more preventive behaviors, particularly HPV vaccination.

Pertaining to intention to receive of HPV vaccines, as others have noted, the overwhelming majority of our respondents expressed the high willingness (37, 39, 44, 104). However, a quickly falling intention to vaccination was observed after letting them know about its prices, accordance with previous results (37, 40, 47, 52, 54). Additionally, one crucial item is that none participants who were categorized into poor/near poor household income vaccinated against HPV. It was correspondingly predicted in the PATH study in 2009 that cost could be one of the chief obstacles for taking the vaccines of HPV in Vietnam (23, 105). Indeed, a diversity of researches conducting in developing parts of the world have reflected a concern of high cost as a rationale for vaccine acceptance (47, 49, 50, 106-112), calling into the existent situation that economic constraints keep women from taking advantage of these services even though they are available. Besides, the promotion strategies for HPV vaccination will need to pay particular attention to some key demographics. Of those who had temporary residence status, those with lower education attainment, and women were be in poverty had the least intention toward HPV vaccination

Besides, the willingness to take HPV vaccination among non-metropolitan women was about 10 times higher than those in metropolitan zones, corroborating findings in US populations in 2016 (113). Possible explanations for this association could be mainly explain by the fact that the willingness was not take account to the HPV vaccines' price, thus the intention was much higher in rural participants as the depiction in Figure 3-4. Moreover, in Vietnam, the vaccines against HPV was propelled by be in a name "Cervical cancer vaccine" to emphasize the goal of CC prevention (23). Further, as in these prior studies, rural women who were found as having higher CC rate could correspondingly had more concerns about cervix cancer and its vaccination (102, 103, 113). Also, a significantly higher percentage of rural women compared to those from urban areas had for positive attitude toward HPV vaccination was observed in our results. They then have a tendency to have higher willingness to receive the HPV vaccines to against this cancer than those in metropolitan areas. Finally, our study was conducted with the strongly support from local health workers in each collection unit. The relationship between physicians and communities may more robust in the countryside in comparison with urban zones as citing in a recent US study (113). Therefore, rural women who more likely trust in their health workers could be much easier accept this vaccination even though nearly half of them had not heard of this vaccine prior to their participation in our survey.

As foreseeable, the results clearly show that those who had high knowledge scores of CC and HPV vaccinations also had significantly higher intentions. Our findings are further in agreement with another study observing

that level of knowledge appears to be greatly influenced to their willingness (27, 30, 31, 51, 57, 59). To make a clear clarification, Health Belief Model has been utilized widely to justify several predictors of potential vaccine uptake (114-116). According to this model, the poorer knowledge level about CC and HPV vaccines are believed to have a lower perception of the risk and severity of HPV infection, a lower perception of the benefits of HPV vaccination, and may lead to a lower intention of getting vaccinated against HPV (115). Further, as a decade has gone by since the approval of the HPV vaccine it might be assumed, its information has also widespread during these years and along with this, the attitude have changed to a more positive one. This might lead to increase the number of women actually getting the vaccination. The CC/HPV vaccines knowledge is in this way changing the behaviour of women (117, 118).

Nevertheless, as our highlight findings, level of knowledge regarding CC and vaccine among participated females in the current study has been considered as a low to moderate. Therefore, these results could bring an initial solution for a well-designed educational program on CC and several prevention methods for this cancer including HPV vaccines. Educational campaigns such as distributing information pamphlets or leaflets particularly taking place of local health center in the countryside have been recommended as a means of increasing the acceptability of HPV vaccination in other countries.

Like other developing nations, there is variation in the health care provision and utilization between metropolitan and non-metropolitan areas (119-125). Even though universal healthcare accessibility is a primary goal of our

Vietnamese government, urban and rural communities differ in their utilization of fundamental healthcare. When urban citizens have a diversity of prevention choices such as communal health center, district/province preventive health center or center for Immunization services, nearly all of women in the countryside tend to access to their community health center to take vaccinations. Despite efforts to provide care for common conditions at the grassroots of our healthcare system, it is estimated that about 80.0% of our rural respondents did not know that whether HPV vaccines can be provided in their local health services. These findings support the fact that the current knowledge and coverage of HPV vaccines were extremely low among this particular group. Similarly, the findings of several previous studies match those of our study, of which lack of accessibility to health centers and lack of caretakers' awareness/misconception were major reasons for non-immunization in the rural zones. As others cited, lack of accessibility to health centers and lack of caretakers' awareness/misconception were major reasons for non-immunization (126-129). Our findings, thus, recommend better targeting of public spending to reduce barriers to the utilization of commune health centers that are used by the poor and rural communities, as well as improving the quality of services.

Collectively, our findings about the associated factors for promoting the HPV vaccinations generate several implications. Initially, knowledge of and misperceptions about CC and HPV vaccination among Vietnamese women are alarmingly issues. Therefore, educational campaigns with the involvement of trusted persons like health workers or teachers as well as well as influential group

(Women's unions or the People's committees) for delivery information is highly recommended. Moreover, within the context of rural situation where nearly almost women access to the communal health center for vaccination, the education program should take advance of this location in order to foster community awareness. Further, the information about several prevention methods for its cancer should be fully publicized and appropriate for each age group. There are 3 well-proven approaches for CC prevention that we vastly recommended (2): 1) safety sexual intercourse such as making utilize of condoms or reducing number of sexual partners; 2) HPV vaccination be ideally taken before sexual debut; and 3) CC screening are highly suggested for females turning to their 40s. Also, to solve a problem related to the cost of this expensive vaccine, a 2-dose HPV vaccination schedule should be carefully consideration to apply their children as soon as their eligible age since this approach can make itself more affordable to reduce at least a third of current total prices (22, 130).

Some existed limitations of the present study should be mentioned since it may affect the interpretation of our findings. Firstly, Data was employed in a cross-sectional study in the pre-evaluation in 2016, so it is beyond the present scope to determine any causal relationship. Secondly, the selection of study populations, which based on the representativeness of the location areas, the highly corporation and burden of our interested epidemic previously, may not fully representative for whole community. Further, there could be selection bias among the participants (who either be pregnant or had the less-than-12-month infant) that may under/overestimate the different factors mentioned as motivators

for vaccine acceptance. In addition, our participants took part in our study were mainly out of recommend age for HPV vaccination (about 64%), thus, there intention to vaccinate for themselves could be quite low compared to the youth or mothers of girls. To deal with this limitation, our recommendation is that the intention to receive HPV vaccines for their daughter will be asked in the post-evaluation in 2018. Thirdly, it is undeniable that the measure scale on CC and HPV vaccine knowledge that based on mean scores were also be one of our restriction. These above-mentioned issues are primary weakness of our study limiting generating the results beyond the sample.

Despite these limitations, our study has several strengths. First of all, this is the first study to investigate the association between several factors and intention for receiving HPV in Vietnam. The findings could call for a public health policy to progress a step-by-step strategy for cervical cancer prevention in the near future. Secondly, women of child-bearing aged, a child's primary caretaker and health keeper for each family, were recruited. As others have cited, the vaccine decision-making including HPV vaccines was primarily done by female parents, not or a tiny role from their daughters and sons (66, 71, 92, 131). Their limited knowledge about CC and HPV vaccination, thus, could strongly affect their intention to vaccinate for themselves as well as for their daughter occurring in a short time. As a result, the most notable thing to do is to understand and address parental concerns in order to tackle these factors associated with the promotion of HPV vaccination uptake in the forthcoming time.

The findings of the present study have clearly knowledge gaps exist in both general awareness as well as more comprehensive knowledge related to cancer of cervix and HPV vaccines among reproductive-aged women in Vietnam. Based on the present data, initial efforts that enable future education programs to build on existing knowledge, while simultaneously seeking to address common misconceptions or unknowns may be enhanced. Since knowledge is a necessary precursor for health-protective behaviors, including the decision to become vaccinated, addressing these knowledge gaps may enable to make better choices. Several prevention methods for cervical cancer should be widely publicized not only HPV vaccines but also safety sexual intercourse and cervical cancer screening. For example, increasing knowledge of cervical cancer may lead to safer sexual practices among women and positive attitude toward HPV vaccination for themselves and their daughter in the forthcoming time as well. Further, these education campaigns (panel, leaflet or booklets) should take advantage of a community health center, where almost all of the rural women access to in order to take the general vaccination. To deal with the high cost of this expensive vaccination, a 2-dose schedule should take carefully into consideration since it can make itself more affordable when reducing at least a third of the current price. Additionally, a qualitative study is needed to fully understand an HPV vaccination willingness and particular obstacles that play a huge impact on Vietnamese women's intention.

5 Conclusion

This study highlights several key factors that associated with the HPV vaccination among women of child-bearing aged in both urban and rural of Hanoi, a capital of Vietnam. Among these important predictors, the knowledge level of CC and HPV vaccines that were alarmingly insufficient are strongly associated with an HPV vaccination intention. Also, cost and low accessibility in rural area were found as obstacles for the promotion of HPV vaccination. Our findings, thus, underscore the initial need to develop a well-designed educational program on CC as well as HPV vaccines in Vietnam and other countries of a similar situation.

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Appendix 1: Supplement material

Table 1: Summarize correct answers for CC knowledge by residence status

No. of correct answers	Overall (n=676)		Metropolitan (n=357)		Non-metropolitan (n=319)	
	n	%	n	%	n	%
0	10	1.5	2	0.6	8	2.5
1	8	1.2	5	1.4	3	0.9
2	33	4.9	27	7.6	6	1.9
3	95	14.1	30	16.8	35	11.0
4	128	18.9	66	18.5	62	19.4
5	208	30.8	99	27.7	109	34.2
6	157	23.1	74	20.7	83	26.0
7	37	5.5	24	6.7	13	4.1

Figure 1: Distribution of overall marks for CC knowledge

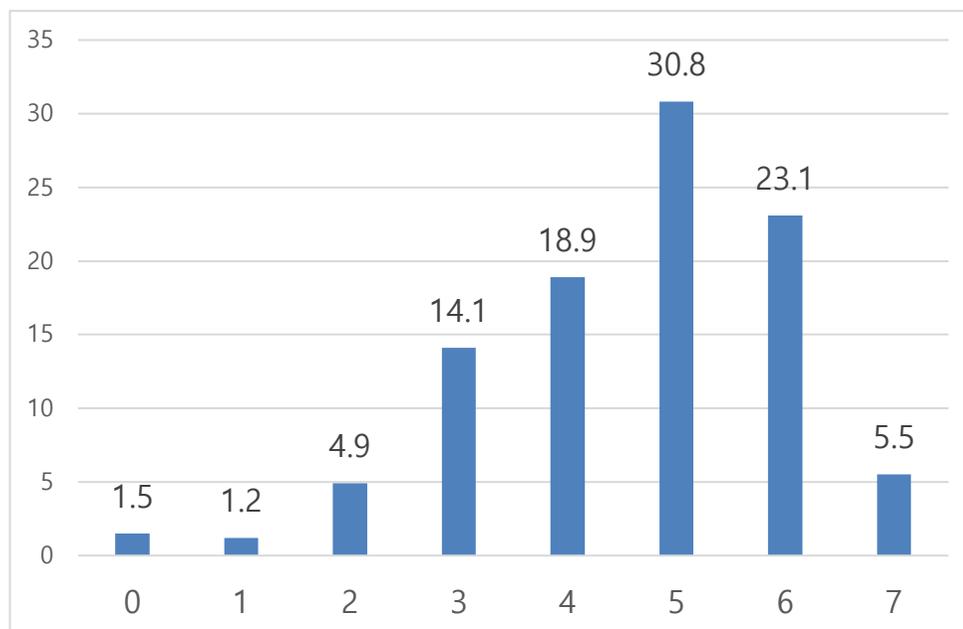
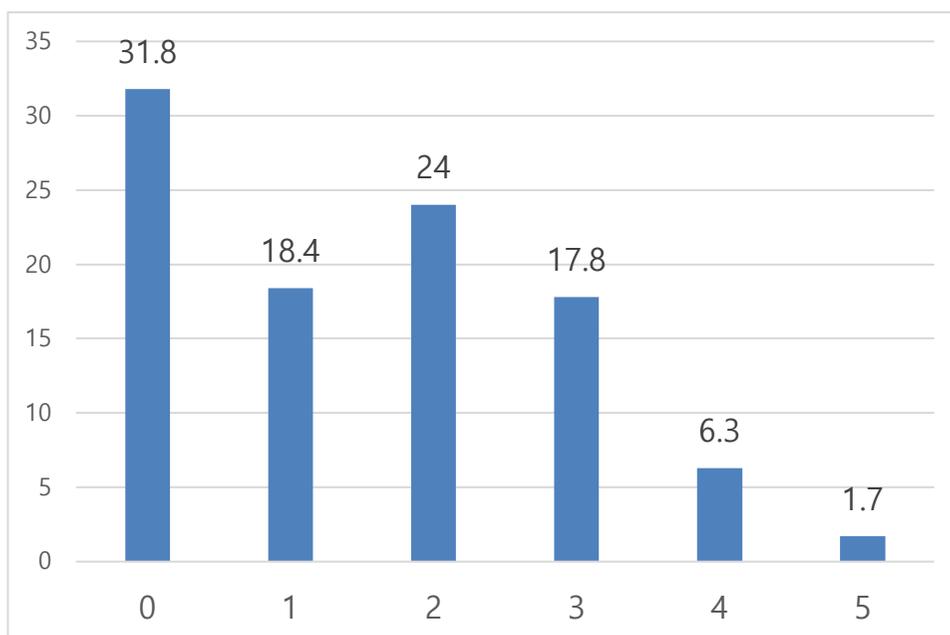


Table 2: Summarize correct answers for HPV vaccines knowledge by residence status

No. of correct answers	Overall (n=575)		Metropolitan (n=338)		Non-metropolitan (n=237)	
	n	%	n	%	n	%
0	183	31.8	93	27.5	90	38.0
1	106	18.4	65	19.2	41	17.3
2	138	24.0	89	26.3	49	20.7
3	102	17.8	58	17.2	44	18.6
4	36	6.3	23	6.8	13	5.4
5	10	1.7	10	3.0	0	0

Figure 2: Distribution of overall marks for HPV vaccines knowledge



Appendix 2: Ethics

MINISTRY OF HEALTH
HANOI MEDICAL UNIVERSITY

No. 184/HMU IRB

Issue: Approval of HMU IRB

SOCIALIST REPUBLIC OF VIETNAM
Independence-Freedom-Happiness

Hanoi, November 14, 2015

CERTIFICATE OF APPROVAL

- Basing on the Decision No.1722/QĐ-ĐHYHN dated May 20, 2014 by the President of Hanoi Medical University about the foundation of the HMU Review Board and secretariat for reviewing the ethical issues in Bio-medical researches ;
- Basing on the approval no. IRB 00003121 to Hanoi Medical University by Office for Human Research Protection USA on June 16, 2009, renewed on October 01, 2012;
- Basing on the summary report dated November 11, 2015 of the Hanoi Medical University Independent Review Board (HMU IRB) and petition for the approval of project's principal investigator.

HANOI MEDICAL UNIVERSITY REVIEW BOARD (HMUIRB) IN BIO-MEDICAL RESEARCH

Approve the ethical issues of the following research proposal

**Research title: Vaccination accessibility for women of child – bearing age
in low and middle – income countries in Southeast Asia**

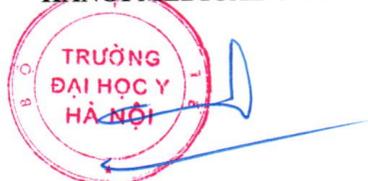
- **Funding source:** Pfizer
- **Principal investigator:** Assoc. Prof. Le Thi Huong, MD., Ph.D.
- **Research Institution:** Institute for Preventive Medicine and Public Health,
Hanoi Medical University
- **Site for research:** Lao, Vietnam
- **Research period:** 2015 – 2018
- **Date of approval:** November ,2015

IRB Standing Member
Hanoi Medical University



Assoc. Prof. Ngo Van Toan MD., PhD

IRB CHAIRMAN
VICE PRESIDENT OF
HANOI MEDICAL UNIVERSITY



Prof. Ta Thanh Van MD., PhD

Số: 184.../HĐĐĐĐHYHN
Vv: Chấp thuận ĐĐNCYSH

Hà Nội, ngày 19 tháng 11 năm 2015

**CHỨNG NHẬN CHẤP THUẬN CỦA HỘI ĐỒNG ĐẠO ĐỨC
TRONG NGHIÊN CỨU Y SINH HỌC**

Căn cứ Quyết định số 1722/QĐ-ĐHYHN, ngày 20 tháng 5 năm 2014 của Hiệu trưởng trường Đại học Y Hà Nội về việc thành lập Hội đồng và Ban thư ký Hội đồng Đạo đức trong nghiên cứu y sinh học xét duyệt các vấn đề đạo đức trong nghiên cứu Y sinh học của các đề tài/Dự án;

Căn cứ chứng nhận số IRB00003121 của Hoa Kỳ chấp nhận Hội đồng Đạo đức trường Đại học Y Hà Nội, ngày 16 tháng 6 năm 2009, được cấp lại ngày 01 tháng 10 năm 2012;

Căn cứ biên bản tổng hợp ý kiến đối với đề tài của Hội đồng Đạo đức trong nghiên cứu Y sinh học trường Đại học Y Hà Nội ngày 10 tháng 11 năm 2015;

Nay Hội đồng Đạo đức trong nghiên cứu Y sinh học trường Đại học Y Hà Nội chấp thuận về các khía cạnh đạo đức trong nghiên cứu đối với đề tài:

- Tên đề tài: Tiếp cận các dịch vụ tiêm chủng cho phụ nữ độ tuổi sinh đẻ tại Việt Nam giai đoạn 2015 - 2018**
- Chủ nhiệm:** PGS.TS. Lê Thị Hương
- Cơ quan chủ trì đề tài:** Viện đào tạo Y học dự phòng và Y tế công cộng, Trường Đại học Y Hà Nội
- Địa điểm triển khai:** Việt Nam, Lào
- Thời gian nghiên cứu:** 2015 – 2018
- Ngày chấp thuận:** Ngày tháng 11 năm 2015

ỦY VIÊN THƯỜNG TRỰC



PGS.TS. Ngô Văn Toàn

CHỦ TỊCH HỘI ĐỒNG
KT. HIỆU TRƯỞNG
PHÓ HIỆU TRƯỞNG



GS.TS. Tạ Thành Văn

Appendix 3: Questionnaire in English version

KNOWLEDGE, ATTITUDE AND BEHAVIOR ABOUT THE USE OF VACCINES TO PREVENT TO SOME DISEASES (Rubella, Influenza, Tetanus, Hepatitis B, HPV) AMONG WOMEN OF CHILD-BEARING AGE

Code:

ABOUT THE STUDY

To reduce the harmful effects of several diseases (such as Rubella, influenza, tetanus, hepatitis B, HPV) for women in the child-bearing age (especially the pregnant), we conduct a study namely “The use of vaccines and some related factors in pregnant women and women had children under 12 months of age in Dong Da and Ba Vi district, Ha Noi in 2016”

The participation in this study is entirely voluntary. The information you answered correctly is extremely vital for the research. Thus, we hope that you will cooperate and provide assistance for us to get the most accurate information. Our team ensures that your information all will be kept the confidential object and we will not disclose these data you shared with local leaders, communes as well as anyone else.

Contacts:

If you want more information or have any question concerning this research, you can ask me now or contact Dr. Le Thi Thanh Xuan – Coordinator – Hanoi medical university at the phone number: 0904248842

Screening question:

Do you agree to participate in this study?

[] Yes [] No **STOP**

I. ADMINISTRATIVE

1. Date of interview:...../04/2016

2. Interview place: 1. At interviewees' home ;

2. Other:.....

3. Full name of interviewer:

4. Full name of interviewee:

Phone number:.....

5. Address: No: Street:

Group:

6. Name of Ward/commune:

1. Trung Tu; 2. Phuong Lien; 3. Thuy An; 4. Phong Van

7. Name of District/county: 1. Dong Da ; 2. Ba vi

8. Data check in the field site

Name of the supervisor/ Sign	Date of checking	Review of the content (code number of question)
------------------------------	------------------	---

9. Clean and input the data

Clean the data	The first input	The second input
Name	Name	Name
Sign	Sign	Sign

II. QUESTIONS

ID	Question	Content	Skip
A. THE SOCIO-ECONOMIC CHARACTERISTIC			
A1	Birth of year (solar calendar)	.....
A2	Is your registration permanent or temporary or unregistered?	1. Permanent residence 2. Temporary residence 3. No registration	
A3	What is your ethnicity?	1. Kinh ethnic 2. Other (specify):	
A4	What is your educational attainment?	1. Illiteracy 2. Primary 3. Secondary school 4. Higher secondary School 5. College 6. University 7. Master	
A5	What do you do? <i>(the job that you spent most of the time)</i>	1. Homemaker 2. Farmer 3. Public servants 4. Workers 5. Self-Business 6. Business Manager 7. Other (specify).....	
A6	How many people living and eating are there in your family during the last 6 months? <i>[Note: pensioners are not workers]</i>	1. Total: people, including: 2. The number of people under the age 18..... people 3. The number of women aged 15-49 years..... people 4. The number of people aged 18-60 years..... people 5. The number of people who are working and have their income..... people 6. The number of people over 60 years old..... people	
A7	How much your family's income per month estimate in the year 2015 is there? <i>(The total income of all</i>	..... Million VND/ month / family 0. Total monthly spending:..... 1. Food cost..... 2. Living (electricity, water) 3. Rent for house (if any)..... 4. Education..... 5. Other:	

	<i>members)</i> <i>Unit: thousand VND</i>	6. Not known (overall estimate)	
A8	In the last month, how much money your family spend for? <i>Ask each item</i> (Unit: thousand VND)	0. Total monthly spending:..... 1. Food cost..... 2. Living (electricity, water) 3. Rent a house (if any)..... 4. Education..... 5. Other: 6. Not known (overall estimate)	
A9	In the past 12 months, how much do your whole family spend for? <i>Ask each item</i>	1. Build (new construction and repairs) 2. Health and health care service: 3. Buy furnitures (TVs, refrigerators, motorcycles..) 4. Traveling: 5. Other (weddings, community...)..... 6. Not know (overall estimate)	
A10	What is your current marital status?	1. Single 2. Married 3. Living together, not married 4. Divorced 5. Widowed	
A11	Are you pregnant woman or having a baby under 1 year old?	1. Pregnant 2. having a baby under 1 year old (BOD from 31/3/15 to 30/3/16)	2 →A13
A12	How many week of your gestation?	..... weeks	
A13	During the recent/current pregnancy, how many times do you have the antenatal examination? In the first 3 months? Middle? Last?	Total: .....times The first 3 months: times The middle 3 months: times The last 3 months: times	
A14	During the recent/current pregnancy, where do you go to have the antenatal	1. Commune/wards medical 2. District/province hospital 3. Central hospital 4. Private/International hospital 5. Other (specify):.....	Pregna nt women in the first

	examination? (Multiple choice question)	9. No Answer	time →A19
A15	Where was your last child born?	1. Commune/wards medical 2. District/province hospital 3. Central hospital 4. Private/International hospital 5. Other (specify):..... 9. No Answer	
A16	How many children do you have?	.....
A17	When did your first child born?		One child→ A19
A18	When did your last child born?		
A19	Do you have a health insurance card?	1. Yes 2. No	
A20	Do you use the Internet?	1. Yes 2. No	2→ A22
A21	What purposes do you using the Internet? [Multiple choice question]	1. Read the online newspaper 2. Search for information 3. Buying and selling online 4. Access to social networks (facebook ...) 5. Entertainment (watching movies, listening to music ...) 6. Other (specify):	
A22	What is the health status during your pregnancy? (Self-assessment)	1. Very good 2. Good 3. Normal 4. Weak 5. Very weak	Pregna nt women →A24
A23	What is your current health status? (Self-assessment)	1. Very good 2. Good 3. Normal 4. Weak 5. Very weak	
A24	Have you ever suffer from Rubella, influenza, hepatitis B,	<u>Rubella</u> : 1.Yes 2.No <u>Influenza</u> : 1.Yes 2.No <u>hepatitis B</u> : 1.Yes 2.No <u>Tetanus</u> : 1.Yes 2.No <u>Cervical cancer</u> : 1.Yes 2.No	

	tetanus, gynecological diseases yet? <i>If you have gynecological diseases, what is your disease?</i>		
A25	During the recent/ current pregnancy, do you have any other disease (acute and chronic). If yes, what disease?	1. Yes (specify) 2. No	
B. THE REALITY ACCESS TO INFORMATION AND USE OF VACCINES			
B1	According to you, what benefits of Vaccination are? <i>(Multiple choice questions)</i>	1. Prevent various dangerous and infectious diseases 2. Cost cheaper than treatment 3. Cheap, safe and effective 4. Other (specify):..... 5. Not know 9. No Answer	
B2	Have you heard about Vaccines <u>(rubella, influenza, hepatitis B, tetanus, cervical cancer / HPV)?</u> <i>[Ask each Vaccine]</i>	1. Rubella Vaccines: 1. Yes; 2. No 2. Influenza Vaccines: 1. Yes; 2. No 3. Hepatitis B Vaccines: 1. Yes; 2. No 4. Tetanus Vaccines: 1. Yes; 2. No 5. HPV Vaccines: 1. Yes; 2. No 6. Other (specify):.....	All not →C1
B3	Where have you heard about the above Vaccines? <i>(Multiple choice question)</i>	1. In school 2. Through watching television 3. Through listening to the radio, loudspeaker 4. By reading newspapers, magazines 5. Look on the internet 6. Through medical staff 7. Through friends, relatives 8. Other (specify): 88. Do not remember 99. No reply	
B4	Did you inject any	Rubella Vaccines: 1. Yes 0. No	

	[Vaccines] ? (Asking 05 types of Vaccines)	Influenza Vaccines: 1. Yes 0. No Hepatitis B Vaccines: 1. Yes 0. No Tetanus Vaccines: 1. Yes 0. No HPV Vaccines: 1. Yes 0. No	
B4c	What reasons do you not inject [Vaccines]? (Ask if participant answer no injects any vaccines)	1. Do not care 2. Not know about the effects of Vaccines 3. Not know where to go injections 4. Expensive 5. Far from your home 6. Do not know about Vaccines 7. Other (Specify) 9. No answer	
B5	Where do you go? 1. Commune health station 2. District/province hospital 3. District/province health center 4. City/province preventive health centers 5. Private clinics 6. Private/International hospital 7. Central hospital 8. Center for Immunization Services 9. Other (specify):.....	1. Rubella Vaccines: 1 2 3 4 5 6 7 8 9 2. Influenza Vaccines: 1 2 3 4 5 6 7 8 9 3. Hepatitis B Vaccines: 1 2 3 4 5 6 7 8 9 4. Tetanus Vaccines: 1 2 3 4 5 6 7 8 9 5. HPV HPV Vaccines: 1 2 3 4 5 6 7 8 9	
B6	How many total doses of Vaccines do you have until now? (Ask each type, if not write 0)	1. Rubella Vaccines: dose 2. Influenza Vaccines: dose 3. Hepatitis B Vaccines: dose 4. Tetanus Vaccines: dose 5. HPV Vaccines: dose 8. Do not remember 9. No answer	
B6a	How many total dose Vaccines do you inject in the last/current pregnancy? (Ask each type, if not write 0)	1. Rubella: .....dose 2. Influenza: .....dose 3. Hepatitis B: .....dose 4. Tetanus: .....dose 5. HPV: .....dose 6. Do not remember 9. No answer	
B6b	How much each dose did you	1. Rubella Vaccines: thousand VND/dose	

	inject in the last/current pregnancy? <i>(If free - record MP, no inject – record KT, not remember - record KN)</i>	2. Influenza Vaccines: thousand VND/dose 3. Hepatitis B Vaccines: thousand VND/dose 4. Tetanus Vaccines: thousand VND/dose 5. HPV Vaccines: thousand VND/dose	
B7	After injection various Vaccines above, did you have any undesirable effects? <i>(Ask the question B7a, b, c, d, e, respectively if yes)</i>	1. Rubella Vaccines: 1. Yes 2. No 0. No injection 2. Influenza Vaccines 1. Yes 2. No 0. No injection 3. Hepatitis B Vaccines 1. Yes 2. No 0. No injection 4. Tetanus Vaccines 1. Yes 2. No 0. No injection 5. HPV Vaccines 1. Yes 2. No 0. No injection	All not →B8
B7e	After injecting HPV Vaccines, do you have any undesirable effects? <i>(Multiple choice questions)</i>	1. No side-effect 2. Pain, swelling, itching and redness at the injection site. 3. Slight fever (under 38.5 degrees C) 4. High fever (upper 38.5 degrees C) 5. Dizziness, nausea, vomiting 6. Pale 7. Difficult or wheezy breath 8. Rash 9. Lymphadenopathy, headache, joint pain, muscle pain, fatigue, weakness, unwell feeling. 11. Other (specify)..... 12. Do not remember 99. No answer	
B8	The reasons why you have the decision to inject Vaccines above? <i>(Multiple choice questions)</i>	1. To prevent for the mother 2. To prevent for the child 3. Other (specify)..... 9. No answer	
B8a	What diseases do the Vaccines above can prevent for the mother? <i>(Just ask if the</i>	0. Do not know 1. Rubella 2. Influenza 3. Hepatitis B 4. Tetanus	

	<i>answer in B8 is 1)</i>	5. Cervical cancer 6. Genital warts 7. Other (specify):	
B8b	What diseases do the Vaccines above can prevent for the child? <i>(Just ask if the answer in B8 is 2)</i>	0. Do not know 1. Congenital Rubella syndrome 2. Influenza 3. Hepatitis B 4. Tetanus 5. Cervical cancer 6. Genital warts 7. Other (specify):	
B9	Do you want to receive more information about Vaccines?	1. Yes 2. No	2→ B11
B10	If yes, what content of Vaccines do you want to hear? <i>[Multiple choice questions]</i>	1. Benefits of Vaccines 2. Schedules of Vaccines 3. Vaccine location 4. Consequences on non-vaccination 5. Free-of-charge Vaccines and location 6. The price of Vaccines 7. The type of Vaccines 8. Other (specify) 9. No Answer	
B11	What type of the communication about Vaccination do you like most? (ONE option)	1. TVs 2. Radios 3. Newspaper / magazine 4. Posters / Leaflets 5. Cell phone 6. Health workers' advice 7. Guideline in the Vaccination booklet 8. Direct talks 9. Integrate with local meetings 10. In the Internet 11. Other (Specify)..... 99. No answer	
C. RELATED FACTORS TO THE USE OF VACCINES			
Ce. Knowledge of Cervical cancer (CC)			
C1e	Have you ever heard about CC?	1. Yes 2. No	
C2e	CC is heritable disease?	1. Yes 2. No 3. Do not know	

		9. No answer	
C3e	What is the cause of CC?	1. Viruses 2. Bacteria 3. Parasites 4. Heritability 5. Poor hygiene (genitals) 6. Other (specify) 7. Do not know 9. No Answer	
C4e	CC is the transmitted disease?	1. Yes 2. No 3. Do not know 9. No answer	
C5e	What objects will have the high risk for CC? <i>(Multiple choice questions)</i>	1. Children 2. Women, ever birth giving women. 3. Elder people 4. Everyone 5. Unfaithful people 6. Women with poor (gynecological) hygiene behavior 7. Other (specify)..... 8. Not know 9. No Answer	
C6e	Can you point out the symptoms of CC? <i>(Multiple choice questions)</i>	1. Abnormal vaginal bleeding 2. Unusual discharge from the vagina 3. Urinary incontinence 4. Bleeding after intercourse 5. Pain during sexual intercourse 6. Back pain 7. Other (specify)..... 8. Do not know 9. No Answer	
C7e	CC can be prevented	1. Yes 2. No 3. Do not know 9. No answer	2,3,9→ C10e
C8e	If yes, what is the most effective prevention method?	1. HPV Vaccines 2. Regular gynecological examination 3. CC testing regularly 4. Other (specify) 5. Do not know 9. No answer	
C9e	What benefits will women who prepare the pregnancy have if	1. Prevent to HPV vaccine 2. Prevent to warts 3. Prevent to genital infections. 4. Other (specify)	

	they inject HPV vaccine? (Multiple choice questions)	5. Do not know 9. No answer	
Knowledge about the HPV Vaccines: prevention of cervical cancer			
C10e	Do women in the child-bearing age need to inject HPV Vaccines? [Read 05 answers]	1. Very necessary 2. Necessary 3. Neutral 4. Not necessary 5. Very not necessary 9. No answer	
C11e	How many HPV vaccine doses are there?	.....dose 0. Do not know 9. No answer	
C12e	What age should HPV vaccine be taken?	1. For the group of age 9-18 2. For the group of age 9-26 3. Other (specify) 4. Do not know 9. No answer	
C13e	Sexually active women can take HPV vaccines?	1. Yes 2. No 3. Do not know 9. No answer	2,3 → C15
C14e	Before taking HPV vaccination, should these women be tested for HPV?	1. Yes 2. No 3. Do not know 9. No Answer	
C15e	Who should not take HPV vaccines? (Multiple choice questions)	1. No object 2. People who have an acute infectious disease, diphtheria. 3. People who are allergic to components of HPV vaccine 4. Other (specify)	
C16e	What is the undesirable effect after receiving HPV vaccines? (Multiple choice questions)	1. No response 2. Pain, swelling, itching and redness at the injection site. 3. Slight fever (under 38.5 degrees C) 4. High fever (upper 38.5 degrees C) 5. Dizziness, nausea, vomiting 6. Pale 7. Difficult or wheezy breath	

		8. Rash 9. Lymphadenopathy, headache, joint pain, muscle pain, fatigue, weakness, unwell feeling. 11. Other (specify)..... 12. Do not remember 99. No answer	
D- THE ACCESS OF VACCINATION SERVICES IN LOCAL AREA			
D1	Do you know any health services that can provide vaccination services for women of child-bearing age (15-49)? If yes, what type of vaccine do they supply?	0. Unknown 1. Rubella vaccine 2. Influenza vaccine 3. Hepatitis B vaccine 4. Tetanus vaccine 5. HPV vaccine vaccine 6. Other (specify): 9. No Answer <i>[Ask each vaccine]</i>	0 <input type="checkbox"/> D3
D2	Name of these health services mentioned above <i>(Multiple choice questions)</i> 1. Commune/wards medical 2. District/province hospital 3. District/province medical center 4. City/province preventive health centers 5. Private clinics 6. Private/International hospital 7. Central hospital 8. Center for Immunization Services 9. Other (specify):.....	1. Rubella vaccine: 1 2 3 4 5 6 7 8 9 2. Influenza vaccine: 1 2 3 4 5 6 7 8 9 3. Hepatitis B vaccine: 1 2 3 4 5 6 7 8 9 4. Tetanus vaccine: 1 2 3 4 5 6 7 8 9 5. HPV Vaccines: 1 2 3 4 5 6 7 8 9	
D3	What is the local vaccination unit that you often use?	1. Commune health station 2. District/province hospital 3. District/province health center 4. City/province preventive health centers 5. Private clinics	

		6. Private/International hospital 7. Center for Immunization Services 8. Other (specify):.....	
D4	How many kilometers do you travel to access this vaccination unit?	..... km	
D5	How long do you travel?	..... minutes	
D6	How much do you paid for traveling in each vaccination time?	.....thousand VND (<i>0 if cycling or walking</i>)	
D7	When you access this vaccination unit, have you ever meet the lack vaccines condition? If yes, how many times?	1. Never 4. Upper 3 times 2. 1 times 5. Do not remember 3. 2 times 9. No answer	
D8	How do the quality of vaccines in there?	1. Very good 5. Very bad 2. Good 6. Do not know 3. Normal 9. Not answer 4. Not good	
D9	In order to improve the accessibility and utilization of vaccination services among women of reproductive age, do you agree with the following activities? Do you suggest any activity? <i>[Ask each lin</i>	Out-of-office hours: 1. Yes; 0. No Home vaccination: 1. Yes; 0. No Subscribe to remind routines by phone and message: 1. Yes; 0. No Advice in the Internet: 1. Yes; 0. No Other (specify):.....: 1. Yes; 0. No	
D10	In order to ensure the children health, what kind of vaccines do women need to	1. Influenza 2. Measles 3. Mumps 4. Rubella 5. Hepatitis B 6. Tetanus 7. Chickenpox 8. HPV 9. Other (specify):.....	<i>Do not read the answer</i>

	take for prevention of certain diseases? <i>(Multiple choice question)</i>	99. No answer	
E- Willing to pay for vaccination			
Ee	READ THE SCENARIO OF HPV VACCINE		
E1e	Do you know the price of HPV vaccine given to women in the child-bearing age? If yes, what is the price?	1. Yes.....VND 2. No 3. Free of charge	
E2e	Do you want to inject the HPV vaccine?	1. Yes 2. No	1 → TABLE
E9e	If not, why do you not choose the HPV vaccine?	1. Not necessary 2. The cost is too high 3. Do not find yourself at risk of Cervix cancer 4. Other (specify):.....	

WILLING TO PAY (circle the price which participant agree)

TYPE OF VACCINE	HPV VACCINE
E3. CURRENT PRICE PER DOSE	1000K
E4. INCREASE X2	2000K
E5. INCREASE X4	4000K
E6. DECREASE X2	500K
E7. DECREASE X4	250K
E8. MAXIMIZE	.....

THANK YOU!

Appendix 4: Questionnaire in Vietnamese version

PHIẾU ĐIỀU TRA KIẾN THỨC, THÁI ĐỘ, HÀNH VI SỬ DỤNG VẮC XIN PHÒNG MỘT SỐ BỆNH (RUBELLA, CÚM, UỐN VÁN, VIÊM GAN B, HPV) Ở NỮ GIỚI TUỔI SINH ĐẸ

Mã phiếu:

GIỚI THIỆU VỀ NGHIÊN CỨU

Để góp phần giảm tác hại của một số bệnh (Rubella, cúm, uốn ván, viêm gan B, HPV) đối với nữ giới tuổi sinh đẻ (đặc biệt phụ nữ có thai) chúng tôi tiến hành nghiên cứu đề tài “Thực trạng sử dụng vắc xin và một số yếu tố liên quan của phụ nữ mang thai, có con dưới 12 tháng tuổi tại quận Đống Đa và huyện Ba Vì, Hà Nội năm 2016”.

Việc tham gia vào nghiên cứu là hoàn toàn tự nguyện. Những thông tin chị trả lời đúng là vô cùng quan trọng đối với nghiên cứu. Vì vậy chúng tôi mong rằng chị sẽ hợp tác và giúp chúng tôi có được những thông tin chính xác nhất. Nhóm nghiên cứu đảm bảo rằng thông tin của đối tượng sẽ được bảo mật và chúng tôi sẽ không tiết lộ thông tin chị chia sẻ cho lãnh đạo địa phương và trạm y tế cũng như bất kỳ ai khác.

Địa chỉ liên hệ khi cần thiết:

Nếu chị muốn biết thêm thông tin hoặc có câu hỏi gì liên quan đến nghiên cứu, chị có thể hỏi tôi bây giờ hoặc liên hệ với TS. Lê Thị Thanh Xuân-Điều phối viên nghiên cứu- Trường Đại học Y Hà Nội theo số điện thoại: 0904248842

Câu hỏi chọn lọc đối tượng:

Chị đồng ý tham gia nghiên cứu này chứ?

[] Đồng ý [] Từ chối →**DỪNG**

I. PHẦN HÀNH CHÍNH

1. Ngày phỏng vấn:...../04/2016
2. Địa điểm phỏng vấn: 1. Tại nhà ĐTNC; 2. Khác (ghi rõ):.....
3. Họ tên phỏng vấn viên:
4. Họ và tên người được phỏng vấn:
- Điện thoại:.....
5. Địa chỉ: Số nhà: Đường phố: Tổ:
6. Phường/xã: 1. Trung Tự; 2. Phương Liên; 3. Thụy An; 4. Phong Vân
7. Quận/huyện: 1. Đống Đa; 2. Ba vì

8. Kiểm tra phiếu tại thực địa

Họ tên giám sát viên/ký	Ngày kiểm tra phiếu	Nội dung cần xem lại (ghi mã số câu hỏi)
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9. Làm sạch số liệu và nhập liệu

Làm sạch số liệu	Nhập liệu lần 1	Nhập liệu lần 2
Họ tên người làm sạch số liệu	Họ tên người nhập liệu 1	Họ tên người nhập liệu 2
Chữ ký	Chữ ký	Chữ ký

II. CÂU HỎI

MS	Câu hỏi	Nội dung trả lời	Chuyên
A. PHẦN THÔNG TIN CÁ NHÂN			
A1	Chị sinh năm nào (<i>dương lịch</i>)?	.....
A2	Hộ khẩu hiện tại của chị là thường trú, tạm trú hay không đăng ký?	1. Hộ khẩu thường trú 2. Hộ khẩu tạm trú 3. Không đăng ký	
A3	Chị là người dân tộc nào?	1. Kinh 2. Khác (ghi rõ):	
A4	Trình độ học vấn của chị?	1. Mù chữ 2. Tiểu học 3. Trung học cơ sở 4. Trung học phổ thông 5. Cao đẳng 6. Đại học 7. Sau đại học	
A5	Nghề nghiệp của chị đang làm hiện nay là gì (<i>công việc mà chị dành nhiều thời gian nhất</i>)?	1. Nội trợ/ ở nhà 2. Làm ruộng 3. Công chức, viên chức 4. Công nhân 5. Kinh doanh tự do 6. Quản lý doanh nghiệp 7. Khác (ghi rõ).....	
A6	Hiện tại gia đình chị đang có bao nhiêu người ăn chung, ở chung trong 6 tháng qua? <i>[không tính người về hưu có lương là người lao động]</i>	1. Tổng số: người, trong đó: 2. Số người dưới 18 tuổi..... người 3. Số nữ từ 15-49 tuổi:..... người 4. Số người từ 18-60 tuổi người 5. Số người đang lao động và có thu nhập người 6. Số người trên 60 tuổi người	
A7	Thu nhập bình quân/ tháng của gia đình chị trong năm 2015 ước tính là bao nhiêu? (<i>Tổng thu nhập của</i>	..... triệu đồng/tháng/gia đình	

	<i>tất cả các thành viên)</i>		
A8	Trong tháng trước, gia đình chị chi tiêu bao nhiêu tiền cho <i>Hỏi từng mục một</i>	0. Tổng chi tiêu hàng tháng:.....nghìn 1. Chi phí cho thực phẩm.....nghìn 2. Sinh hoạt (điện, nước) .....nghìn 3. Thuê nhà.....nghìn 4. Giáo dục nghìn 5. Khác: nghìn 6. Không biết (ước lượng chung) nghìn	
A9	Trong 12 tháng qua, cả gia đình chị chi tiêu bao nhiêu tiền cho các khoản không thường xuyên? <i>Hỏi từng mục một</i>	1. Xây dựng (xây sửa nhà, xây mới) nghìn 2. Y tế và chăm sóc sức khỏe..... nghìn 3. Mua đồ đạc (Tivi, tủ lạnh, xe máy.....)..... nghìn 4. Du lịch: nghìn đồng 5. Khác (cưới hỏi, cộng đồng.....)..... nghìn 6. Không biết (Ước lượng chung)..... nghìn	
A10	Tình trạng hôn nhân hiện tại của chị?	1. Độc thân 2. Đã kết hôn 3. Sống chung, không kết hôn 4. Ly hôn 5. Goá	
A11	Chị thuộc đối tượng nào trong các đối tượng sau?	1. Đang mang thai 2. Đã sinh con dưới 1 tuổi (sinh từ 31/3/15-30/3/16)	2 → câu A13
A12	Số tuần thai hiện tại?	.....tuần tuổi	
A13	Lần có thai cuối/mang thai lần này, chị khám thai bao nhiêu lần? số lần khám trong 3 tháng đầu? giữa? cuối?	Tổng số lần khám thai.....lần 3 tháng đầu: .....lần 3 tháng giữa: .....lần 3 tháng cuối: .....lần	
A14	Lần có thai cuối/mang thai lần này, chị	1. Trạm Y tế xã/phường 2. Bệnh viện huyện/tỉnh 3. Bệnh viện trung ương	Phụ nữ mang thai lần

	khám thai ở đâu? <i>(Câu hỏi nhiều lựa chọn)</i>	4. Bệnh viện tư nhân/quốc tế 5. Khác (ghi rõ):..... 9. Không trả lời	đầu chuyển A19
A15	Lần cuối chị sinh con ở đâu?	1. Trạm Y tế xã/phường 2. Bệnh viện huyện/tỉnh 3. Bệnh viện trung ương 4. Bệnh viện tư nhân/quốc tế 5. Khác (ghi rõ): 9. Không trả lời	
A16	Số con hiện tại	.....con	
A17	Năm sinh con đầu lòng?		1 con → A19
A18	Năm sinh con bé nhất?		
A19	Chị có thẻ Bảo hiểm Y tế không?	1. Có 2. Không	
A20	Chị có sử dụng Internet không?	1. Có 2. Không	2→A22
A21	Mục đích chị sử dụng Internet? <i>[Câu hỏi nhiều lựa chọn]</i>	1. Đọc báo điện tử 2. Tìm kiếm thông tin 3. Mua bán trên mạng 4. Tiếp cận mạng xã hội (facebook...) 5. Giải trí (xem phim, nghe nhạc...) 6. Khác (ghi rõ):.....	
A22	Tình trạng sức khỏe lúc mang thai như thế nào? <i>(đối tượng tự đánh giá)</i>	1. Rất tốt 2. Tốt 3. Bình thường 4. Yếu 5. Rất yếu	Phụ nữ đang mang thai →A24
A23	Tình trạng sức khỏe hiện nay của chị như thế nào? <i>(đối tượng tự đánh giá)</i>	1. Rất tốt 2. Tốt 3. Bình thường 4. Yếu 5. Rất yếu	
A24	Chị đã từng mắc bệnh Rubella, cúm, viêm gan B, uốn ván, các bệnh lý phụ khoa chưa?	<u>Rubella:</u> 1.Có 2.Chưa <u>Cúm:</u> 1.Có 2.Chưa <u>Viêm gan B:</u> 1.Có 2.Chưa <u>Uốn ván:</u> 1.Có 2.Chưa <u>Ung thư cổ tử cung:</u> 1.Có 2.Chưa	

	<i>Nếu mắc bệnh phụ khoa hỏi cụ thể bệnh gì?</i>		
A25	Trong lúc mang thai gần nhất/hiện nay, chị có mắc bệnh (<i>cấp tính và mạn tính</i>) gì khác không? Nếu có là bệnh gì?	1. Có (cụ thể)..... 2. Không	
B. THỰC TRẠNG TIẾP CẬN THÔNG TIN VÀ SỬ DỤNG VẮC XIN			
B1	Theo chị, tiêm chủng có những ích lợi gì? <i>(Câu hỏi nhiều lựa chọn)</i>	1. Phòng được các bệnh truyền nhiễm hiểm 2. Chi phí rẻ hơn điều trị bệnh 3. Phương pháp phòng bệnh rẻ tiền, an toàn, hiệu quả 4. Khác (ghi rõ):..... 5. Không biết 9. Không trả lời	
B2	Chị đã từng nghe về vắc xin (<u>Rubella, cúm, viêm gan B, uốn ván, ung thư cổ tử cung/HPV</u>) chưa? <i>[Hỏi từng vắc xin]</i>	1. Vắc xin phòng Rubella: 1. Có; 2. Không 2. Vắc xin phòng cúm: 1. Có; 2. Không 3. Vắc xin phòng viêm gan B: 1. Có; 2. Không 4. Vắc xin phòng uốn ván: 1. Có; 2. Không 5. Vắc xin phòng ung thư CTC: 1. Có; 2. Không 6. Khác (ghi rõ):.....	Tất cả chưa → Chuyển câu C1
B3	Chị nghe thông tin về vắc xin ở trên từ đâu? <i>(Câu hỏi nhiều lựa chọn)</i>	1. Trong nhà trường 2. Qua xem ti vi 3. Qua nghe radio, loa truyền thanh 4. Qua đọc báo, tạp chí 5. Xem trên internet 6. Qua nhân viên y tế 7. Qua bạn bè, người thân 8. Khác (ghi rõ)..... 88. Không nhớ 99. Không trả lời	
B4	Chị đã từng tiêm [vắc xin]	Vắc xin phòng Rubella: 1. Có 0. Chưa	

	<p>chưa? (<i>đọc tên 05 loại vắc xin</i>)</p>	<p>Vắc xin phòng cúm: 1. Có 0. Chưa</p> <p>Vắc xin phòng viêm gan B: 1. Có 0. Chưa</p> <p>Vắc xin phòng uốn ván: 1. Có 0. Chưa</p> <p>Vắc xin phòng ung thư cổ tử cung: 1. Có 0. Chưa</p>	
B4c	<p>Lý do chị không tiêm [vắc xin] phòng bệnh là gì? (<i>Hỏi câu này nếu đối tượng trả lời không tiêm bất kể 05 loại vắc xin vừa hỏi</i>)</p>	<p>1. Không quan tâm 2. Không biết về tác dụng của vắc xin 3. Không biết đi tiêm ở đâu 4. Giá thành cao 5. Địa điểm tiêm ở xa 6. Không biết về Vắc xin 7. Khác (Ghi rõ)..... 9. Không trả lời</p>	
B5	<p>Chị tiêm vắc xin trên ở đâu? 1. Trạm Y tế xã, phường 2. BV quận/huyện/tỉnh/TW 3. TT YT quận/huyện 4. TT YTDP tỉnh/thành phố 5. Phòng khám tư nhân 6. BV tư nhân/nước ngoài 7. Bệnh viện Trung ương 8. Trung tâm tiêm chủng dịch vụ 9. Khác (Ghi rõ):.....</p>	<p>1. VX phòng Rubella: 1 2 3 4 5 6 7 8 9 2. VX phòng cúm: 1 2 3 4 5 6 7 8 9 3. VX phòng VG B: 1 2 3 4 5 6 7 8 9 4. VX phòng uốn ván: 1 2 3 4 5 6 7 8 9 5. VX phòng HPV: 1 2 3 4 5 6 7 8 9</p>	
B6	<p>Tổng số mũi vắc xin mà chị tiêm cho đến thời điểm hiện tại? (<i>hỏi từng loại, nếu chưa tiêm ghi 0</i>)</p>	<p>1. VX Rubella: mũi 2. VX cúm: .....mũi 3. VX viêm gan B: .....mũi 4. VX uốn ván: .....mũi 5. VX HPV:.....mũi 8. Không nhớ 9. Không trả lời</p>	

B6a	Tổng số mũi vắc xin mà chị tiêm cho lần mang thai cuối/hiện tại? (hỏi từng loại, nếu chưa tiêm ghi 0)	<ol style="list-style-type: none"> 1. VX Rubella: mũi 2. VX cúm: .....mũi 3. VX viêm gan B: .....mũi 4. VX uốn ván: .....mũi 5. VX HPV:.....mũi 6. Không nhớ 9. Không trả lời 	
B6b	Giá mỗi mũi tiêm chị đã sử dụng trong lần gần nhất? (nếu miễn phí ghi MP, còn không tiêm ghi KT, không nhớ ghi KN)	<ol style="list-style-type: none"> 1. VX phòng Rubella:.....nghìn/mũi 2. VX phòng cúm: nghìn /mũi 3. VX phòng viêm gan B: nghìn /mũi 4. VX phòng uốn ván: nghìn /mũi 5. VX phòng ung thư cổ tử cung: nghìn/mũi 	
B7	Sau khi tiêm các vắc xin kể trên, chị có phản ứng, tác dụng phụ gì không? (hỏi các câu B7a,b,c,d,e tương ứng nếu trả lời có)	<ol style="list-style-type: none"> 1. VX Rubella: 1. Có; 2. Không; 0. Không tiêm 2. VX cúm: 1. Có; 2. Không; 0. Không tiêm 3. VX viêm gan B: 1. Có; 2. Không; 0. Không tiêm 4. VX uốn ván: 1. Có; 2. Không; 0. Không tiêm 5. VX ung thư CTC: 1. Có; 2. Không; 0. Không tiêm 	Nếu tất cả không → Chuyển câu B8
B7e	Sau khi tiêm vắc xin HPV cơ thể có phản ứng, tác dụng phụ gì? (Câu hỏi nhiều lựa chọn)	<ol style="list-style-type: none"> 1. Không có phản ứng, tác dụng phụ 2. Đau, sưng, ngứa và đỏ tại chỗ tiêm. 3. Sốt nhẹ (<38,5 độ C) 4. Sốt cao (>38,5 độ C) 5. Choáng váng, buồn nôn, nôn 6. Tái nhợt 7. Khó thở, thở rít 8. Phát ban 9. Sưng hạch, nhức đầu, đau khớp, đau cơ, mệt, yếu người, cảm giác không khỏe 11. Khác (ghi rõ) 12. Không nhớ 99. Không trả lời 	
B8	Lý do chị quyết định tiêm vắc xin kể trên là gì?(Câu hỏi)	<ol style="list-style-type: none"> 1. Để phòng bệnh cho mẹ 2. Để phòng bệnh cho con 3. Khác (Ghi rõ)..... 9. Không trả lời 	

	<i>nhiều lựa chọn</i>)		
B8a	Theo chị, tiêm các vắc xin kể trên có thể phòng bệnh gì cho mẹ? (<i>chỉ hỏi nếu câu B9 trả lời là 1</i>)	0. Không biết 1. Rubella 2. Cúm 3. Viêm gan B 4. Uốn ván 5. Ung thư cổ tử cung 6. Sùi mào gà 7. Khác (ghi rõ):	
B8b	Theo chị, tiêm các vắc xin kể trên có thể phòng bệnh gì cho con? (<i>chỉ hỏi nếu câu B9 trả lời là 2</i>)	0. Không biết 1. Hội chứng Rubella bẩm sinh 2. Cúm 3. Viêm gan B 4. Uốn ván 5. Ung thư cổ tử cung 6. Sùi mào gà 7. Khác (ghi rõ):.....	
B9	Chị có muốn được truyền thông về tiêm phòng vắc xin không?	1. Có 2. Không	2→ chuyển B11
B10	Nếu có, nội dung gì về vắc xin mà chị muốn nghe? [<i>câu hỏi nhiều lựa chọn</i>]	1. Lợi ích tiêm vắc xin 2. Lịch tiêm/phác đồ 3. Địa điểm tiêm 4. Tác hại nếu không tiêm vắc xin 5. Vắc xin miễn phí và địa điểm 6. Giá vắc xin 7. Các loại vắc xin 8. Khác (Ghi rõ)..... 9. Không trả lời	
B11	Theo chị, khi truyền thông về tiêm chủng thì hình thức nào là chị thích nhất? (<i>Câu hỏi MỘT lựa chọn</i>)	1. Phát trên truyền hình 2. Phát trên đài phát thanh 3. Báo/ tạp chí 4. Tranh áp phích/ Tờ rơi 5. Điện thoại 6. Tư vấn của CBYT 7. Hướng dẫn trong sổ tiêm chủng 8. Tổ chức nói chuyện trực tiếp 9. Lồng ghép với các cuộc họp tại địa phương 10. Mạng Internet 11. Khác (Ghi rõ)	
		99. Không trả lời	

C. CÁC YẾU TỐ LIÊN QUAN ĐẾN VIỆC SỬ DỤNG VẮC XIN			
Ce.Kiến thức về bệnh Ung thư cổ tử cung (UTCTC)			
C1e	Chị đã từng nghe về bệnh UTCTC chưa?	1.Có 2.Chưa	
C2e	Theo chị, bệnh UTCTC có phải là bệnh di truyền không?	1. Có 2.Không 3. Không biết 9. Không trả lời	
C3e	Chị có biết bệnh UTCTC do tác nhân nào gây nên?	1. Vi rút 2. Vi khuẩn 3. Ký sinh trùng 4. Di truyền 5. Vệ sinh (bộ phận sinh dục) kém 6. Khác (ghi rõ)..... 7.Không biết 9. Không trả lời	
C4e	Bệnh UTCTC có phải là bệnh lây truyền hay không?	1. Có 2. Không 3. Không biết 9. Không trả lời	
C5e	Theo chị những đối tượng nào có nguy cơ cao mắc UTCTC? <i>(câu hỏi nhiều lựa chọn)</i>	1. Trẻ em 2. Phụ nữ, phụ nữ sau sinh. 3. Người già 4. Tất cả mọi người 5. Người không chung thủy. 6. Người vệ sinh (bộ phận sinh dục) kém 7. Khác (ghi rõ)..... 8. Không biết 9. Không trả lời	
C6e	Chị hãy kể những biểu hiện của bệnh UTCTC mà chị biết? <i>(Câu hỏi nhiều lựa chọn)</i>	1.Chảy máu bất thường ở âm đạo 2. Dịch âm đạo bất thường 3. Rò rỉ nước tiểu và phân qua âm đạo 4. Chảy máu sau khi quan hệ tình dục 5. Đau khi quan hệ tình dục 6. Đau lưng 7. Khác (ghi rõ) 8. Không biết 9. Không trả lời	
C7e	Theo chị, bệnh UTCTC do vi rút HPV có thể phòng ngừa	1.Có 2.Không 3.Không biết 9. Không trả lời	2,3,9→ Chuyển câu C10e

	được không?		
C8e	Nếu có, cách phòng ngừa nào hiệu quả nhất?	<ol style="list-style-type: none"> 1. Tiêm vắc xin HPV 2. Khám phụ khoa thường xuyên 3. Xét nghiệm UTCTC thường xuyên 4. Khác (ghi rõ) 5. Không biết 9. Không trả lời 	
C9e	Phụ nữ trong độ tuổi tiêm phòng UTCTC có tác dụng gì? (<i>Câu hỏi nhiều lựa chọn</i>)	<ol style="list-style-type: none"> 1. Phòng UTCTC 2. Phòng SMG 3. Phòng viêm nhiễm bộ phận sinh dục. 4. Khác (ghi rõ)..... 5. Không biết 9. Không trả lời 	
Kiến thức về vắc xin HPV: phòng ngừa Ung thư cổ tử cung (UTCTC)			
C10e	Theo chị, phụ nữ có cần thiết phải tiêm vắc xin phòng UTCTC không? [<i>đọc 05 đáp án lên</i>]	<ol style="list-style-type: none"> 1. Rất cần thiết 2. Cần thiết 3. Bình thường 4. Không cần thiết 5. Rất không cần thiết 	
C11e	Theo chị, vắc xin UTCTC cần tiêm ít nhất mấy mũi?	<p>.....mũi</p> <ol style="list-style-type: none"> 0. Không biết 9. Không trả lời 	
C12e	Theo chị, nên tiêm vắc xin UTCTC vào thời điểm nào?	<ol style="list-style-type: none"> 1. Trong độ tuổi 9-18 2. Trong độ tuổi 9-26 3. Khác (ghi rõ) 4. Không biết 9. Không trả lời 	
C13e	Theo bạn, phụ nữ đã quan hệ tình dục có cần phải tiêm vắc xin HPV nữa không?	<ol style="list-style-type: none"> 1. Có 2. Không 3. Không biết 9. Không trả lời 	2,3 → C15
C14e	Theo bạn, trước khi tiêm phòng UTCTC có cần phải xét nghiệm HPV không?	<ol style="list-style-type: none"> 1. Có 2. Không 3. Không biết 9. Không trả lời 	
C15e	Vaccin UTCTC không được tiêm những	<ol style="list-style-type: none"> 1. Không có đối tượng nào không được tiêm 2. Người đang bị bệnh truyền nhiễm cấp 	

	trường hợp nào? <i>(Câu hỏi nhiều lựa chọn)</i>	tính. 3. Người bị dị ứng với thành phần của vắc xin HPV 4. Khác (ghi rõ)..... 5. Không biết 9. Không trả lời	
C16 e	Theo chị, khi tiêm vắc xin UTCTC/SMG có thể có phản ứng, tác dụng phụ gì? <i>(Câu hỏi nhiều lựa chọn)</i>	1. Không có phản ứng, tác dụng phụ 2. Đau, sưng, ngứa và đỏ tại chỗ tiêm. 3. Sốt nhẹ (<38,5 độ C) 4. Sốt cao (>38,5 độ C) 5. Choáng váng, buồn nôn, nôn 6. Tái nhợt 7. Khó thở, thở rít 8. Phát ban 9. Sưng hạch, nhức đầu, đau khớp, đau cơ, mệt, yếu người, cảm giác không khỏe 11. Khác (ghi rõ)..... 12. Không biết	
D-TIẾP CẬN DỊCH VỤ TIÊM PHÒNG TẠI ĐỊA PHƯƠNG			
D1	Chị có biết cơ sở dịch vụ y tế nào trên địa bàn chị sinh sống có cung cấp dịch vụ tiêm phòng cho nữ giới tuổi sinh đẻ (15-49) không? Nếu có cung cấp vắc xin loại gì? <i>[hỏi từng loại vắc xin]</i>	0. Không biết 1. VX Rubella 2. VX cúm 3. VX viêm gan B 4. VX uốn ván 5. VX HPV 6. VX khác (ghi rõ): 9. Không trả lời	0 → Chuyển câu D3
D2	Tên cơ sở có thể tiêm vắc xin phòng bệnh kể trên? <i>(Câu hỏi nhiều lựa chọn)</i> 1. Trạm Y tế xã, phường 2. BV quận/huyện/tỉnh/TW 3. TT YT quận/huyện 4. TT YTD	1. VX phòng Rubella: 1 2 3 4 5 6 7 8 9 2. VX phòng cúm: 1 2 3 4 5 6 7 8 9 3. VX phòng VG B: 1 2 3 4 5 6 7 8 9 4. VX phòng uốn ván:	

	tỉnh/thành phố 5. Phòng khám tư nhân 6. BV tư nhân/nước ngoài 7. Bệnh viện Trung ương 8. Trung tâm tiêm chủng dịch vụ 9. Khác (Ghi rõ):.....	1 2 3 4 5 6 7 8 9 5. VX phòng K CTC: 1 2 3 4 5 6 7 8 9	
D3	Đâu là cơ sở tiêm chủng gần nơi chị ở nhất mà chị thường sử dụng?	1. Trạm Y tế xã/phường 2. Bệnh viện quận/huyện/tỉnh/trung ương 3. Trung tâm YT quận/huyện 4. Trung tâm YTDP tỉnh/thành phố 5. Phòng khám tư nhân 6. Bệnh viện tư nhân/nước ngoài 7. Trung tâm dịch vụ tiêm chủng 8. Khác (Ghi rõ)	
D4	Để đi tới cơ sở tiêm vắc xin gần nhất đó, chị đi quãng đường xa bao nhiêu km?	..... km	
D5	Chị đi mất bao nhiêu lâu?	..... phút	
D6	Chị trả bao nhiêu tiền cho việc đi lại cho 1 lần đi tiêm vắc xin phòng bệnh?	.....nghìn đồng (<i>ghi 0 nếu đi xe đạp, đi bộ</i>)	
D7	Đã khi nào chị tới cơ sở trên để tiêm vắc xin mà không còn vắc xin không? Nếu có thì có bao nhiêu lần không còn vắc xin?	1. Không lần nào 2. Có 1 lần 3. Có 2 lần 4. Từ 3 lần trở lên 5. Không nhớ 9. Không trả lời	
D8	Theo bản thân chị tự đánh giá, chất lượng vắc xin tại cơ sở này thế nào?	1. Rất tốt 2. Tốt 3. Bình thường 4. Không tốt 5. Rất không tốt	

	không?		
E9e	Nếu không tại sao chị lại không lựa chọn tiêm vắc xin Ung thư cổ tử cung HPV?	1.Không cần thiết 2.Chi phí quá cao 3.Không tiếp thấy mình có nguy cơ nhiễm Ung thư CTC 4.Khác (ghi rõ).....	

BẢNG KHẢ NĂNG CHI TRẢ (khoanh tròn vào giá tương ứng nếu đối tượng đồng ý)

LOẠI VẮC XIN	UNG THƯ CỔ TỬ CUNG HPV
E3.GIÁ HIỆN TẠI MỘT MŨI	1000K
E4.GẤP ĐÔI	2000K
E5.GẤP BỐN	4000K
E6. GIẢM ĐÔI	500K
E7. GIẢM BỐN	250K
E8. TỐI ĐA

CẢM ƠN CHỊ!

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