

ปัจจัย และอุปสรรคในการรับวัคซีนเข็มที่สี่ของผู้หญิงสาวในเมืองฮานอย ประเทศเวียดนาม

นางสาว หวง พวง เห่งยีน

วิทยานิพนธ์นี้เป็นส่วนหนึ่งของการศึกษาตามหลักสูตรปริญญาวิทยาศาสตรมหาบัณฑิต

สาขาวิชาสาธารณสุขศาสตร์

วิทยาลัยวิทยาศาสตร์สาธารณสุข จุฬาลงกรณ์มหาวิทยาลัย

ปีการศึกษา 2553

ลิขสิทธิ์ของจุฬาลงกรณ์มหาวิทยาลัย

FACILITATING FACTORS AND BARRIERS FOR INTENTION TO ACCEPT HPV
VACCINE AMONG YOUNG FEMALES IN HANOI - VIETNAM

Miss Nguyen Hoang Phuong

A Thesis Submitted in Partial Fulfillment of the Requirements
for the Degree of Master of Public Health Program in Public Health

College of Public Health Sciences

Chulalongkorn University


Academic Year 2010

Copyright of Chulalongkorn University





Thesis Title FACILITATING FACTORS AND BARRIERS FOR
INTENTION TO ACCEPT HPV VACCINE AMONG YOUNG
FEMALES IN HANOI- VIETNAM
By MISS NGUYEN HOANG PHUONG
Field of Study PUBLIC HEALTH
Thesis Advisor Alessio Panza, M.D., M.Com.H., DTMH


Accepted by the College of Public Health Sciences, Chulalongkorn
University in Partial Fulfillment of the Requirements for the Master's Degree

.....Dean of the College of Public Health Sciences
(Professor Surasak Taneepanichskul, M.D.)

THESIS COMMITTEE

..... Chairman
(Khemika Yamarat, Ph.D.)

..... Thesis Advisor
(Alessio Panza, M.D., M.Com.H., DTMH.)

..... External Examiner
(Sirikul Isaranuruk, Prof., M.D., M.P.H)

หวง พวง เหวียน : ปัจจัย และอุปสรรคในการรับวัคซีนเอชพีวีของผู้หญิงสาวในเมืองฮานอย ประเทศเวียดนาม (FACILITATING FACTORS AND BARRIERS FOR INTENTION TO ACCEPT HPV VACCINE AMONG YOUNG FEMALES IN HANOI - VIETNAM) อ.ที่ปรึกษาวิทยานิพนธ์หลัก: นายแพทย์.ดร.อเล็กซ์โอ พันซ่า, 85 หน้า.

การวิจัยครั้งนี้มีวัตถุประสงค์เพื่อประเมินปัจจัย และอุปสรรคในการรับวัคซีนเอชพีวีของผู้หญิงสาวอายุ 15 - 25 ปีในเมืองฮานอย ประเทศเวียดนาม ตามทฤษฎีความเชื่อด้านสุขภาพ การวิจัยนี้เป็นการศึกษาแบบภาคตัดตามขวาง กลุ่มตัวอย่างในการวิจัยนี้คือหญิงสาวที่ยินดีในการตอบแบบสอบถาม ซึ่งได้มาจากการสุ่มแบบง่ายและ สุ่มแบบกลุ่ม จำนวน 386 คน ข้อมูลถูกรวบรวมโดยแบบสอบถาม และวิเคราะห์โดยค่าร้อยละ, ค่าเฉลี่ย, ค่าเบี่ยงเบนมาตรฐาน, ค่าทดสอบที, ค่าทดสอบไคแอสควร์ และการวิเคราะห์ถดถอยแบบโลจิสติก

ผลลัพธ์จากการสำรวจพบว่า ผู้หญิงสาวชาวเวียดนามมีความรู้ไม่เพียงพอเกี่ยวกับ เอชพีวี (80%) และ วัคซีนเอชพีวี (58%) ปัจจัยที่สามารถทำนายความตั้งใจในการรับวัคซีนเอชพีวีของผู้หญิงสาวในเมืองฮานอย ประเทศเวียดนาม คือความรู้เกี่ยวกับวัคซีน เอชพีวี (OR= 1.97, CI: 1.16-3.33), การรับรู้ประโยชน์ (OR= 3.08., CI: 1.45-6.54), การรับรู้อุปสรรค (OR=0.314., CI: 0.13-0.75) และการได้รับคำปรึกษาด้านการดูแลสุขภาพ (OR= 4.24., CI: 1.917-9.41).

ปัจจัยสำคัญที่สนับสนุนให้หญิงสาวในการรับวัคซีนเอชพีวีในอนาคตคือ ความต้องการในการปกป้องสุขภาพตนเองจากมะเร็งปากมดลูก และ หูดที่อวัยวะสืบพันธุ์ ความเชื่อของพวกเขาก็เกี่ยวกับประสิทธิผลของวัคซีนเอชพีวี อย่างไรก็ตาม อุปสรรคของผู้หญิงสาวในการรับวัคซีนเอชพีวี ประกอบด้วย การขาดข้อมูลข่าวสารเกี่ยวกับ เอชพีวี และวัคซีนเอชพีวี ความกลัวในผลข้างเคียงของวัคซีนเอชพีวี และราคาของวัคซีน

ข้อเสนอแนะจากการวิจัยนี้ได้แก่ การจัดโปรแกรมการศึกษาที่เข้มข้นและแพร่หลาย เกี่ยวกับ เอชพีวี และวัคซีนเอชพีวี ให้กับประชาชนทั้งหลาย โดยเฉพาะตามช่วงอายุของผู้หญิงสาวในการรับวัคซีนเอชพีวี นอกจากนี้ยังเสนอแนะให้นโยบาย คือภาครัฐควรสนับสนุนค่าใช้จ่ายในการรับวัคซีนเอชพีวีบางส่วน เพื่อลดภาระค่าใช้จ่าย สำหรับหญิงสาว และ สนับสนุนให้พวกเขาในการรับวัคซีนเอชพีวีมากขึ้น

สาขาวิชา สาธารณสุขศาสตร์.....

ปีการศึกษา 2553.....

ลายมือชื่อนิติ.....

ลายมือชื่อ อ.ที่ปรึกษาวิทยานิพนธ์หลัก.....

5379110153: MAJOR PUBLIC HEALTH

KEYWORDS: HPV/ HPV VACCINE/ INTENTION TO ACCEPT HPV VACCINE/ YOUNG FEMALE/ HANOI/ VIETNAM

NGUYEN HOANG PHUONG: FACILITATING FACTORS AND BARRIERS FOR INTENTION TO ACCEPT HPV VACCINE AMONG YOUNG FEMALES IN HANOI - VIET NAM. ADVISOR: ALESSIO PANZA., M.D., M.Com.H., DTMH. 85pp.

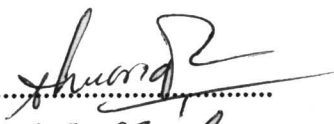
The objectives of the study were to assess facilitating factors and barriers for intention to get HPV vaccine among 15-25 years old females in Hanoi, Vietnam based on Health Belief Model framework. This research study was a cross-sectional research. Simple random sampling and cluster random sampling were used to select the participants. Overall, 386 young female agreed to answer the questionnaire. Data were collected by using constructed questionnaire and analyzed by percentage, mean, standard deviation, the independent t-test, chi-square test and logistic regression model.

The results showed that young Vietnamese female had insufficient knowledge on HPV (80%) and HPV vaccine (58%). The predictors for intention to accept HPV vaccine among young female in Vietnam are knowledge on HPV vaccine (OR= 1.97, CI: 1.16-3.33), perceived benefit (OR= 3.08., CI: 1.45-6.54), perceived barriers (OR=0.314., CI: 0.13-0.75) and health care provider's consultation (OR= 4.24., CI: 1.917-9.41).

The facilitating factors which encourage young females use HPV vaccine in future are their demands to protect their health from cervical cancer and genital warts, their belief of the effectiveness of HPV vaccine. On the other hand, barriers towards their intention to get HPV vaccine include lacking of information related to HPV and HPV vaccine, being afraid of vaccine's side effect and the cost of the vaccine.

This study's recommendations include organizing broader and more intense educational programs about knowledge on HPV and HPV vaccine to all the people, especially for those who are at the recommended age to use the vaccine. In addition, the study recommends to adopt health policies which partly finance the HPV vaccination to reducing the out-of pocket cost of the vaccine for young women and to encourage them to get vaccination.

Field of study: Public Health.....

Student's Signature: 

Academic Year: 2010.....

Advisor's Signature: 

ACKNOWLEDGEMENTS

I deeply express my gratitude and appreciation to my thesis advisor Dr. Alessio Panza for his kindness, support and guidance throughout the whole process of this study and courses of MPH as well.

I would like to say a great thank to Dr. Khemika Yamarat as chairman and Prof. Sirikul Isaranurug as external examiner in my Thesis Committee for giving valuable advices to accomplish my study.

I would also like to thank all my teachers at the College of Public Health Sciences, Chulalongkorn University who have given support and guidance throughout my study.

I am profoundly thankful to Center for Community Health and Development (COHED) and Ecumenical scholarship program (ESP) of Bread for the World for their immense help in my career and support to do this study successfully.

I also would like to show my appreciation to all of my friends for their kindly and sincerely support throughout MPH course

And finally, I am especially thankful to my wonderful friend, Quang who gave my strength in my study and for his everlasting support and encouragement.

CONTENTS

	Page
ABSTRACT IN THAI	iv
ABSTRACT IN ENGLISH	v
ACKNOWLEDGEMENTS.....	vi
CONTENTS.....	vii
LIST OF TABLES	ix
LIST OF FIGURES	xi
ABBREVIATIONS	xii
CHAPTER I INTRODUCTION.....	1
1.1 Background	1
1.2 Research Questions	4
1.3 Hypothesis	4
1.4 Research objectives	4
1.5 Conceptual Framework	5
1.6 Operational definitions	6
CHAPTER II LITERATURE REVIEW.....	8
2.1 Health belief model	8
2.2 Socio-demographic factors.....	11
2.3 Threat.....	12
2.4 Expectation.....	15
2.5 Cues of action	17
2.6 Vietnam context	18
CHAPTER III RESEARCH METHODOLOGY	23
3.1 Research Design	23
3.2 Area study.....	23
3.3 Population study	23
3.4 Sample size and Sampling methodology.....	23
3.5 Data collection.....	25
3.6 Research Instruments: questionnaire.....	26
3.7 Validity	27
3.8 Pre - test.....	27

	Page
3.9 Reliability	27
3.10 Data analysis.....	27
3.11 Ethical Consideration	29
3.12 Benefits.....	29
CHAPTER IV: RESULT OF THE STUDY	31
4.1 Descriptive analyses	31
4.1.1 Socio-demographic descriptions.....	31
4.1.2 Pap smear, Sexual behaviors and cervical cancer history of family.....	32
4.1.3 Knowledge on HPV and HPV vaccine	35
4.1.4 Perceptions on HPV and HPV vaccine.....	39
4.1.5 Facilitating factors and barriers towards intention to get HPV vaccination	42
4.2 Relationship between independent variables and intention to get HPV vaccine.....	46
4.2.1 Bivariate analysis	46
4.2.2 Multivariate analysis.....	52
CHAPTER V: DISCUSSION, CONCLUSION AND RECOMMENDATION	54
5.1 Discussion	54
5.2 Conclusion.....	65
5.3 Limitations.....	66
5.4 Recommendations	66
REFERENCE	68
APPENDICES	75
Appendix A	76
Appendix B.....	77
Appendix C.....	78
VITAE	85

LIST OF TABLES

	Page
Table 1 Socio-demographic information of participants	32
Table 2 Pap smear practice, sexual behaviours and.....	33
Table 3 Pap smear practise of young females aged over 21 years old	34
Table 4 Family history of cervical cancer.....	34
Table 5 Sexual behaviours and using condom and oral contraceptive	35
Table 6 Knowledge on HPV	36
Table 7 Knowledge on HPV vaccine.....	38
Table 8 Participants' perception of severity related to HPV	39
Table 9 Perceived susceptibility to HPV infection	40
Table 10 Perceived benefit.....	41
Table 11 Perceived Barriers.....	42
Table 12 Number of participants who got HPV vaccine	42
Table 13 Number of participants who intend to get HPV vaccine	43
Table 14 Sources of information about HPV and HPV vaccine.....	45
Table 15 Person who had advices to participants to get HPV vaccine.....	45
Table 16 Received consultation from health care provider	45
Table 17 Perception about health care provider's knowledge.....	46
Table 18 Relationship between participant's socio-demographic information and their intention to get HPV vaccine	47
Table 19 Relationship between young females' knowledge on HPV and their intention to get HPV vaccine	48
Table 20 Relationship between young females' knowledge HPV vaccine and their intention to get HPV vaccine	48
Table 21 Relationship between participants' perception of HPV and their intention to get HPV vaccine	49

Table 22 Relationship between participants' perception of HPV vaccine and their intention to get HPV vaccine	50
Table 23 Relationship between sources of information and young females' intention to get HPV vaccine	50
Table 24 Relationship between to whom participants ask for advice and intention to get HPV vaccine	51
Table 25 Relationship between health care provider's consultations about HPV vaccine	52
Table 26 Logistic regression analysis of young females' intention to get HPV vaccine	53

LIST OF FIGURES

	Page
Figure 1 Conceptual Framework	5
Figure 2 Health Belief Model	9
Figure 3 Sampling method.....	25
Figure 4 Distribution of levels of knowledge on HPV	37
Figure 5 Distribution of levels of knowledge on HPV vaccine	38
Figure 6 Reasons for intention to get HPV vaccine in future among young females...	43
Figure 7 Reasons for not intent to accept HPV vaccine	44

ABBREVIATION

ACIP	Advisory Committee on Immunization Practices
CDC	Centre for Disease Control and prevention
FDA	The Food and Drug Administration
GAVI	Global Alliance for Vaccines and Immunisation
HBM	Health Belief Model
HPV	Human Papillomavirus
IARC	International Agency for Research on Cancer
MOH	Ministry of Health
PATH	Program for Appropriate Technology in Health
WHO	World Health Organization
PPP	Purchasing Power Parities

CHAPTER I

INTRODUCTION

1.1 Background

According to WHO, there are about 510,000 women over the world diagnosed with cervical cancer each year and 288,000 women died from cervical cancer yearly, among those 80% of cervical cancer deaths worldwide occur in developing countries. It also shows that cervical cancer is the second biggest cause of female cancer mortality worldwide (Baer, 2000). Human Papillomavirus (HPV) is a common virus worldwide that was found in almost 100% of cervical cancer cases (Maissi et al., 2004) and 70% of these cancer cases are due to HPV 16 and 18 (CDC, 2007). HPV is calculated to be the reason of about half a million new cancers each year in which most of infected women are in developing countries. By any measure, genital HPV infection and HPV-associated cervical cancer are becoming significant national and global public health concerns. HPV can also cause other types of cancers such as head and neck cancers and genital warts, observed in both men and women. Number of new cancers related to HPV increased continuously, WHO estimates that an estimated 30 million new of genital HPV are diagnosed every year and approximately 630 million persons are infected with HPV worldwide.

In terms of its ability to spread out, Centre for Disease Control and prevention (CDC - The U.S) expressed that HPV is the most common sexually transmitted infection, people can be infected with HPV through genital contact during vaginal and anal sexual behaviours, even oral sex. In addition, most HPV infected people cannot realize that they are infected, since many infected person has no signs or symptoms. Although most infections with HPV cause no symptoms and are ultimately resolving itself without treatment, persistent genital HPV infection can lead to cervical cancer in women. The potential risk of HPV is that it can cause cervical cancer for a woman during her whole life, right from the first time of having sex and prolong the duration of her sexual activities. It is similar to the incidence of sexual diseases, there is not less than 80% of women, at least once in their lifetime, are infected with HPV. Women at childbearing age are the main subjects whom the HPV virus can attack. However, middle-aged women can still be newly infected and cannot eliminate the risk of HPV infection with types that can cause cancers. According to many studies,

women those who are aged 20-24 years, have had multiple sexual partners, or had their first sexual contact at a young age are at the highest risk for HPV infection (CDC, 2006)

Many studies pointed out that HPV vaccination is one of the most effective ways to reduce the incidence of HPV, especially for young girls who have never been exposed to any types of HPV (GAVI, 2010., Julie GR, 2007). In 2006, the US Food and Drug Administration and the European Medicines Agency approved the first HPV vaccine called Gardasil which can protect women from four types of HPV including HPV16, 18, 6 and 11. The first two HPV types cause most (70%) cervical cancers (types 16 and 18). The second HPV vaccine named Cervarix was recommended for young females from 9 to 26 years old. To get the best effect of vaccination, they should be vaccinated before they have the first sexual intercourse. However, HPV vaccines cannot treat or get rid of existing HPV infection. HPV vaccines do not treat or cure cancers or warts caused by HPV infection that occurred before vaccination. The HPV vaccine can be very effective at preventing the foremost cause of cervical cancer.

Numerous of studies showed the low willingness to receive HPV vaccine among young women as well as their parents. These studies indicated some obstacles toward HPV vaccination such as lack of knowledge, high cost of HPV vaccine, the recommendation of family (Smith PJ, 2004., Kwan T.T.C, 2008). Thus, vaccine acceptance is associated to many factors such as knowledge on HPV and HPV vaccine, price of HPV vaccine, the recommendation of doctors or family members, social demographic factors, the availability of HPV vaccine. The concept of vaccine acceptance can be explained by using behavioural theories, especially the Health Belief Model (HBM). The construct of the HBM has been used to identify the significant factors toward intention of vaccination that should be addressed to improve the HPV vaccine coverage. Similarities and differences in the intention of vaccine acceptance among different socio-demographic groups have been investigated so that intervention strategies could be focused to benefit those with greater barriers to vaccination. The results will be used to produce recommendations to direct young women vaccination campaigns.

One of the facts is that the second highest death rate caused by cancers among women in Vietnam is from cervical cancer which is strongly related to HPV. Therefore, the matter of cancer caused by HPV has caught more attention of researchers in Vietnam recently. In a study conducted by PATH in Vietnam, the incidence rate of cervical cancer in Vietnam is 20 per 100,000 women annually and 11 per 100,000 women of mortality rate (PATH, 2009)

There are some studies on HPV related-issues carried out before. According to the HPV and related cancer summary report in Vietnam, HPV prevalence in Vietnam is 5.4% among general female population (WHO/ICO, 2010). The highest HPV prevalence in Vietnam is the one found in biggest cities. A study focused on 1500 women who live in urban districts of Hanoi in 2008 showed that 5.13% of the participants were infected by HPV and the highest percentage of HPV type detected among those people was HPV18 with 31% (Le, T.T, 2009).

After the first time that HPV vaccine was approved in Vietnam in 2008, a project on introducing HPV vaccine in Vietnam has been carried out by PATH and Vietnamese Institute of Hygiene and Epidemiology from 2006 to 2011 (PATH, 2009). Within the activities of the project, a series of HPV vaccine pilot studies has been carrying out in which free vaccinations were provided and implemented in some provinces in Vietnam. Approximately 800 secondary-school students, aged between 10-13 years old in Hoa Binh province, were vaccinated in this project. In the same pilot study, 3400 girls aged 6-11 were HPV vaccinated in Thanh Hoa province and Can Tho City (WHO, 2008). However, apart from these pilot studies, data on numbers of young women who are eligible to get HPV vaccine are not available. In other words, at present, there is no official data on how many women have had HPV vaccination in Vietnam.

The significance of this thesis are that it does not only aim to contribute to this field of study regarding description of the current situation of HPV issues, but it also attempts to figure out the facilitating factors and barriers toward the intention of HPV vaccine acceptance, from which researcher proposes some effective solutions in order to enhance people knowledge and behavior in cancer prevention as well as consult to

medical policy makers to propose other effective method of HPV prevention such as safe sex program, increasing age of first sex.

1.2 Research Questions

1. What are the facilitating factors that influence young Vietnamese women's intention to accept HPV vaccine?
2. What are the barriers that influence young Vietnamese women's intention to accept HPV vaccine?

1.3 Hypothesis

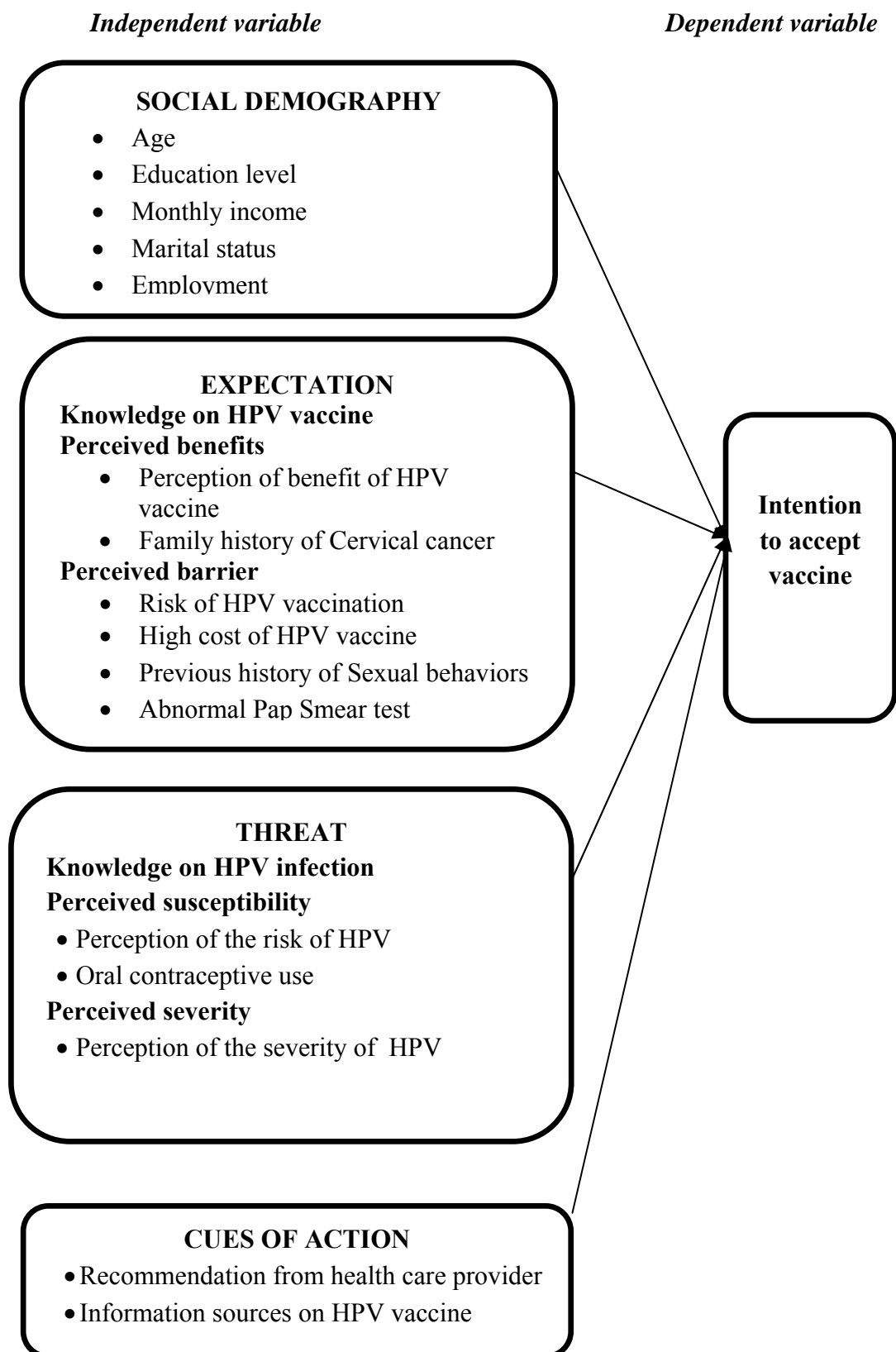
1. High educational level, employment, high monthly income, high knowledge on HPV and HPV vaccine, oral contraceptive use, family history of cervical cancer, perceived susceptibility, severity of HPV and benefits of HPV vaccine as well as information from family member, peers and health care provider are *facilitating factors* to the young women's intention to accept HPV vaccine.
2. Older age, being married, abnormal pap smear, history of previous sexual behaviour lack of information about HPV infection and HPV vaccine, high cost and fear of the HPV vaccine are the *barriers* to the intention to accept HPV vaccine among young Vietnamese women

1.4 Research objectives

1. To identify the facilitating factors of the intention to accept HPV vaccine among 15 to 25 year old Vietnamese women
2. To identify the barriers of the intention to accept HPV vaccine among 15 to 25 year old Vietnamese women

1.5 Conceptual Framework

Figure 1 Conceptual Framework



1.6 Operational definitions

- Human Papillomavirus: A type of virus that can cause abnormal tissue growth (for example, warts) and other changes to cells. Infection for a long time with certain types of HPV can cause cervical cancer. HPV may also play a role in some other types of cancer, such as anal, vaginal, vulvar, penile, oropharyngeal, and squamous cell skin cancers.

- Education level: refers to the highest level of education that the respondents have attained at the time of interview. Education is classified into 5 groups which are never go to school, primary school (1- 5 years of school), secondary education (6 -9 years of school), high school (10 – 12 years of school) and the higher education (university and above)

- Income: total income of all family members in one month is divided into 5 groups: (1) Low income (below 3 million VND per month); (2) Low middle income (from 3 million VND (425 ID) to 7 million VND (1000 ID)); (3) Middle income (over 7 million (1000 ID) to 10 million VND (1425 ID)); (4) High income (from 10 million VND (1425 ID), to 20 million VND (2850 ID)); (5) Very high income (from more than 20 million VND (2850 ID))

- Young women: Women living in Hanoi aged from 15 years old to 25 years old. This group is eligible to get HPV vaccine.

- HPV vaccine: A vaccine is used to prevent genital warts, cervical cancer, vulvar cancer, and vaginal cancer which can be caused by certain HPV types. It is also used to prevent lesions that are caused by those viruses and that can lead to cervical, vulvar, or vaginal cancer, also called HPV vaccine.

- Cervical cancer: Cancer that forms in tissues of the cervix (the organ connecting the uterus and vagina). It is usually a slow-growing cancer that may not have symptoms but can be found with regular Pap tests (a procedure in which cells are scraped from the cervix and looked at under a microscope). Cervical cancer is almost always caused by HPV infection.

- Intention of vaccine acceptance: can be understood as the willingness to get vaccination. It is classified into intend to accept and not intend to accept HPV vaccine.

- Pap smear: A procedure in which cells are scraped from the cervix for examination under a microscope. It is used to detect cancer and changes that may lead to cancer. A Pap smear can also show conditions, such as infection or inflammation that are not cancer.

- Perceived susceptibility: The degree to which individuals feel personally susceptible to contracting a condition. Perceived susceptibility is how likely an individual get HPV infection in future.

- Perceived severity: The extent that individuals value the condition as serious; through emotional arousal or consideration of the consequences of the condition. Perceived severity is the influence of HPV infection on health and relationship

- Perceived benefits: The extent of individuals' belief in taking a specific action to prevent a condition that will be beneficial and effective. A perceived benefit is that HPV vaccine can protect people from genital warts and cervical cancer.

- Perceived barriers: The degree to which negative aspects of an action serve as barriers to action, causing avoidance. In this study, perceived barriers are the perception of risk, high cost of HPV vaccine and the time of vaccination.

- Barriers: any factor which inhibit and discourage young female to get HPV vaccine such as older age, being married, abnormal pap smear, history of previous sexual behaviour, lack of information about HPV infection and HPV vaccine, high cost and fear of the HPV vaccine.

- Facilitating factors: any factors which stimulate, provide, or encourage young female to get HPV vaccine such as high knowledge on HPV and HPV vaccine, perceived benefit on HPV vaccine, consultation from health care providers.

CHAPTER II

LITERATURE REVIEW

2.1 Health belief model

The HPV vaccines are designed to decrease number of HPV infection, therefore, to avoid being exposed to HPV, women should be vaccinated. Women will be vaccinated if they have vaccine acceptance. The intention of vaccine acceptance will be affected by many factors such as knowledge on HPV and HPV vaccine, health care provider and family member's recommendation, accessibility and availability of information on HPV infection and HPV vaccine, etc... However, vaccine acceptance is a health seeking behaviors, women will have behaviors associated with maintaining and protecting their health from illness. Health seeking behaviors are regarding the Health Belief Model (HBM).

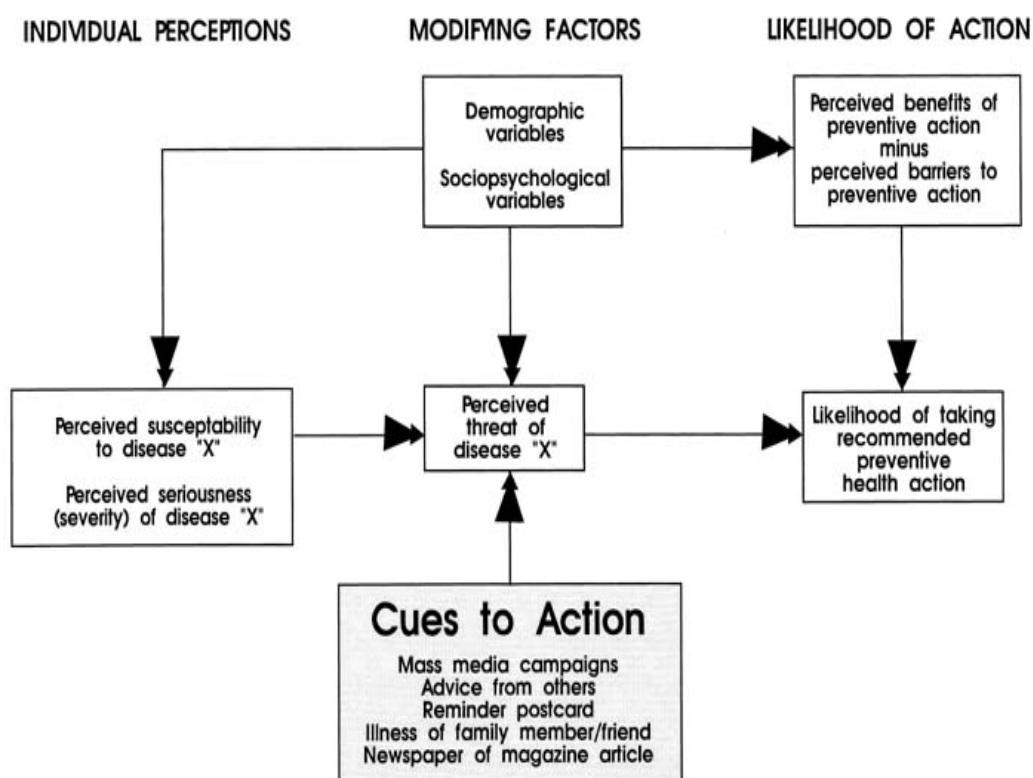
The HBM was developed in the 1950s by Hochbaum, Rosenstock and Kegels, psychologists from the U.S. Public Health Service to explain why people would or would not use health services (Rosenstock, 1974). The HBM points out that health behaviors are decided by health belief and willingness to take actions (Abood, Black, Feral, 2003). It is used to explain and predict health behaviors and health issues by focusing on the knowledge, attitudes, and belief of individuals.

Health belief plays a major role in the intention of HPV vaccine acceptance; young women are willing to protect themselves from HPV that lead to receive HPV vaccine. This model includes four main components: perceived susceptibility, perceived severity, perceived benefits, and perceived barriers.

Perceived susceptibility is defined as a person's perception of the likelihood of getting a disease while *perceived severity* is that individual's opinion of behaviors change to avoid a consequence, regarding how serious of consequence he can consider. *Perceived barrier* is an individual's assessment of the influences that facilitate or discourage adoption of the promoted behaviors and perceived benefits is defined as an individual's assessment of the positive consequences of adopting the behavior. *Perceived benefits* refer to knowledge, attitudes or beliefs of various actions that can be taken to reduce risk of disease or illness.

This model can be used to examine the relationship between women's beliefs and their behaviors regarding prevention from HPV infection. It is also directly related to HPV knowledge levels and preventive behaviors as acceptance of HPV vaccine. Figure 2 shows the basic elements of health belief model (Ashford, 1999)

Figure 2 Basic Elements of Health Belief Model



There are some studies that used HBM in studying cervical cancer prevention, HPV infection, especially HPV vaccine acceptance. Ingledue and colleagues (2004) conducted a study to assess college women's knowledge, perceptions and preventative behaviors regarding HPV infection and cervical cancer by using HBM as a theoretical framework. The results showed that there is no relationship between HPV and cervical cancer knowledge and perceived susceptibility or cervical cancer. Researchers also found an existed negative correlation between HPV and cervical cancer and perceived seriousness of HPV and cervical cancer. If individuals are unaware of the risk factors of HPV and cervical cancer, they may not practice any

preventable behavior to protect themselves from HPV infection (Ingledue et al., 2004).

Another study applying the HBM was conducted by Denny-Smith and colleagues in 2006 to assess knowledge of perceived susceptibility, perceived serious and risk behaviors related to HPV and cervical cancer among female nursing students. This study expressed that a significant relationship exists between susceptibility and severity of HPV and cervical cancer. It was a surprise for researchers when they found that the participating female nursing students presented quite low knowledge levels for what people would expect from them who are upper level nursing students (Denny-Smith et al., 2006).

HBM is also successfully used to predict vaccine acceptance among the most risk persons. It argues that if an individual believes himself to be at risk of diseases and he also receives benefit of preventive actions as well as their barriers, he will engage in preventive behaviors. Perceived susceptibility, benefits and barriers among risk group demonstrated the wanting to get vaccinated against HPV. However, the wanting to change behaviors is not enough to make somebody change their behaviors.

HBM also describes other elements that press a desire to change behaviors such as advice from others, illness of family members or friends and how they can get information. Hsu and colleagues examined the health beliefs and reasons for HPV vaccination among young adult women (aged 18–26 years), and adult women (aged over 26 years) in a study conducted in 2009. Researchers found out that health belief related to intention to accept HPV vaccine is different between young adult women and adult women. The main reason of young women to use vaccine is recommendation from others such as family members, health care providers. Meanwhile the main reasons of receiving HPV vaccine among adult women are their awareness of HPV infection and gynecology diseases. Young women always consider about the cost and availability of vaccination before receiving HPV vaccine (Hsu, 2010).

There is no knowledge variable in the HBM that was showed above, however, in some study; researcher expressed the importance of knowledge of HPV and HPV vaccine in vaccination. Various studies was conducted to examine the vaccination among women based on HBM that includes knowledge variable (Hsu, 2010., Kang,

2010., Marlow, 2009). Knowledge of HPV such as the transmission, the consequence, might affect an individual's decision to vaccinate by influencing their perceptions of threat. Meanwhile, knowledge on HPV vaccine such as the effectiveness, the safeness of vaccine will become the perceived of expectation.

2.2 Socio-demographic factors

Social demographic factors, as additional propositions of HBM, have influence on other components of HBM including perceived of susceptibility, perceived barriers and perceived benefits. Some studies showed the influence of socio-demographic factors on intention to take vaccine for both parents and women who can decide to take the vaccine.

Franceschi and colleague expressed in International Agency for Research on Cancer (IARC) studies that women's education levels were consistently associated with cervical cancer risks. However, they did not find any association between educational levels and HPV infection in either of the two IARC studies. In fact, there is the strongest association between cervical cancer and low education level. In addition, screening history seems to be an important socio-demographic factor in studying the acceptance of HPV vaccination (Franceschi S, 2009).

Furthermore, some studies also showed an association between high income and HPV vaccination for the daughters. A study detected that parents with higher socio-economic status and education levels were more likely to reject HPV vaccination for their girls at any age. They concerned the safety of vaccination and believed that their children were not at risk of HPV infection. It was noted in a study from the United States that unvaccinated children tend to come from families where mothers have a college degree and the household's income was high (Smith PJ, 2004).

In a study about the influencing of socio-demographic factors on HPV testing and vaccination acceptability, researches found out that educational levels and marital status were associated with screening attendance. Meanwhile the acceptance of HPV vaccination was predicted by only one factor which is daughter's age, studied on mothers who have youngest daughter at the age of 13-16 years old (Marlow, 2008).

2.3 Threat

The perceived threat includes perceived susceptibility and perceived severity and knowledge on HPV. According to the HBM, women can receive HPV vaccine to prevent from HPV infection if they consider themselves at risk of HPV infection (perceived susceptibility) and they believe that HPV infection can cause serious consequences (perceived severity) such as cervical cancer, genital warts. Lack of knowledge maybe a potential barrier for people to get HPV vaccine. On the contrary, it encourages people to seek for HPV vaccination if they have sufficient knowledge on HPV and HPV vaccine.

There are many studies that expressed the association between knowledge on HPV with HPV acceptance. Read and his colleagues detected that knowledge on HPV were significantly associated with willingness to get HPV vaccine for both parents and adolescents (Read, 2010). A study in Korean also had the same result that college age female's knowledge is the significant predictor for intention to accept HPV vaccine. Therefore, assessing about knowledge on HPV is important to understand the intention of HPV vaccination acceptance (Han, 2007).

Thus, women can take the vaccination because of their awareness of cervical cancer prevention. They were aware that HPV infection could concern them and they also had risk of being exposed with cervical cancer. Then, they felt that they had sufficient information about the vaccine to make a decision regarding HPV vaccination (Weisberg et al, 2009).

Knowledge of HPV infection is also various among different education levels, socio-economic status and age groups. Many researchers have divided women's knowledge on HPV issues into three different categories: no knowledge or minimal knowledge, insufficient and partly knowledge, full knowledge to assess different levels of HPV vaccine acceptance among women.

Despite the widespread of HPV, a lot of women lack information on HPV. They are unknowing about the existence of HPV in all over the world (Friedman, Sheppard, 2007., Baer et al., 2000). Even when they know about HPV, they fail to know that HPV is an STD. Baer's study explored that 4.6% of female college students listed HPV as a STD, and many of others were uninformed that HPV is the most common STD (Baer et al, 2000). The general population did not know about the link

between HPV and cervical cancer and unawareness the role of Pap smears in detecting HPV (Mays et al., 2000).

Insufficient knowledge or partial knowledge of HPV will cause misunderstanding of HPV that was showed in various studies. People believe that we can be protected fully from HPV by condoms (Mays et al., 2007). Lawrence and colleagues expressed that 100% condom use may protect women against HPV infection (Lawrence, 2006). However, this number is only achieved when condom are used correctly and in every sexual intercourse. In this case, if women believe that condom can help them fully avoid of being infected with HPV, they may refuse to use other methods including vaccination.

Another study which examined the effectiveness of condom against HPV infection showed that condom use cannot eliminate all HPV infections because HPV can be transmitted by skin contact (Winer RL, 2006). In addition, Dell's study (2000) suggested that women knew that HPV is a STD but they had unawareness of symptoms that are associated with HPV such as asymptomatic, genital warts, abnormal pap tests, and cervical cancer and they also had limited experience on performing a pap smear.

Nonetheless, female's knowledge of HPV has increased, but knowledge of the link between HPV and cervical cancer remains low (Tiro et al., 2007). Individuals were not aware of the danger of HPV infection as well as misunderstood about HPV infection prevention. Therefore, insufficient or partial knowledge caused the refusal of receiving HPV vaccine.

In general, for the first two levels of knowledge on HPV issues, lack of knowledge or insufficient knowledge may be considered as the barrier for women to accept vaccination. It is obvious that when they do not know about HPV they will not seek methods to protect themselves from being infected. In addition, if they have insufficient knowledge, for example, if they do not know how HPV being transmitted, they will not know how to protect themselves or being confused when using the vaccine.

Lastly, some studies demonstrated that when women have a full knowledge of HPV, their willingness to take HPV vaccine will be higher than those who have low knowledge on HPV infection (Allen., 2009., Marlow, 2009., Hsu, 2010). Allen and

colleagues reported the relationship between increasing knowledge of HPV and vaccination tendency among female students, who had received vaccine or intending to receive vaccine, get the highest knowledge scores. The result showed that the knowledge of participants who were vaccinated or intending to be vaccinated was strongly correlated with the intention to be vaccinated (Allen., 2009).

The HBM proposes that if a person feels to be vulnerable, they might have motivation to take prevention. Besides the perceived susceptibility, perception about the seriousness of disease plays an important role in making preventing behaviors. Many studies pointed out that both perceived of susceptibility and perceived severity were the predictors of intention to get HPV vaccine among women (Kahn, 2003). Kahn and his colleague found that knowledge on HPV was significantly associated with intention to get HPV vaccine meanwhile both perceived susceptibility and severity were not associated (Kahn, 2003). Hsu also pointed out that perceived susceptibility and perceived severity were predictors for intention to get HPV vaccine among young Taiwan females (Hsu, 2009).

On the other hand, according to various existing researches about HPV vaccine acceptance, some researchers indicated that there are no significant relationships between HPV vaccine acceptance with the perceived susceptibility and perceived severity (Allen, 2009., Zimet, 2005). Allen categorized college women according to their stage of HPV vaccine acceptance. She found that there is significantly difference between intention to take vaccine with neither perceived severity nor perceived susceptibility (Allen, 2009).

Beside the knowledge on HPV infection, perceived susceptibility and perceived severity, perception of threat might be affected by family history, contraceptive pill, and sexual behaviours. If a woman use contraceptive and she has fully knowledge about HPV infection, she will definitely accept to take HPV vaccine. Since women who have an HPV infection and have used oral contraceptives for over five years have a three-fold increase in the risk of cervical cancer compared to never users. The insufficient and misunderstanding knowledge are obstacles for women to accept vaccine. Hence, by having a full knowledge of HPV issues, women themselves tend to find the right method to protect them from being infected by the virus.

Moreover, women can perceive that they are at risk of cervical cancer if their family members have cervical cancer. Women with a family history of cervical cancer, especially an infected mother or sister have a two-fold risk of developing cervical cancer, suggesting an inherited susceptibility (Negri, 2005). Some researches expressed the strong relationship between these factors (sexual behaviors, family history, contraceptive pill, condom use) and acceptability to HPV vaccine. Buchanna indicated in her study among young females in US that sexual activity may predict higher acceptance of the HPV vaccine (Buchanna, 2008).

2.4 Expectation

Except perceived threat, intention of HPV vaccine acceptance is also influenced by perceived barriers, perceived benefits and knowledge on HPV vaccine. People should understand about the benefit of HPV vaccine as well as the barriers to access vaccine.

In term of knowledge on HPV vaccine, women should know that HPV vaccine is an effective way which can help persons to avoid being infected by HPV. The most important function of HPV vaccine is protecting women from some types of HPV which causes cervical cancer. Moreover, women aged from 9 -26 were recommended to take this vaccine with three injections over a six month period (CDC, 2007). Besides, the vaccine was announced to be less effective in young women who had already been exposed to any types of the HPV types covered by the vaccine. These vaccines are not used to treat existing HPV infections, genital warts, pre-cancers or cancers. None of women who have been vaccinated reported to have any side effects from these vaccines. Thus, most of the women who have experienced at least one HPV vaccine injection would know that they will be protected from cervical cancer by using this vaccine (Rachel, et al, 2009).

Nevertheless, there are a lot of people those did not know about HPV vaccine as well as having insufficient knowledge or understanding about HPV vaccine. Those people may think that if they take vaccination, they could live healthier and longer. Data from U.S National Survey showed that there were 5% or fewer respondents who thought that HPV vaccine takers do not need to have a test such as Pap smears, are protected against all STDs, can be less worried about being infected by STDs and no longer having to use condoms in their intercourse (Rachel, et al, 2009). Many research

found the little knowledge on HPV vaccine among young female such as Tiro (2007), Moraros (2006). Moraros and colleagues mentioned in their finding that among women with very low knowledge on HPV vaccine, 90% of them never heard about HPV vaccine before. However, 62% of those believed a vaccine would prevent HPV infection (Moraros, 2006). Some previous researches also mentioned that higher levels of knowledge on HPV vaccine correlate with the increasing of HPV vaccine acceptance (Allen, 2009., Kahn, 2003)

Perceived barrier is also one of the most important factors impacting on individual's intention to take vaccine. In other words, it influences individual's HPV vaccine acceptance. Barriers are considered as high cost, worry about the risk and side effect of vaccination. There are some previous studies conducted to find out the barriers towards women's intention to take vaccine (Marlow, 2009., Giuseppe, 2008., Allen, 2009). Within the HBM, perception of inability to pay for vaccines will reduce the likelihood that vaccination will occur. Cost as a barrier also extends beyond the retail price of vaccine. A study among 18 -30 year old American females indicated that cost is the important component that influences the accessibility of HPV vaccination (Allen, 2009).

Identifying the barriers towards HPV vaccine acceptance will help to design and develop appropriate programs and strategies that make people change their behaviors. Researchers also indicated that barriers cause the refusal of HPV vaccination among women. Kwan and colleagues studied barriers of gaining knowledge about HPV and HPV vaccine in China and they found that the most common reasons that make women to be unvaccinated are lack of information, high cost of vaccination, the length of effectiveness, low awareness about HPV infection and HPV vaccination, perception of family members, and worry about side effect of vaccine. (Kwan et al, 2008).

Stigma and psychology are also barriers towards vaccine acceptance. If the stigma surrounding HPV is not lessened, it is possible that women or teenagers will not get the vaccine because they do not want to be seen as promiscuous or loose as in the case of STD testing (Barth et al., 2002). Almost young women, aged less than 26 years old, were reported not being sexually active or concerns about vaccine safety as the most important reasons for vaccination. However, for younger women, lack of

sexual activity is one of reasons for not receiving the vaccine. They were worried about the side effect of vaccine that vaccine would affect their ability. Conversely, older women were more likely to report cost as a barrier to vaccine receipt (Rachel et al, 2009).

Perception of risk and the side effects of the HPV vaccine is also barrier for women to inject HPV vaccine. Respondents were worried about some possible side effects of the HPV vaccine, concerned on their fear of having cervical cancer as a consequence of HPV vaccine injection. Many of them thought that women who were injected HPV vaccine would not feel protected from cervical cancer (Moraros et al, 2006). Several studies showed the association between perceived barriers and HPV vaccination (Marlow, 2009., Allen, 2009). Hsu indicated in a study about intention to get HPV vaccine among Taiwan females that cost and availability of HPV vaccine highly impacted to intention to inject vaccine (Hsu, 2009).

In terms of perceived benefits, some studies have explored the association between perceived benefits and HPV vaccination among young female (Allen, 2009., Kang, 2010., Marlow, 2009). The direct effectiveness of perceived benefits on HPV vaccination acceptance was found in college women. Allen et al. (2009) found that women who intended to get vaccine or were already vaccinated had higher perceived benefit scores than those who had no intention or against to take HPV vaccine. Perceived benefits based on the perception of vaccine's potential effects to protect women from HPV infection and to prevent cervical cancer and genital warts. Another study on young adult females found that most of them believed that getting the HPV vaccine would be an effective method to prevent cervical cancer and prevent future acquisition of HPV (Kahn et al., 2003).

2.5 Cues of action

Cues of action are external factors that remind a desire to take HPV vaccine. They can be the service provider's knowledge on HPV and HPV vaccine, the support of family members, health care providers and peers, and the accessibility to information on HPV and HPV vaccine.

The accessibility of information on HPV and HPV vaccine will encourage young female to get vaccine if they receive information from the reliable resources such as professional service providers, family members, partners, etc.... Numerous of

researches have shown that acceptance of HPV vaccine is associated with where they get information, physician's recommendation and the advice of family members.

Women can gain knowledge about HPV and HPV vaccination from various ways such as television, magazine, health provider, friends and family members. Holcomb's study found that women know about HPV from health care professionals (30%), school (29%), teachers (18%), health clinics (23%), friends (22%), and parents (8%) (Holcomb et al, 2004). A research in USA also indicated that female adolescents can get vaccine information from healthcare providers and family members, friends and especially from advertisement for HPV vaccine program. Therefore, women are not limited to get information about HPV vaccine. They are also advised to have the vaccine by general practitioners.

Awareness of family members is also one of the reasons for them to be vaccinated. For the young girls, their family members, especially, their parents are the most powerful people who can influence them to be vaccinated. The main factors impact on their parents' acceptance of HPV vaccination including: 1) having at least one daughter; 2) being in favor of vaccination; 3) knowledge of cervical cancer prevention and 4) being aware that their children could be infected by HPV (Pelucchi et al, 2008). In Kahn' study (2003), women will accept vaccination when others approve of vaccination, including parents, healthcare providers, partners, and religious institutions. If a woman have friends who have HPV, it is possible that she will receive HPV testing. Moreover, Daley found out in a research about influence on HPV vaccination status that women who were unvaccinated were likely to know about HPV vaccine from healthcare providers or from family members (Daley 2010).

2.6 Vietnam context

In recent years, the increasing prevalence of HPV infection attracts researchers to detect the prevalence of HPV infection and their risk factors. This is a quite new area of research in Vietnam, therefore, researches merely concentrated on some big and central cities such as Hanoi and Ho Chi Minh City where presented a higher prevalence of HPV infection.

First and foremost, the prevalence of HPV infection has been previously observed by studies conducted in Vietnam. One of them was a study on HPV infection among women in the South and North of Vietnam carried out in 2003 in two

biggest cities of Vietnam including Hanoi and Ho Chi Minh cities. The result shows that 10.9% of women in Ho Chi Minh City and 2.0% in Hanoi were detected to be infected by HPV. This research also aimed to improve the knowledge on prevalence and risk factors of HPV cervical infection for women.

Another study in 2008 focused on 1500 women who live in urban districts of Hanoi. The results showed that 5.13% of the participants were infected by HPV and the highest percentage of HPV type detected among those people was HPV18 with 31%. In terms of age cohort, women from 20 to 39 years old have the highest prevalence with 18.47%. The proportion of HPV infection in group of those aged under 20 years old is lower than that among those aged over 20 years old. The different rates of HPV infection among different areas also presented in the result of this research which indicated that women living in urban areas have a higher prevalence than one living in rural areas. Finally, researcher also found out that sexual behaviors seemed to raise the prevalence of HPV (Le, T.T, 2009).

While studying the risk factors for HPV infection, researchers figured out that sexual behavior is the highest risk factor for HPV infection in both cities. Current use of oral contraceptives seemed to significantly affect the probability of HPV DNA detection in Ho Chi Minh City. Importantly, this study showed that HPV prevalence in population was closely related to cervical cancer incidence rates (Pham H.A, 2003).

Before the first HPV vaccine was approved in Vietnam in 2008, a research had been carried out in 2007 by National Institute of Hygiene and Epidemiology with technical and financial supported by PATH and Bill and Melinda Gates Foundation. The results were used to develop strategies regarding HPV vaccination such as HPV vaccine delivery strategy, communication strategy and advocacy strategy. The purposes of advocacy strategy are to partner with the National Immunization Program and Ministry of Health (MOH), consider engaging global agencies as WHO and GAVI to make information available to policy makers, convene workshops with policymaker to promote awareness on HPV vaccine, and explain about efficiency of HPV vaccine. In addition, this research also conducted a pilot study to provide free HPV vaccine for young adolescence in some provinces in Vietnam that are Thanh Hoa, Can Tho. However, data about vaccination in that study are unpublished (PATH, 2009).

Other aspect examined in this study is parent's attitudes and acceptability toward HPV. This is an important perspective needed to look into while studying on HPV because parent's attitudes and acceptability toward HPV can affect the rate of young females those have not had HPV vaccinated, which can lead to a higher rate of HPV infection among women.

Another research has been conducted in Da Nang city on the attitudes and acceptability toward HPV vaccine among mothers who have daughters aged from 10 to 18 and examined factors that may influence HPV vaccine uptake. Result showed that 11% of participants were aware of HPV vaccine and most of them (94%) thought that HPV vaccine would be effective. In terms of vaccination acceptability, over 90% the mothers were desirable to have their daughters getting vaccine. Regardless of their knowledge about HPV vaccine, this number somehow supports to previous findings which showed that the mothers were aware of HPV vaccine. In addition, they also expressed that health provider's recommendations would be important for them to make decision. This finding may help health care administrators to develop a system of consultants related to HPV vaccine issues to encourage people getting HPV vaccinated (Dinh, 2007).

These above researches showed the high prevalence of HPV infection in biggest cities of Vietnam as well as the knowledge and attitudes of parents toward HPV and HPV vaccine. However, this study is different from the previous studies in the aspect that it concentrates on the facilitating factors and barriers based on knowledge and acceptance of women who are the principle beneficiary of HPV vaccine. It is also designed to study in Hanoi where HPV prevalence has rapidly increased recently.

Beside knowledge of HPV and HPV vaccine, the cost of vaccination may have a significant effect on vaccine acceptance among Vietnamese women. In Vietnam, it costs around US\$100 per dose of HPV vaccine (Saigongiaiphong, 2007) and a three-dose package is needed for each woman when they decide to have vaccination. The average annual per capita income in Vietnam is \$1,200 (vneconomynews, 2010), therefore spending US\$300 for the vaccination is quite a big money for women if not saying that a lot of Vietnamese women cannot afford that expense.

It is also important that after the HPV introduction program in Vietnam we need to assess the barriers as well as the facilitating factors towards acceptance of HPV vaccine in order to adjust future programs. As mentioned above, HPV vaccine will be most effective for those who are at young age, especially before they have their first sexual activities. The HPV vaccination in young people requires parental consent. In Vietnam almost of the previous studies were done with parents as the participants, since vaccine is also effective in late adolescent, it is also important to study the perception of people above 15 years old who can decide to get vaccination themselves. In Vietnam there are no well-established legal rules regarding the age of consent for participation in a research, or age for using of certain HPV vaccine as well as health services, e.g. STD clinics, family planning services and drug treatment programs. The following considerations, however, can be used to provide some guidance:

- Article 21, Civil Code of Vietnam, expresses that “in cases where a person who is between full fifteen years old and under full eighteen years old has his/her own property to ensure the performance of obligations, such person may establish and perform civil transactions by him/herself without the consent of his/her representative at law, unless otherwise provided by law”
- Article 6, The Labor Code of Vietnam, allows individuals aged from 15 to 18 years old to work without parental consent, but they cannot take up professions posing a risk to their health.

What we can extrapolate from these above Articles is that Vietnamese women are considered matured enough to be autonomous in making decision at the age of 15 and above. Hence, it is reasonable to examine the HPV vaccine acceptance among women aged from 15-25 years old. In addition, studying parent’s influence on their daughter’s decision in having vaccination may point out whether it is a facilitating factor or a barrier to HPV vaccine acceptance in Vietnam.

Regarding types of HPV vaccine used in Vietnam, according to Vietnamese MOH there are two types of HPV vaccines: Gardasil and Cervarix. In details, on 24th July 2008, Vietnamese MOH issued Decision No. 2653 on licensing registration number QLVX-H07-09 to Gardasil vaccine made by Merck and Co.,Inc – USA and

on 18th November 2008, MOH also issued Decision No. 4541 on licensing registration number QLVX-H11-09 to Cervarix vaccine made by GlaxomithKline Biologicals s.a – Belgium.

In terms of recommended age for vaccination, Gardasil was licensed for use in females aged from 9 to 26 years old and the Advisory Committee on Immunization Practices (ACIP) recommended routine HPV4 vaccination of females aged 11 or 12 and catch-up vaccination for females aged 13 through 26 years old.

In Vietnam, according to the official guideline for age of vaccine usage (No. 701/QLD-DK) issued by Department of Drug Administration, MOH, in January 2009, Gardasil vaccine is recommended for women aged from 9 to 26 years old and Cervarix is for those who is 10 to 25 years old. Both of HPV vaccines were strongly recommended for females who have never had sexual behaviors.

Participants in this study are Vietnamese women who are among 15 – 25 years old. These women are legally considered as matured enough to make their own decision in many aspects of life. They are also at the recommended age of getting vaccination. However, female aged from 15 to 25 may have sexual behaviors before, so they have to judge by themselves if they are eligible for HPV vaccine by comparing their sexual behaviors.

This thesis studies the facilitating factors and barriers towards vaccine acceptance among these young Vietnamese women. It attempts to find out the correlation between women's knowledge and HPV vaccine acceptance as well as their vaccination status, based on which we can know how the effectiveness of these strategies are. Moreover, this study can contribute to this field of study regarding identifying the facilitators as well as barriers toward women's vaccine acceptance, from which researcher can propose some effective solutions in order to enhance their knowledge and behaviors in cancer prevention. The findings on women's knowledge of HPV are so important to build up a strategy to encourage them getting HPV vaccine injected, that helps to reduce the HPV prevalence. Last but not least, the results of this study are expected to be able to help the Government in making decisions scientifically in their future HPV vaccination programs.

CHAPTER III

RESEARCH METHODOLOGY

3.1 Study Design

Cross-sectional survey had been employed in this survey to collect data. After the proposal and research tools have been accepted by Ethical Committee, the survey has been conducted with a specified sample. Cross-sectional survey can help to assess the knowledge and perception of young women in a specific time.

3.2 Area study

This research is carried out in inner districts in Hanoi, capital of Vietnam, in which MOH, Central level and national hospital such as the National Obstetric and Gynaecological Hospital, Central Gynaecological Hospital are located. In addition, National Institute of Hygiene and Epidemiology, which is considered as the leading organization on vaccine study is also located there. There are many advertising programs for HPV vaccine at Hanoi such as poster, banners on streets, in hospital, clinics or health care centres. There are also many of state and private health care centres as well as hospitals in Hanoi where people can get consultancy about their health problems as well as information on vaccine. Inner districts are central districts in Hanoi. There are 10 inner districts in Hanoi including Ba Dinh, Hoan Kiem, Hai Ba Trung, Dong Da, Tay Ho, Thanh Xuan, Cau Giay, Long Bien, Hoang Mai and Ha Dong

3.3 Population study

Participants in this research are young women, who live in inner districts of Hanoi, can read and write Vietnamese and are 15 – 25 years old. As mentioned before, these women are legally considered mature enough to make their own decision in many aspects of life. They are also at the recommended age of getting HPV vaccine. According the guideline for HPV vaccination released by MOH in Vietnam, young female aged from 9 to 26 years old are eligible for HPV vaccination.

3.4 Sample size and Sampling methodology

At the time of this survey, there are very few studies on HPV in Vietnam related to facilitating factors and barriers toward intention to accept HPV vaccine and there is no data about prevalence of female who took HPV vaccine. Therefore,

according to the regulations to calculate the sample size, the prevalence of HPV vaccine acceptance (p) has been taken on at 50%. The sample size was calculated by the following equation:

$$n = \frac{z^2 \times p \times (1 - p)}{d^2}$$

$$n = \frac{(1.96)^2 \times .050 \times (1 - 0.50)}{(0.05)^2} = 386$$

n: sample size

z: value from normal distribution associated with 95% confidence interval 1.96

p: the expected proportion of who knowledge and information risk factor and preventive behavior (50%) = 0.5

d: error allowance (degree of accuracy desired) 5%

Data collected were 386

In this research, the sample has been selected through four step sampling method: (using computer generated random numbers at <http://www.random.org/>).

In the first step, three districts have been chosen randomly from ten inner districts of Hanoi. The three selected districts were: Cau Giay with 8 wards , Hai Ba Trung with 20 wards , Hoan Kiem with 18 wards.

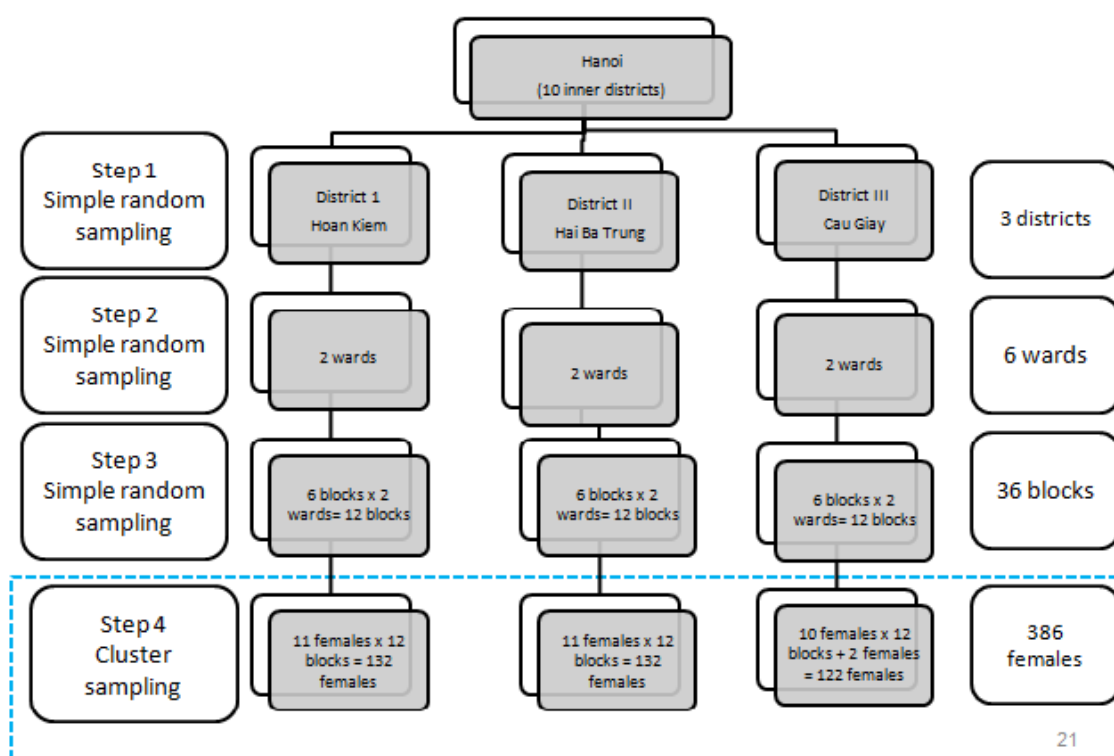
In the second step, in each selected district, two wards were randomly selected. Hence, the sample was a total of six wards. Each ward is subdivided in blocks that vary from a minimum of 30 to a maximum of 45 blocks.

In the third step, two blocks from each ward were randomly selected for a total of 36 blocks.

In the fourth and final step, to identify the 15-25 year old females residing in a block the researcher used a list of these women provided by the People Committee Members. If a block had 11 females 15 to 25 years old, all these females were asked to participate to this study. If a block had less than 11 females 15 to 25 years old, the missing number was compensated by including females in the adjacent block till the number of 11 females 15-25 year old was reached. If a block had more than 11 15-25

year old females, the first female to be interviewed was chosen randomly and the subsequent 10 females were selected by visiting the closest household with a 15-25 year old female, then the next closest and so on. The closest households were selected following a direction pointed out by the spinning of a pen. If a household had more than one 15-25 year old female, one was interviewed by lottery selection. The fourth step followed the methodology in WHO 1991. Figure3 summarizes the sampling methodology:

Figure 3: Multi-stage sampling method



3.5 Data collection

The target population for the study are young women aged from 15 to 25 residing in selected inner districts of Hanoi. The member of people's committee introduced the researcher to young women in selected households. The researcher described the study for respondents. The respondents who agreed to participate in the study were required to sign in the inform consent. After that, researcher gave

respondents a copy of questionnaire, respondents answered questionnaire by themselves. Researchers waited until respondents complete the questionnaire, in cases respondents had questions about questionnaire, researchers were responsible for answering those questions. Respondents put their completed questionnaire into a locked box by themselves. All information was kept anonymous by assigning a coded number to each participant. There were some sensitive questions asked in this study. The self administrated questionnaire used to keep the confidence of information and also increase the accuracy of the answers. In addition, it aimed to assess the respondent's knowledge, hence, self-administrated questionnaire was the best way in order to understand the matter.

Data were collected by the principal researcher and four research assistants (RA): three recruited from Vietnamese Academy of Social Sciences and one from Center for Community Health and Development. In order to limit interviewer bias, the RA received one day training on research objectives and methodology and on how to distribute questionnaires in standardized way. The training was complemented by field practice.

The research assistants (RAs) were responsible to go to the field to collect data. Before interviewing the participants, the RA gave clear verbal explanation to each potential participant on the purposes and procedures of the study, the utilization of the results and the right of non- participating to the research. RA distributed the questionnaire, and collected the signed consent.

The RA also explained that the questionnaire would be folded and put in a locked box by the participants so that nobody will see his/her answers to the sensitive questions.

3.6 Research Instruments: questionnaire

A self-administered questionnaire was used for this research. The questionnaire was adapted by using three questionnaires that were designed by Ingledue, K., Cottrell, R., and Bernard, A. (2004), Gerend M, A (2009) and Gregory D Zimet (2010). The questionnaire is divided into 5 parts: Social Demographic Information, Reproductive health history, Knowledge of HPV and HPV vaccines, Perception on HPV and HPV vaccine, HPV vaccination,

3.7 Validity

Questionnaire was reviewed by experts in reproductive health field in College of Public Health Sciences: Dr Ratana Somrongthong, Dr Khemika Yamarat and Dr Alessio Panza. Questionnaire was modified according to their comments and suggestions.

3.8 Pre—test

The sample of the pre-test is 20 young females from 15 to 25 years old, taken from Hai Phong city. The goals of the pre-test are to determine the reactions of young women in Hanoi to the questionnaire, validate the translation of key terms used, find out whether the respondents could understand the terms, and ascertain whether the sequence of the questions solicited the desired information. A researcher was hired to assist in pre testing the instrument with 20 young females. The data were sent to principle researcher to analyze the reliability. After doing pre test, the English words ‘HPV vaccine’ were changed into ‘vaccine to prevent cervical cancer’ since that name was familiar with young female in Vietnam rather than HPV vaccine. The question about the sources of information was changed from the future tense into the past tense.

3.9 Reliability

The internal consistency was analyzed by using Cronbach’s Alpha coefficient. Upon analysis, the Cronbach’s Alpha result for knowledge part was 0.766. The perception score with Cronbach’s Alpha were 0.84 for perceived severity, 0.79 for perceived barriers, 0.82 for perceived benefit.

3.10 Data analysis

Data collected from this survey were analyzed by using both descriptive and inferential statistics utilizing SPSS software for Windows. Descriptive statistics were used to summarize, organize and simplify data as well as find out how much knowledge that young female gained by using frequency distribution, percentage, mean, median, mode, SD. For inferential statistics data analysis such as Chi Square, it was used to calculate association between knowledge on HPV infection, vaccination and education levels, and economical status. Logistic Regression had also been employed to determine women’s behavioural intention to get vaccine. All the confounding factors had been eliminated in multiple logistic regressions. Logistic

regression was used to identify the most important predictor variables (the barriers and facilitating factor) that are related to HPV vaccine acceptance among young women.

Generally, information about knowledge on HPV and HPV vaccine were collected through 10 multiple choice questions. The first six questions are about knowledge on HPV and 4 questions were used to detect the knowledge of participants on HPV vaccine. The first and the third question have two correct options while the sixth has three correct options. Totally, there are 14 correct options in which 10 correct options are in the part of knowledge on HPV and 4 correct options in knowledge on HPV vaccine.

In order to identify levels of participants' knowledge on HPV and HPV vaccine, score counting method has been used in which each correct option is counted as 1 and 0 is for incorrect option or "don't know". Afterward, the scores were categorized into groups which are identified as good knowledge, moderate knowledge and insufficient knowledge following bloom's cut-off point:

Less than 60% refers to insufficient knowledge

From 60% to 80% refers to moderate knowledge

More than 80% refers to good knowledge

For knowledge on HPV, if the score is more than 80% (9-10), the person was noted as having good knowledge, between 60% to 80% of total score (7-8) was noted as moderate and less than 60% (≤ 6) was noted as insufficient knowledge.

For HPV vaccine knowledge, if the scores are more than 80% (4), the person was noted as having good knowledge, between 60% to 80% of total score (3) was noted as moderate and less than 60% (≤ 2) was noted as insufficient knowledge.

Perception section includes 10 questions and the questions consisted of both negative and positive statement. For both of negative and positive, the score was calculated by 6 point Likert scale. The rating scale was measured follows the cut off point: mean \pm standard deviation

Perceived susceptibility: the score \leq mean – 1 standard deviation (≤ 2.6) refers to perception of low susceptibility. The score \geq mean + 1 standard deviation (> 5)

refers to perception of high susceptibility and the score within mean + standard deviation and mean – standard deviation (2.7 – 5.3) refers to perception of moderate susceptibility.

Perceived severity: the score \leq mean – 1 standard deviation (≤ 11.4) refers to perception of low severity. The score \geq mean + 1 standard deviation (≥ 17.2) refers to perception of high severity and the score within mean + 1 standard deviation and mean – 1 standard deviation (11.5 – 17.1) refers to perception of moderate severity.

Perceived barriers: the score \leq mean – 1 standard deviation (≤ 6.8) refers to perception of low barriers. The score \geq mean + 1 standard deviation (≥ 11.9) refers to perception of high barriers and the score within mean + 1 standard deviation and mean – 1 standard deviation (6.9 – 12) refers to perception of moderate barrier.

Perceived benefit: the score \leq mean – 1 standard deviation (≤ 7.6) refers to perception of low benefit. The score \geq mean + 1 standard deviation (≥ 11.1) refers to perception of high benefit and the score within mean + 1 standard deviation and mean – 1 standard deviation (7.7 – 11.2) refers to perception of moderate benefit.

3.11 Ethical Consideration

Before participants answer the questionnaire, the researchers explained purpose of the study to them. The informed consent form was signed when the potential participants accept to participate in the survey. Name of respondents were not recorded and data were coded using the alpha-numeric code assigned to each participant. The respondents were free to participate or withdrawal from the survey at any time. This study was reviewed and approved by the Institutional Review Boards (IRBs) of Ethical Committee of College of Public Health Science of Chulalongkorn University.

3.12 Benefits

This study is expected to find out the barriers and facilitating factors of HPV vaccination among young women in Hanoi – Vietnam, from which some effective solutions can be proposed in order to enhance knowledge and behaviors to receive HPV vaccine to prevent cervical cancer. The results of this study also consult to medical policy makers to propose the correct guidelines for females who receive

vaccine and other effective campaigns to encourage females among 15 and 25 years old to take HPV vaccine.

CHAPTER IV RESULT OF THE STUDY

4.1 Descriptive analyses

The first part of this section focuses on describing the socio-demographic information of the participants, their Pap smear practice, sexual behaviors, cervical cancer history of their family, knowledge and attitudes toward HPV and HPV vaccines, and cues of action. The second part looks at the relationship between these factors and their intention to take HPV vaccine.

4.1.1 Socio-demographic descriptions

Table 1 describes the detailed socio-demographic characteristics of participants and it shows that nearly half of the participants are 22 to 25 years old (43.2%) and the minority of them is in the 15 – 17 year old group (21%). The average age is 20.73 years old, SD is 3.121 and the range is from 15 to 25. Among those respondents, 85.8% are single, 13.5% are married and the minority of them is divorce or separate.

Among respondents, the majority of them have college/university/graduate school levels (60.9%) and a few of them have primary (0.3%) or no formal education (1%). Regarding respondent's occupation, Table 1 shows that more than a half of the respondents are student (both high school and undergraduate) (57%), a small part of them are unemployed (6%) and only 11 respondents are housewives at the time of the survey.

Family monthly income has been converted into International Dollars (ID) using Purchasing Power Parity¹ exchange rates (PPP) in 2010 to make it more understandable to international readers. Among those respondents, the majority of them have family monthly income from 425 – 1,425 ID (57.8%) and only 8.8% of them living in households with monthly income over 2.850 ID.

¹ An international dollar has the same purchasing power as the U.S. dollar has in the United States. Costs in local currency units are converted to international dollars using Purchasing Power Parity (PPP) exchange rates. A PPP exchange rate is the number of units of a country's currency required to buy the same amounts of goods and services in the domestic market as U.S. dollar would buy in the United States. An international dollar is, therefore, a hypothetical currency that is used as a means of translating and comparing costs from one country to the other using a common reference point, the US dollar. (<http://www.who.int/choice/costs/ppp/en/>)

Table 1 Socio-demographic information of participants (n= 386)

Variable	Frequency	Percent
Age		
- 15 - 17	81	21.0
- 18 – 21	138	35.8
- 22 – 25	167	43.2
Marital status		
- Single	331	85.8
- Married	51	13.5
- Divorce/separate	1	0.3
- Don't want to answer	2	0.5
Highest education level		
- College/University/Graduate school	235	60.9
- High school	137	35.5
- Secondary school	9	2.3
- No formal education	4	1.0
- Primary school	1	0.3
Occupation		
- Student (high school and undergraduate)	220	57.0
- Employed (full time/part time)	127	32.9
- Unemployed	23	6.0
- Housewife	11	2.8
- Others: Seller	5	1.3
Household monthly income		
- < 3 million VND (425 ID*)	49	12.7
- 3 – 7 million VND (425-1,000 ID)	100	25.9
- Over 7 – 10 million VND (1,000 – 1,425 ID)	123	31.9
- Over 10 – 20 million VND (1,425 – 2,850 ID)	80	20.7
- > 20 million VND (2.850 ID)	34	8.8

* *International dollars also known as purchasing power parity (PPP)*

4.1.2 Pap smear practice, Sexual behaviors and cervical cancer history of family

Table 2 shows the distribution of participants who have heard of Pap smear, have got Pap smear test and its result. The majority of participants (68.9%) never heard about Pap smear. Among 120 participants who have heard about Pap smear,

there are only 8 of them already used this test (6.7%), and only one of them who had abnormal result was observed.

Table 2 Pap smear practice

Variable	Frequency	Percent
Number of participants who heard about Pap smear (n = 386)		
No	266	68.9
Yes	120	31.1
Number of participants who have taken Pap smear among women who heard about Pap smear (n= 120)		
No	108	90.8
Yes	8	6.7
Don't remember	3	2.4
Don't want to answer	1	0.1
The result of Pap smear among those who were tested (n= 8)		
Normal	7	87.5
Abnormal	1	12.5

Table 3 describes Pap smear practise of respondents who are over 21 years old and eligible for Pap smear according to guidelines in Vietnam. The data show that most of them had never heard of Pap smear before with 67.1% and among those who have already heard of Pap smear, only 11.1% (8 cases) have had a Pap test. However, among respondents who had taken the test, only one of them got the abnormal result.

Table 3 Pap smear practise of young females aged over 21 years old

Variables	Frequency	Percent
Number of participants from 21 years old who heard about Pap smear (n= 219)		
Yes	72	32.9
No	147	67.1
Number of participants over 21 years old who have had Pap smear (n= 72)		
No	62	86.1
Yes	8	11.1
Don't remember	2	2.8
The result of Pap smear among participants over 21 years old who had tested (n= 8)		
Normal	7	87.5
Abnormal	1	12.5

Table 4 shows that there is only a few of respondents having family's member getting cervical cancer (4.9%) meanwhile the majority of respondents said "no" when being asked whether there is anyone in their family having cervical cancer or not (64.5%) and a quite remarkable number of them (28.5%) do not know if there is anyone in their family being infected by this kind of cancer.

Table 4 Family history of cervical cancer (n=386)

Variables	Frequency	Percent
Family history of cervical cancer (n=386)		
No	249	64.5
Don't know/ don't remember	110	28.5
Yes	19	4.9
Don't want to answer	8	2.1

With respect to participants' sexual behaviors, table 5 shows a relatively high percent of participants who have never had sexual intercourse yet (63.7%) and 31.1% of participants already have sexual intercourse.

For those who already had sexual intercourse (n=120), using condom can help to avoid STDs and oral contraceptive for unexpected pregnancy. The data shows that participants used condom “sometimes” (23.3%) and “usually” (19.2%), very few “always” and “never” used condom, 9.2% and 6.6% respectively. Among sexually active participants, 26.7% reported using oral contraceptive, among these people, 68.8% are already married.

Table 5 Sexual behaviours and using condom and oral contraceptive

Variables	Frequency	Percent
Sexual behaviors (n=386)		
Have not had sexual intercourse	246	63.7
Currently have sexual intercourse	75	19.4
Have ever had sexual intercourse	45	11.7
Don't want to answer	20	5.2
Condom use among those who had sexually active (N=120)		
Always	11	9.2
Usually	23	19.2
Sometimes	28	23.3
Occasionally	20	16.7
Rarely	16	13.3
Never	8	6.6
Don't want to answer	14	11.7
Oral contraceptive use among those who had sexually active (N=120)		
No	72	60.0
Yes	32	26.7
Don't want to answer	16	13.3

4.1.3 Knowledge on HPV and HPV vaccine

4.1.3.1 Knowledge on HPV

Table 6 shows that many young females have insufficient knowledge on HPV or have no knowledge on it. The majority of them includes those “don't know” what diseases that HPV can cause and have incorrect answer (totally 38.7%). Only 22.3% of them have fully correct answer. In cases of the main causes of HPV infection, the percent of “Don't know” is relatively high (36.4%). In addition, the percentages of

partly correct answers and incorrect answers are also remarkable, 36.9% and 5.6% respectively.

In terms of knowledge on who is at the high risk of HPV infection, 54.3% of them chose the incorrect answer and only 21.8% of participants chose the correct answer. When being asked about how to detect HPV infection, many of participants reported “don’t know” (35%) and had incorrect answer (35%).

For the question about HPV treatment, most of respondents (51.9%) chose the incorrect options. A few of them (10.2%) can answer the question correctly. Similarly, when being asked about how to reduce the risk of contracting HPV, almost all of participants are partly correct (59.2%) even “don’t know” (23.1%). There is only 16.1% of them have fully correct answer.

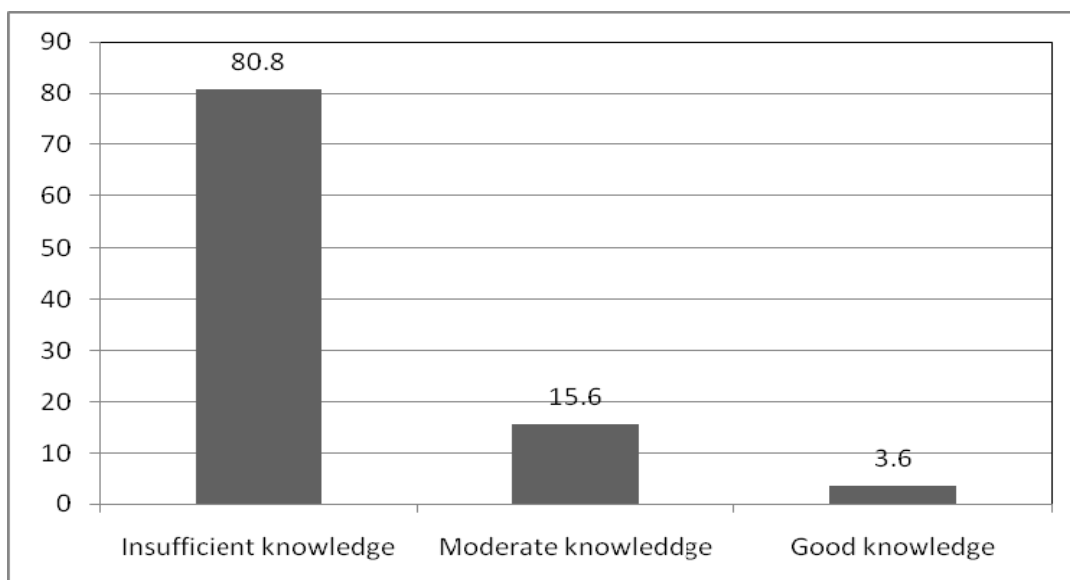
Table 6 Knowledge on HPV (n=385)

Variable	Correct N (%)		Incorrect N (%)	Don't know N (%)	Total N (%)
	Fully	Partly			
What are the disease caused by HPV infection	86 (22.3)	150 (39.0)	3 (0.8)	146 (37.9)	385 (100)
What is the cause of HPV infection	80 (20.8)	142 (36.9)	23 (5.9)	140 (36.4)	385 (100)
Who are at high risk to be infected HPV	84 (21.8)	0 (0)	209 (54.3)	92 (23.9)	385 (100)
How can HPV be detected	115 (30.0)	0 (0)	135 (35.0)	135 (35.0)	385 (100)
How can the exiting case of HPV be treated	39 (10.2)	0 (0)	200 (51.9)	146 (37.9)	385 (100)
How can the risk of contracting HPV be reduced	62 (16.1)	228 (59.2)	6 (1.6)	89 (23.1)	385 (100)

Regarding levels of knowledge on HPV, as can be observed in Figure 4, almost participants have insufficient knowledge related to HPV (80.8%) while only 3.6% of respondents have good knowledge on HPV. This figure clearly shows the lack of knowledge on HPV among young females of Vietnam.

Figure 4 Distribution of levels of knowledge on HPV (N=385)

Mean: 3.8, median 4, Mode: 0, SD 2.67, Range 10



4.1.3.2 Knowledge on HPV vaccines

Table 7 shows that the percent of respondents who do not know about HPV vaccine is quite high with 29.5%. For other items, such as “HPV vaccine is recommended to whom”, this percent is also high with 29.4%, especially they “do not know” whether a woman with HPV vaccination need a Pap test or not (53.3%) and also do not know how many doses of HPV vaccine are required (61.7%). Regarding the whole 4 items, there is 16.1% among all participants reported that they “do not know” anything about HPV vaccine.

However, some respondents know quite well about the vaccine such as they know that HPV vaccine is recommended to women from 9-26 years old (61.3%). Simultaneously, about 56% of them said that HPV vaccine can be used to protect people from being infected by specific types of HPV which can cause cervical cancer. Yet, the percent of correct answer towards the question about the required number of HPV vaccine doses and about the necessity of Pap test for vaccinated females remain low with 24.9% and 29.6% respectively.

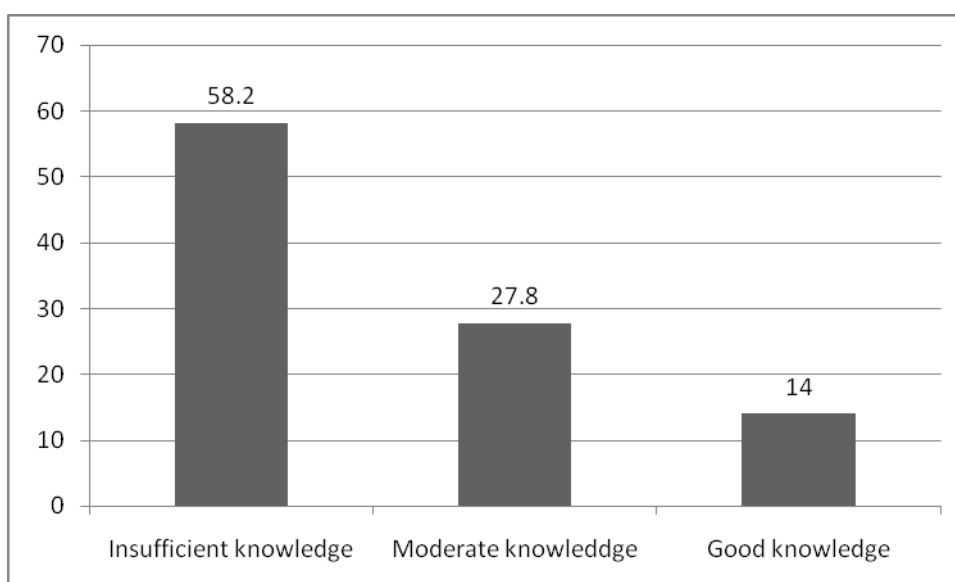
Table 7 Knowledge on HPV vaccine (N=385)

Variable	Correct N (%)	Incorrect N (%)	Don't know N (%)	Total N (%)
1. Who are eligible for HPV vaccine?	236 (61.3)	36 (9.3)	113 (29.4)	385 (100)
2. What do you know about HPV vaccine?	216 (56.0)	55 (14.5)	114 (29.5)	385 (100)
3. Do females who receive the HPV vaccine need to get Pap smears?	114 (29.6)	66 (17.1)	205 (53.3)	385 (100)
4. How many doses of HPV vaccine are required?	96 (24.9)	52 (23.4)	238 (61.7)	385 (100)

Distributions of levels of knowledge on HPV vaccine were presented in Figure 5. There is a relatively high percent of participants (58.2%) who have insufficient knowledge on HPV vaccine. For those who have good knowledge HPV vaccine, the percent is 14% which is relatively low.

Figure 5 Distribution of levels of knowledge on HPV vaccine (N=385)

Mean 1.95, Median: 2, Mode 2, SD 1.3 Range 4.



4.1.4 Perceptions on HPV and HPV vaccine

Perception section includes 9 questions, four questions for HPV and five for HPV vaccine, and the questions consisted of both negative and positive statements. Perception includes perceived benefit, perceived barriers, perceived susceptibility, and perceived severity.

4.1.4.1 Perception on HPV

Perceived severity

Table 8 shows that most of the participants reported that having genital HPV will make them upset (93.2%) and they may get troubles with their health because of HPV infection (93%) (from somewhat agree to strongly agree). In addition, there are some participants (37.8%) who considered that their relationships would be affected if they were infected with HPV.

Conversely, about six percent of participants expressed their disagreement with these statements. 3.9% and 4.4% of participants stated that they strongly disagree with “having genital HPV would be very upsetting” and “having genital HPV would be very disruptive to my health”, respectively. About 19% of participants did not think that “having genital HPV would be very disruptive to their relationships”. In general, participants in this study have the high perception of severity related to HPV.

Table 8 Participants' perception of severity related to HPV (n=385)

Statement	Percentage					
	Strongly disagree	Disagree	Somewhat disagree	Somewhat Agree	Agree	Strongly agree
Having genital HPV would be very upsetting	3.9	0.8	2.1	12.5	56.0	24.7
Having genital HPV would be very disruptive to my health	4.4	1.0	1.6	12.8	50.0	30.2
Having genital HPV would be very disruptive to my relationships	4.2	4.7	9.1	22.7	37.8	21.6

Perceived susceptibility

When being asked about the likelihood of getting HPV in near future, almost participants said that they are at risk of being infected in different levels. In general, data show that most of the participants believed they are likely to get HPV regardless of different levels of the likelihood to be infected in future (75.6%). Table 9 shows that 37.0% participants are somewhat likely to get HPV and some respondents said they are unlikely to get HPV (12.0%) or “very unlikely” (6.0%). In conclusion, more than a half of participants thought that they are at risk of having HPV in the future.

Table 9 Perceived susceptibility to HPV infection (n=385)

Statement	Percentage					
	Very unlikely	Unlikely	Somewhat unlikely	Somewhat likely	Likely	Very likely
How likely is it that you will get genital HPV in future?	6.0	12.0	6.5	37.0	31.8	6.8

4.1.4.2 Perception on HPV vaccine

Perceived benefits to HPV vaccine

In table 10, most of the participants agreed that HPV vaccine will protect them from cervical cancer (45.6%). They (46.1%) mostly agreed that HPV vaccine is helpful to prevent genital HPV infection. There is only a minimal number of participants who did not agree with these statements, such as 1.0% of them strongly disagreed that HPV vaccine will protect people from getting cervical cancer, or 1.6% of them strongly disagreed that HPV vaccine will be effective in preventing genital HPV infection.

Table 10 Perceived benefits (n=385)

Statement	Percentage					
	Strongly disagree	Disagree	Somewhat disagree	Somewhat Agree	Agree	Strongly agree
HPV vaccine will protect people from getting cervical cancer	1.0	1.6	4.2	29.2	45.6	18.5
HPV vaccine will be effective in preventing genital HPV infection	1.6	3.4	4.9	28.9	46.1	15.1

Perceived barriers on HPV vaccine

Table 11 shows that 64% of participants agreed with the statement “Having to pay a lot for the HPV vaccine prevents me from getting vaccinated in future” by all levels of agreement and about 36% disagreed with it.

For the second item, 38.8% of participants disagreed and even strongly disagreed (15.4%) with the statement that “It takes a lot of time to get vaccinated”. There is only 15.4% of participation “somewhat agreed” and around 9% “agreed” with the statement. For the last item, almost participants believed that HPV vaccine is safe. In details, 41.4% reported “somewhat safe”, 46.4% “safe” and 5.2% “very safe”. There are also some persons (7.0%) said that it is risk to get HPV vaccine.

Table 11 Perceived Barriers on HPV vaccine (n=385)

Statement	Percentage					
	Strongly disagree	Disagree	Somewhat disagree	Somewhat Agree	Agree	Strongly agree
Having to pay a lot for the HPV vaccine prevents me from getting vaccinated in future	5.7	13.0	16.4	21.1	22.1	21.6
It takes a lot of time to get vaccinated	15.4	38.8	16.1	15.4	9.1	5.2

Statement	Percentage					
	Very risk	Risk	Somewhat risk	Somewhat safe	Safe	Very safe
How safe do you think it is to get the HPV vaccine*	1.8	0.8	4.4	41.4	46.4	5.2

*Negative statement

4.1.5 Facilitating factors and barriers towards intention to get vaccination

Among the total number of participants in this survey, there are only five persons who have already got HPV vaccine (1.3%).

Table 12 Number of participants who got HPV vaccine (n=383)

	Frequency	Percent	Valid Percent
No	378	97.9	98.7
Yes	5	1.3	1.3

In table 13, data show that among participants who have not got HPV vaccine yet there is about 64.5% having intention to get vaccine in the future and about 34% reported that they would not accept vaccine.

Table 13 Number of participants who intent to get HPV vaccine (n= 378)

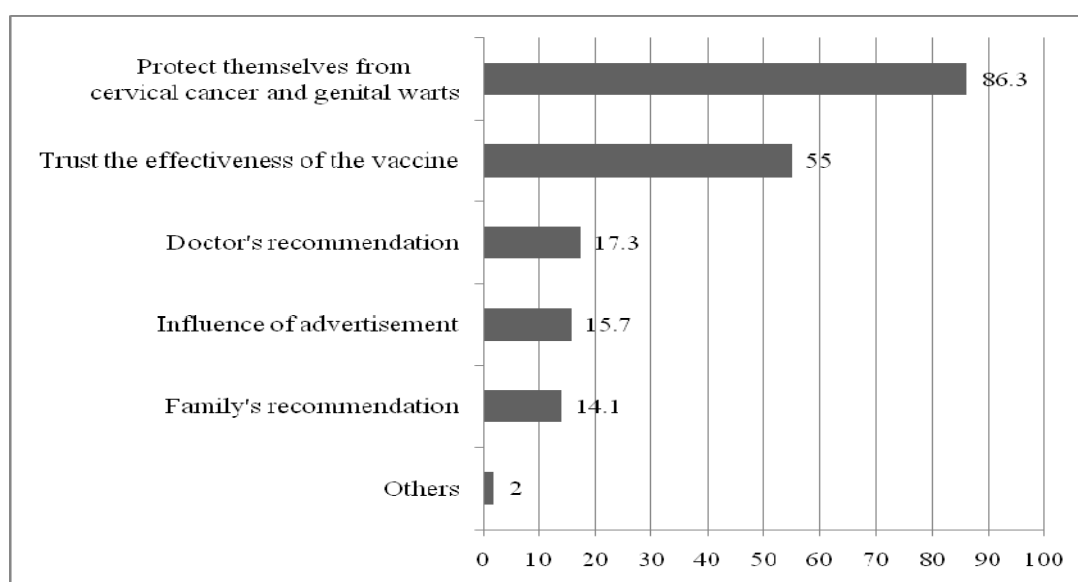
	Frequency	Percent	Valid Percent
Yes	249	64.5	65.9
No	129	33.4	34.1

4.1.5.1 Reason for intention to get HPV vaccine

Four among five participants who got HPV vaccination said that they were recommend by their family members. All of them got the consultation about HPV vaccine from health care providers.

The facilitating factors of intention to accept vaccine among those who never get vaccine was showed in the Figure 6. There are two main reasons that encourage young females to get HPV vaccine which include “protect themselves from cervical cancer and genital warts” (86.3%) and “Trust the effectiveness of the vaccine” (55.0%). In addition, there are some other reasons such as following doctor recommendation (17.3%) or family’s recommendation (15.3%) and influence of advertisement (14.1%).

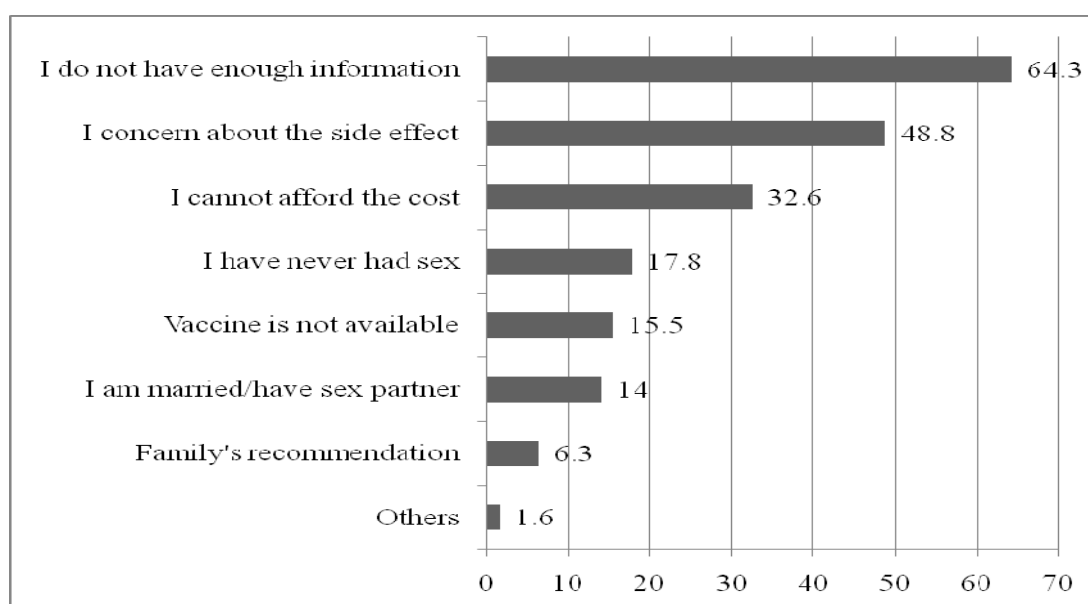
Figure 6 Reasons for intention to get HPV vaccine in future among young females (n=249)



4.1.5.2 Reason for no intention to get HPV vaccine.

Figure 7 shows the reasons for not intend to get the vaccine. The main reason is that young women do not have enough information about the vaccine (64.3%). The second reason is that they are worried about the side effect of the vaccine (48.8%). In addition, 32.6% of participants who do not have intention to get HPV vaccine said that they cannot afford the price of the vaccine. Only 1.6% of participants said that their family members recommended them to refuse HPV vaccination.

Figure 7 Reasons for not intent to accept HPV vaccine in future among young females (n=129)



In terms of the sources of information on HPV and HPV vaccine that mentioned in table 14, over 70.5% of respondents chose internet as one of the main sources to obtain information and 20.9% access to health care providers. Only a small percent of them reported receiving information from family members (19.9%).

Table 14 Sources of information about HPV and HPV vaccine (n = 378)

Items	Frequency	Percentage
Internet	272	72.0
TV/radio	139	36.8
Friends	144	37.3
Magazine/Newspaper	125	33.1
Health care provider	115	30.4
Family members	77	10.4
Others: Flyer, banner, poster...	3	0.8

In terms of whom participants will consult when they decide to get HPV vaccine, table 15 shows that 74.6% of participants will consult health care providers before they decide to get the vaccine meanwhile there are about 50% of them consult their parents, 29.9% would seek for consultancy with friends and 0.8% will ask other persons such as their husband.

Table 15 To whom participants will ask for advices (n=378)

Items	Frequency	Percentage
Ask to parent	189	50.0
Ask to health care provider	282	74.6
Ask to friends	111	29.4
Ask to older sister/brothers	94	24.9
Ask to husband	3	0.8

Table 16 shows that 76 participants (19.7%) reported that they got the consultation about HPV vaccine from health care provider.

Table 16 Received consultation from health care provider (n=378)

	Frequency	Valid Percent
No	302	79.9
Yes	76	20.1

In table 17, more than a half of participants (51.3%) who were asked about health care providers' knowledge on HPV vaccine, perceived that health care providers barely understand about HPV vaccine and 2.7% perceived that health care providers lacked of knowledge on HPV vaccine.

Table 17 Perception about health care provider's knowledge (n=76)

Items	Frequency	Percentage
Adequately understand	27	35.5
Barely understand	39	51.3
Inadequately understand	5	6.6
Lack of understanding	2	2.7
No answer	3	3.9

4.2 Relationship between socio-demographic characteristics, knowledge and perception on HPV and HPV vaccine, sources of information and intention to get HPV vaccine among young females

4.2.1 Bivariate analysis

4.2.1.1 Social - demography

Table 18 shows the relationship between socio-demographic factors of respondents and their intention to get HPV vaccine.

There is no significant relationship between respondents' marital status, education, and monthly income with intention to get HPV vaccine. However, the result shows that there are significant relationships between intention to accept HPV vaccine and age (p-value= 0.022), occupation (p-value = 0.022). The intention to get HPV vaccine was increased and highest at the group of those are 22-25 years old (73.6%). In addition, 73.8% of those who already had jobs (both full time and part time) intended to get HPV vaccine in the future. For those are unemployed or student, there are around 62% of them have intention to get vaccine.

Table 18 Relationship between participant's socio-demographic information and their intention to get HPV vaccine

Variable	Intention N (%)	No intention N (%)	X ²	P- value ≤ 0.05
Age (n=378)			7.650	0.022*
15 – 17	48 (60.0)	32 (40.0)		
18 - 21	81 (60.0)	54 (40.0)		
22 – 25	120 (73.6)	43 (26.4)		
Marital status (n=378)			0.471	0.493
Married	34 (61.8)	21 (38.2)		
Single	215 (66.6)	108 (33.4)		
Highest education (n=378)			3.317	0.069
No education to high school	88 (60.3)	58 (39.7)		
Undergraduate and higher	161 (69.4)	71 (30.6)		
Occupation (n= 378)			5.603	0.022*
Employed (full and part time)	96 (73.8)	34 (26.2)		
Unemployed, students	153 (61.7)	95 (38.3)		
Monthly income (n=378)			0.001	0.977
≤ 1,425 international income	176 (65.9)	91 (34.1)		
>1,425 International income	73 (65.8)	38 (34.2)		

*Significant at $p < 0.05$

4.2.1.2 Pap smear practice, Sexual behaviors and cervical cancer history of family

There is no relationship between intention to get HPV vaccine and sexual behaviors ($p=0.43$), Pap smear practice ($p=0.55$), cervical history of family ($p=0.51$). The relationship between the condom use and use contraceptive pill among participants who had sexual activities and intention to get HPV vaccine reveals that there was no significant difference ($p=0.52$).

4.2.1.3 Knowledge on HPV

Table 19 shows a significant relationship between knowledge on HPV and respondents' intention to have the vaccine (p -value=0.03). Among respondents who had insufficient knowledge on HPV, there are 63.0% of them intended to get the

vaccine. The highest percent of respondents want to have vaccine in future is in the group of those who had moderate and high knowledge on HPV (78.6%). Eight respondents did not answer this question. Given that only one respondent with good knowledge had no intention to get HPV vaccine and this respondent was analyzed together with those having moderate knowledge.

Table 19 Relationship between young females' knowledge on HPV and their intention to get HPV vaccine (n= 378)

Variable	Intention N (%)	No intention N (%)	X^2	P- value ≤ 0.05
Knowledge on HPV (n=378)			6.162	0.013*
Insufficient knowledge	194 (63.0)	114 (37.0)		
Moderated and good knowledge	55 (78.6)	15 (21.4)		

* Significant at ≤ 0.05

4.2.1.4 Knowledge on HPV vaccine

In table 20, the data show that the relationship between these two variables is highly significant (p-value = 0.005). Among respondents with low knowledge on HPV vaccine, 60.5% of them have intention to get the vaccine. For those who had high knowledge on HPV vaccine, 76.9% of them intended to get HPV vaccine in future.

Table 20 Relationship between young females' knowledge on HPV vaccine and their intention to get HPV vaccine

Variable	Intention N (%)	No intention N (%)	X^2	P- value ≤ 0.05
Knowledge on HPV vaccine (n= 378)			10.693	0.005*
Low knowledge	158 (60.5)	103 (39.5)		
Moderated knowledge	71 (78.0)	20 (22.0)		
High knowledge	20 (76.9)	6 (23.1)		

* Significant at ≤ 0.05

4.2.1.5 Perception

Table 21 presents the relationship between respondents' perception of susceptibility, severity about HPV. The result presents none significantly relationship in perceived susceptibility (p-value=0.280) and perceived severity (p-value=0.404) among respondents toward intention to get HPV vaccine.

Table 21 Relationship between perceptions of HPV and young females' intention to get HPV vaccine

Variable	Intention N (%)	No intention N (%)	X ²	P- value ≤ 0.05
Perceived susceptibility (n=378)			2.547	0.280
Perception of low susceptibility	11 (57.9)	8 (42.1)		
Perception of moderate susceptibility	17 (54.8)	14 (45.2)		
Perception of high susceptibility	221 (67.4)	107 (32.6)		
Perceived severity (n=378)			1.811	0.404
Perception of low severity	29 (67.4)	14 (32.6)		
Perception of moderate severity	190 (64.4)	105 (35.6)		
Perception of high severity	30 (75.0)	10 (25.0)		

* *Significant at ≤0.05*

Table 22 shows the relationship between perceived benefit and perceived barrier towards intention to get HPV vaccine among young females. Both of two variables were found highly significant in relationship with intention to get HPV vaccine, perceived benefit (p-value= 0.003) and perceived barrier (p-value<0.001). When testing the relationship between items in perceived barriers and the intention of taking vaccine, the perception of high cost of vaccine and perception of the risk of vaccine were highly significant in the relationship with intention to get HPV vaccine.

Table 22 Relationship between perceptions of HPV vaccine and young females' intention to get HPV vaccine

Variable	Intention N (%)	No intention N (%)	X^2	P- value ≤ 0.05
Perceived benefit (n=378)			11.973	0.003
Perception of low benefit	15 (40.5)	22 (59.5)		
Perception of moderate benefit	208 (69.1)	93 (30.9)		
Perception of high benefit	26 (65.0)	14 (35.0)		
Perceived barriers (n=378)			18.298	<0.001
Perception of low barriers	40 (85.1)	7 (14.9)		
Perception of moderate barriers	194 (66.0)	100 (34.0)		
Perception of high barriers	15 (40.5)	22 (59.5)		

4.2.1.6 Cues of action.

Table 23 presents the relationship between sources of information and young females' intention to get HPV vaccine in which internet and magazine/newspaper are main sources that respondents would use to seek for information related to HPV issues. For those who intended to get HPV vaccine, 69.1% of them seek for the information from internet (p-value=0.03) and 73.6% of them used magazine/newspaper to get the information (p-value=0.02).

Table 23 Relationship between information sources on HPV vaccine and young females' intention to get HPV vaccine (n=378)

Variable	Intention N (%)	No intention N (%)	X^2	P- value ≤ 0.05
TV/ Radio			0.300	0.584
<i>Yes</i>	94 (67.6)	45 (32.4)		
<i>No</i>	155 (64.9)	84 (35.1)		
Internet			4.542	0.023*
<i>Yes</i>	188 (69.1)	84 (30.9)		
<i>No</i>	61 (57.5)	45 (42.5)		
Magazine/ Newspaper			4.960	0.026*
<i>Yes</i>	92 (73.6)	33 (26.4)		
<i>No</i>	157 (62.1)	96 (37.9)		
Health provider/ health propagandist			0.586	0.444
<i>Yes</i>	79 (68.7)	36 (31.3)		
<i>No</i>	133 (63.6)	76 (36.4)		

Variable	Intention N (%)	No intention N (%)	X ²	P- value ≤ 0.05
Friends			0.001	0.975
Yes	95 (66.0)	49 (34.0)		
No	154 (65.8)	80 (34.2)		
Family members			0.006	0.94
Yes	51 (66.2)	26 (33.8)		
No	198 (65.8)	103 (34.2)		

Table 24 shows the relationship between “to whom participants will ask for advice about HPV vaccine” and the intention to get HPV vaccine. The result shows that there are significant differences in willingness to get advice from parent (p=0.023) and sister/brothers (p=0.011) towards intention to get HPV vaccine.

Table 24 Relationship between to whom participants will ask for advice and intention to get HPV vaccine (n=378)

Variable	Intention N (%)	No intention N (%)	X ²	P- value ≤ 0.05
Ask to Parents			5.190	0.023*
Yes	135 (71.4)	54 (28.6)		
No	114 (60.3)	75 (39.7)		
Ask to older Sister/brother			6.299	0.011*
Yes	72 (76.6)	22 (23.4)		
No	177 (62.3)	107 (37.7)		
Ask to Friends			0.855	0.355
Yes	77 (69.5)	34 (30.6)		
No	172 (64.4)	95 (35.6)		
Ask to Health care providers			0.879	0.348
Yes	182 (64.5)	100 (35.5)		
No	67 (69.8)	29 (30.2)		

*Significant at ≤ 0.05

Table 25 shows that the relationship between doctor’s recommendation and intention to get HPV vaccine was found highly significant (p-value<0.001). Among participants who were recommended by doctors, almost (89.5%) are willing to accept HPV vaccine.

Table 25 Relationship between health care provider's consultation about HPV vaccine and intention to get HPV vaccine (n=76)

Variable	Intention N (%)	No intention N (%)	χ^2	P- value ≤ 0.05
Health care provider's consultation in the past			23.569	<0.001*
Yes	68 (89.5)	8 (10.5)		
No	181 (59.9)	121 (40.1)		

* Significant ≤ 0.05

4.2.2 Multivariate analysis

This part uses multivariate analysis to examine all the independent variables in the relationship with respondents' intention to get HPV vaccine. All the independent variables which had significant relationship with respondents' intention to get vaccine in bivariate analysis such as knowledge on HPV, knowledge on HPV vaccine, perceived barrier and perceived benefit, occupation, age, sources of information have been put into a logistic regression model after controlling all other variables, which help to identify clearly the significant factors.

After controlling other independent variables, knowledge on HPV vaccine ($p=0.041$), perceived benefit ($p=0.001$), perceived barriers ($p=0.007$) and health care provider's consultation ($p<0.001$) were found as the significant predictors for intention to accept HPV vaccine among young females. Young females' intention to get HPV vaccine was associated to knowledge on HPV vaccine (OR: 1.75., 95%CI: 1.02-3.0), health care provider's consultation (OR: 4.4., 95% CI: 1.98-9.8) and perceived benefit (OR: 3.50., 95%CI: 1.62-7.52). It means that females who have high knowledge on HPV vaccine are likely to get vaccine 1.75 times more than those with insufficient knowledge. Women who were recommended by health care providers were likely to get vaccine 4.4 times more than others. However, the perceived barriers have negative relationship with intention to get HPV vaccine (OR: 0.29, 95% CI 0.12-0.71). In conclusion, three factors that were found as predictors for intention to accept HPV vaccine among young females in Vietnam were HPV vaccine knowledge, perceived benefit and health care provider's consultation

Table 26 Logistic regression analysis of young females' intention to get HPV vaccine (n=378)

Variable	B	Odd Ratio	95.0% C.I.for		p-value
			EXP(B)		
			Lower	Upper	
Age ^(a)	0.004	1.004	0.910	1.108	0.931
Internet based information ^(b)	0.154	1.167	0.694	1.964	0.561
Newspaper based information ^(c)	0.227	1.255	0.729	2.159	0.413
Ask for advice from parents ^(d)	0.512	1.669	0.991	2.811	0.054
Ask for advice from sister/brother ^(e)	0.385	1.469	0.785	2.750	0.229
Health provider's consultation ^(f)	1.487	4.422	1.981	9.871	<0.001*
Knowledge on HPV ^(g)	0.275	1.317	0.738	2.350	0.351
Knowledge on HPV vaccine ^(h)	0.562	1.753	1.024	3.002	0.041*
Perceived benefit ⁽ⁱ⁾	1.253	3.502	1.629	7.528	0.001*
Perceived barriers ^(j)	-1.214	0.297	0.123	0.717	0.007*
Occupation ^(k)	0.499	1.647	0.863	3.145	0.131

*Significant at ≤ 0.05

(a) Age: continuous variable

(b) Received information about HPV vaccine from internet compares to no received information from internet

(c) Received information about HPV vaccine from newspaper compares to no received information from newspaper

(d) Ask for advice from parents compares to not ask for advice from parents

(e) Ask for advice from older sister/brother compares to no ask for advice from older sister/bother.

(f) Receiving health provider's consultation compares to no receiving health provider's consultation.

(g) High and moderate knowledge on HPV compare to low knowledge on HPV

(h) High and moderate knowledge on HPV vaccine compare to low knowledge on HPV vaccine

(i) High and moderate perceived benefit compare to low perceived benefit

(j) High and moderate perceived barriers compare to low perceived barriers

(k) Employment compares to unemployment

CHAPTER V

DISCUSSION, CONCLUSION AND RECOMMENDATION

5.1 Discussion

The main purpose of this study was to determine the knowledge on HPV and HPV vaccine as well as find out the facilitating factor and barriers, the relationship between social demographic and intention to accept HPV vaccine among young Vietnamese female in Hanoi, Vietnam. The outcome of this research was expectation to able to be used by health authorities for HPV vaccine strategy in future.

5.1.1 Social - demographic information

In this study, only 21% of participants are aged from 15 to 17 years old. Many eligible participants aged 15 to 17 refused to answer the questionnaire. Nearly a half of participants in this study are aged from 22 to 25 years old. The age distribution in this study is similar in distribution with the general population in Vietnam (General statistics office, 2009). Based on the educational system of Vietnam, age were divided into groups including 15-17 (high school), 18-21 (undergraduate) 22 and above (graduate or working)

The majority of respondents in this research are single (85.5%). The high percentage of single status can be explained by the young age of the respondents: 79% below 24 years. According to Vietnamese 2009 Census, the average age of marriage among women is 24.4 in urban (General statistics office, 2009). In other research on intention to get HPV vaccine, the majority of population was also found to be single such as 90% of young Malaysian participants in Shad Lam City (Redhwan, 2010).

Most participants (60.9%) have high education (undergraduate or higher). One of the most important elements which are related to respondent's high education is that they are all living in a big city and education of residents in urban areas is believed higher than those in rural areas (National University, 2010). In other young population based research on intention to get HPV vaccine, it was also found out a high level of education (college and above) for instance 74% adult women in London (Lenehan, 2008).

The unemployed and housewife women in this study are 8.8% which is similar to that reported in the National 2009 Census with unemployed and housewives among

15 to 19 years old at 11.9% and 9% of those who are 20-24 years old (General statistic office, 2009). Students in this study were 57% which is less than the number of 15-24 years old females in Hanoi who are studying that is 74% (General statistic office, 2009). The reason of this difference was that many girls in the 15-17 year old group who are all students refused to participate in the research. In a study in Taiwan, Hsu and colleagues found that in 18-26 year old group over 50% of participants are students (Hsu 2010)

The monthly income in National Census 2009 showed that the majority of income group is middle monthly income group (24%) and the lowest percentage is highest income group. That data corresponded with the distribution of monthly income group in this study. The highest income group is middle income (31%) and the highest income group with lowest percentage (8.8%)

5.1.2 Family history of cervical cancer, Pap smear and sexual behaviour

There were 4.9% (19/386) of respondents reported that there were someone in their family detected with cervical cancer. Kahn also found the similar percentage (3.8%) of 18-30 American females with family history of cervical cancer (Kahn, 2003), but in the research of Buchana among 18 to 39 year old females in Indiana State, US, researcher found a slightly higher percentage of participants (7.7%) with family history of cervical cancer (Buchana, 2009). However, among Hanoi young women, we can see that many respondents (28.5%) reported “don’t know” or “don’t remember” whether there was anyone in their family detected with cervical cancer or not. Therefore, it may influence the actual percentage of respondents whose family’s member diagnosed with cervical cancer. The incidence of cervical cancer in Vietnam is 20 per 100,000 per year and it is the second cause of death in Vietnam.

In terms of Pap smear experience, the percentage of total participants who heard about Pap smear is 31% and over 21 year old women is only 32.9%. This factor may somehow explain the low proportion of taking Pap test among young females in this research. According to the guideline of Vietnam, women above 21 years old should take Pap smear. To the author’s knowledge there is no KAP research on Pap smear among young females in Vietnam before. A research about the cost effectiveness of Pap smear in Vietnam showed that a Pap smear in Vietnam costs less than \$0.40 (Suba, 2001). However, there are only 2% of total participants and 3.7% of

the eligible over 21 year old women (11.1% of those who heard about Pap smear) in this study took a Pap test at least one time. In general, the prevalence of having cervical cancer screening including Pap smear in Vietnam was 4.9% among female from 18 to 69 years old (WHO/ICO, 2010). Other research in Hanoi found that 99 % of females among 15 to 60 years old had never taken Pap smear test before (Pham, H.A, 2003). The fact is that the percentage of women who took Pap smear in Vietnam is very low though the cost of this test is very cheap. Increasing knowledge on Pap smear is very important since Pap smear can help to reduce the prevalence of cervical cancer. Pap smear is useful in identifying precancerous or cancerous cells on cervix. Low Pap smear practices were also found in a research of Hsu with 95% of participants who were young females aged 17 to 39 in Taiwan (Hsu, 2010). However, the knowledge on Pap smear among Vietnamese female was lower than knowledge on HPV vaccine, this can be explained that because there have been many projects to promote HPV vaccine in Vietnam since 2008, HPV vaccine were advertised through many communication channels in Vietnam. Therefore, Vietnamese females have more information about HPV vaccine (known as the vaccine for preventing cervical cancer) than Pap smear.

With respect to Pap smear practice, many studies have examined the association of an abnormal Pap test result and intention to get HPV vaccine among women. However, a recent research proved that there is no significant association found between abnormal Pap test result and acceptance of vaccination (Barry, 2009). The present study showed a minimal number of women having abnormal Pap test result and because of which, it was unable to test the association between this variable and the intention to get HPV vaccine among young females. In addition, if an individual has abnormal Pap smear, she may have HPV infection before. Therefore, it is too late to have intention to get HPV vaccine.

In this research the percentage of females without sexual experience is 63.7%. This percentage is slightly lower than that of young females aged 15-24 reported for Vietnam as a whole (74.8%) (NIHE, 2005). The similar percentage (61.2%) of young women in Taiwan reported that they never had sexually experience (Hsu, 2009).

5.1.3 Intention to get HPV vaccine

Generally, about 60% of participants said that they intend to have HPV vaccine. To the author knowledge there is no similar research conducted so far in Vietnam but this finding is consistent with previous research in developing countries. Over 60% of undergraduate females in Taiwan had high intention to obtain HPV vaccine (Hsu, 2009), 53% females in Malaysia would like to take the vaccine (Redhwan, 2010). Kwan and colleague found the similar result (about 60%) among Chinese adolescents in Hong Kong (Kwan, 2008). A study in Korea also gave 60% of participants have intention to take the vaccine (Kang, 2010). Meanwhile in some Western countries, we can find the higher rate of females who were intending to get HPV vaccination such as 89% among British female adolescence aged from 16 to 19 years old (Marlow, 2009), 81.7% of those who professed intention to accept the vaccine in Italy (G Di Giuseppe, 2008), and 85% adult American women (aged from 18 to 30 years old) said that they were extremely and very likely to get HPV vaccine (Kahn, 2003).

Up to now, there are no published reports about the prevalence rate of HPV vaccination in Vietnam even when some pilot studies on HPV vaccine acceptance have been completed in early 2011. However, this study found out that the rate of vaccination among participants was low, only 1.3% of the participants having been vaccinated at the time of the study. The low rate (1.3%) of vaccination was also found in a study on Korean female college students (Kang, 2010) in which the study population was similar to this research's population with 61% college graduated.

On the contrary, in USA, women have a higher rate of HPV vaccination. Allen reported that about 12% among American undergraduate females got HPV vaccine (Allen, 2008). In CDC report about the vaccination among American adolescents, 37.2% of adolescents were noted as having HPV vaccination (CDC, 2008).

The reasons for low rate of HPV vaccination and the intention to accept vaccine among participants in this study can be explained by being not familiar with HPV vaccine. As mentioned before, the first HPV vaccine was released in Vietnam in late 2008 and vaccines are in the pilot process in some big cities. Since 58.2% of respondents have insufficient knowledge of HPV vaccine, it is possible that the introduction of HPV vaccine in Vietnam has not been supported by sufficient

advertising. In addition, Redhwan mentioned in a study that 17% of Malaysian college age females are not willing to be vaccinated in the future because of its side effects (Redhwan, 2010). Fear of side effects of vaccine was also found in 48% of respondents who did not intend to get HPV vaccine in present study. This may lead to a lower rate of getting vaccinated or delay using this kind of vaccine.

5.1.4 Association between social demographic characteristics and intention to get HPV vaccine

The result from bivariate analysis on the effects of socio-demographic characteristics on participants' intention to get HPV vaccine reveals that there is no relationship between income, education and marital status and the intention to get vaccine.

Marital status in this research did not significantly associate with intention to get HPV vaccine. This finding was supported by the finding of Hsu and colleagues. They also found out that there is no difference on marital status towards intention to engage vaccine. This study showed that education was not associated with intention to accept HPV vaccine among Vietnamese young females that is consistent with some other research (Lenehan, 2008; Kang, 2010; Read, 2010),

On the contrary, age and occupation are the factors that have significant relationship with young females' intention to get vaccine in bivariate analysis. However when testing these significant factors in multivariate analysis after controlling other factors, it turned out that they were not the predictors for the intention to get HPV vaccine. This result is consistent with various researches' findings about the relationship between age and intention to get vaccination in which a study on females aged 17 to 36 who were undergraduate students in Taiwan explored that older women were more likely to intend to take the vaccine (Hsu, 2009).

Age factor turned out not to be significantly related to intention to get vaccine in the multivariate analysis since there might be other factors that strongly influence the intention of young female such as knowledge and perception of HPV and HPV vaccine. Age is positively correlated with the knowledge and perception of HPV and HPV vaccine. When getting older, people are always considered as having more experience and knowledge. It means that the older they become, the more knowledge and perception they gain, which may encourages them to take HPV vaccine in future.

This finding is consistent with Drewry's research in which researcher figured out that older women have higher knowledge about HPV than young women (Drewry, Palacio, Scarinci, 2010)

A possible reason for the employed women to have significantly higher intention to get HPV vaccine in bivariate analysis is that they were more able to afford the HPV vaccine. About 30% of respondents are living in households with monthly income above 1,425 ID, which would be sufficient for paying a three dose completed vaccination. Almost 65% of participants in this study are unemployed therefore a program that subsidizes HPV vaccination, particularly for young, unemployed women may increase intention to get vaccinated.

5.1.5 Association between Pap smear experience, sexual behaviours, family history of cervical cancer and intention to get HPV vaccine.

Finding in this study showed that there are no significant relationships between variables including family history of cervical cancer, Pap smear experience, sexual behaviours, condom use, oral contraceptive and intention to get HPV vaccine.

Allen and colleagues reported that even though the awareness of HPV, HPV vaccine and intention to get HPV vaccine was high among college women in US, the use of Pap smear test turned out to be low. Moreover, they explored that family history of cervical cancer was not significantly associated with the intention of getting HPV vaccine (Allen, 2009). Buchana also indicated the non relationship between family history of cervical cancer and intention to get HPV vaccination (Buchana, 2009).

Regarding sexual behaviours, according to USA FDA recommendation, women without sexual activities firstly and with very short history of sexual activity secondly should take HPV vaccine since this vaccine will be the most effective for women who have never had sexual intercourse. In this study, young women who have never had sexually experience have higher intention to receive the vaccine. However, women with history of sexual intercourse also have shown intention to get HPV vaccine. About 66.4% of those who never have sex intended to accept the vaccine while 63.9% of those who already had sex intended to do so. This result can be explained by the low knowledge of HPV vaccine (56.8%) among women who already had sex.

Another reason could be that some respondents, who had sexual activities in the past but did not currently, thought that they still can have benefits from HPV vaccination. This finding corresponds with the result of Kang among Korean female college students, he showed that among college age females, there was no difference in their sexual behaviour history and intention to be vaccinated (Kang, 2010).

Using condom is considered as a way to prevent from being infected with HPV. However, among 120 participants who already had sex, only 37.5% knew that using male condom can reduce contracting of HPV infection and 16.7% in cases of female condom. In addition, only 9.2% of those respondents reported that they “always” used condom when having sexual intercourse. The majority of them used condom “usually” or “sometimes”. These figures indicate that the knowledge of young females in reducing risk of being infected with HPV was limited. Many studies have mentioned about using condom in relation with prevention of HPV infection. The result of no difference in condom use among female with sexually experience supported for Kang’s research that expressed that there was no correlation between intention to using condom and intention to get HPV vaccine among college aged female in Korea (Kang, 2010).

5.1.6 Association between knowledge on HPV and HPV vaccine and intention to get HPV vaccine

In bivariate analysis, it was revealed that there is a strong relationship between both knowledge on HPV ($p = 0.03$) and knowledge on HPV vaccine ($p=0.005$) and intention to get HPV vaccine among young females in Hanoi. Most of participants had low levels of knowledge about HPV and HPV vaccine. Over 80% of participants have insufficient HPV knowledge and 58.2% have insufficient knowledge on HPV vaccine. Redhwan also found a low knowledge of HPV among college women in Malaysia (Redhwan, 2010). In addition, findings from other studies confirm our finding that knowledge of HPV and HPV vaccine were low among British adolescents (Marlow, 2007).

Young females in Hanoi seemed to know more about HPV vaccine rather than HPV infection. In the newspapers, internet and other mass media, HPV vaccine was publicised with the name as vaccine to prevent cervical cancer and HPV was not mentioned. Therefore, Vietnamese young female knew about vaccine to prevent

cervical cancer (called HPV vaccine in the English translation for the questionnaire and in the presentation of the results).

In multivariate analysis, only knowledge on HPV vaccine was significantly associated with intention to get vaccine ($p=0.05$) after controlling other variables. To prevent HPV infection and cervical cancer, high knowledge on HPV vaccine is one of the important facilitating factors for intention to accept HPV vaccine. On the contrary, in multivariate analysis, knowledge on HPV appeared not to be predictor for intention to get HPV vaccine. Lenehan also found that HPV-related knowledge was not related to women's intention to get HPV vaccine (Lenehan, 2008). Ultimately, it was the vaccine that women aims to get, therefore for them, information about the vaccine may be considered more important than information about HPV.

The fact that bivariate analysis has shown that people with good knowledge on HPV and HPV vaccine are more likely to get vaccinated is confirmed by a research among late teen age in Seoul-Korea (Han, 2007). Another study among inner city Caribbean and African American adolescents and their parents revealed that knowledge on HPV and HPV vaccine significantly influence the intention in receiving HPV vaccine (Read, 2010).

This finding also indicated that knowledge on HPV and HPV vaccine should be improved among young women to be aware of the importance of HPV vaccination and its preventive benefits.

5.1.7 Association between perception on susceptibility and severity of HPV and intention to get HPV vaccine

The perceived susceptibility and perceived severity were not significantly related to intention to have HPV vaccine in bivariate analysis. This finding is consistent with Kahn's study among 18 to 30 year old American females. They pointed out that there are no relationship between perceived susceptibility and severity with intention to receive the HPV vaccine (Kahn, 2003). Marlow and colleagues also found that perceived severity was not associated with willingness to get HPV vaccine and suggested that severity is less important for preventive behaviours such as vaccination (Marlow, 2009). It means that women may not pay much attention to the severity of HPV rather than other factors such as the benefits of HPV vaccine and the health care provider's consultation. A possible reason for not

finding an association between intention to get HPV vaccine and their perceived susceptibility among Hanoi young women is that most of them do not know that HPV causes most of the cervical cancers. In other words they know that the vaccine prevents cervical cancer but they do not know that the cancer is caused by HPV.

5.1.8 Association between perceived benefits and barriers towards HPV vaccine and intention to get HPV vaccine

Result from bivariate analysis showed that two variables, perceived benefits were directly and perceived barriers were inversely significantly related to intention to have HPV vaccine. This finding is consistent with Kahn's study among 18 to 30 American females, in which researcher pointed out that perceived benefit and barriers were significantly associated with intention to accept vaccine.

In multivariate analysis of this study, both perceived benefit and perceived barriers still remained significantly associated with young females' intention to obtain the vaccine. Young women with higher perceived benefits are 3 times more likely to intend to get HPV vaccine. Various study showed the association between intention to get HPV vaccine and perceived benefit among adult and adolescents (Malow, 2009; Dempsey, 2006; Zimet, 2000). Thus, perceived benefit is the important facilitating factors of intention to be vaccinated.

Moreover, perceived barriers were inversely and highly significantly related to young females' intention. The perceived barriers in this study included the perception of the risk of HPV vaccine, the high cost and the time of vaccination. When these three items were tested with the intention of HPV vaccination, only perception of the risk of vaccine and high cost of vaccine were still significantly related to intention be vaccinated. This result is supported by a previous study (Burke, 2010) in which young women's most frequently reported side effects, cost, and not knowing enough as the barriers towards their intention to get vaccination.

5.1.9 Association between cues of action and intention to get HPV vaccine

According to the HBM, cues of action is one of the important components that might influence behaviours. In this study, cues of action included information sources and the health care provider's consultation. Participants reported that they got the information on HPV vaccine through internet, newspaper, TV, friends, health care providers, family member and flyer. In bivariate analysis, the significant differences

in intention to get HPV vaccine were found among women who get information from internet and newspaper/magazines. Hsu also indicated in the study among 18 to 28 year old Taiwan females that media plays an important role in decision to be vaccinated HPV vaccine (Hsu, 2010). However, in regression model these variables turned out not to be associated with the dependent variable.

Given the significant association in bivariate analysis we still need to pay attention to educate clinicians as well as consumers through mass media and other approaches.

This study found that the intention to accept vaccine is significantly related to the health care provider's consultation in both bivariate and multivariate analysis. Over 89% of women who were consulted about HPV by health providers said that they intend to accept the HPV vaccine. Furthermore, all of vaccinated participants in this study reported that they received the consultation from health care providers. It points out the important role of health care providers in providing information to young females about HPV and HPV vaccine and encouraging them to receive the vaccine. This finding was also consistent with other study which showed that health care provider's consultation is one of the strongest factors that contribute to vaccine acceptability (Zimet, 2000). This point also reinforces the importance of physician education on national guidelines for HPV vaccination.

Participants who will ask advice from parents and older siblings to decide to get vaccine may expect not only advice but also some help in overcoming the barriers to get HPV vaccination. These two groups, therefore, showed more intention to be vaccinated than groups that ask for advice to friends and health care providers.

5.1.10 Facilitating factors and barriers for intention to get HPV vaccine

The purpose of this study is identifying the facilitating factors and barriers for intention to get HPV vaccine. According to above result, facilitating factors for intention to get HPV vaccine are higher knowledge on HPV vaccine, higher perceived benefit and health care provider's consultation. Hence, high knowledge on HPV vaccine, high perceived benefit and provider's consultation are the main facilitating factors for intention to get HPV vaccine. This result was consistent with other studies (Kahn, 2003., Hsu, 2010., Kwan, 2007) that indicated the important influence of

health care providers and high knowledge towards intention to get vaccine. According to Lenehan, physician recommendation was the most influential factor in women's intention to be vaccinated (Lenehan, 2008).

This study also asked participants about the reasons of intention to get HPV vaccine. The findings still reveals that the principle facilitating factors towards intention to get vaccine included the benefit of HPV vaccine as protect themselves from cervical cancer and genital warts, trust the effectiveness of vaccine. In addition, some participants who intended to be vaccinated reported the influencing of doctor's recommendation, influence of advertisement and family's recommendation. Kwan and colleagues also pointed out that facilitating factors for intention to get HPV vaccine among Hong Kong adolescent females were family and peer supports, endorsements from medical professionals (Kwan, 2007).

On the contrary, perceived of barriers, especially, perception of high cost and the risk of HPV vaccine would be the barriers that prevent young females in Hanoi from intending to be vaccinated. Regarding the reasons for no intention to get vaccine, most of participants still gave the same barriers such as lack of information (64%), concern about side effect (48.8%). Moreover, 17.8% showed that they did not need vaccine since they never had sexual activities. This finding corresponded with the study among young women in Malaysia (Sami, 2010). Other reason of HPV vaccine rejection were high cost (32.6%), unavailability of HPV vaccine (15.5%), family recommendation (6.3%) and having sexual experience (14%). Consistently, some researches revealed that the barriers of intention to get HPV vaccine included high cost, low perceived risk of HPV infection, having sexually inexperience (Sami, 2010, Kwan, 2007).

In other studies, fear of needles was also reported as one of the barriers (Kwan, 2007., Sami, 2010., Bernad, 2011). In a research about intention to take HPV vaccine among Australian young female, researcher showed that barrier of vaccination is fear of injection which caused by witnessing their friend undergone vaccination (Bernad, 2011). But these fears were not investigated in the present study. In general, we can see that the similar barriers observed over those studies include the lack of information about HPV vaccine, risk of vaccination, fear of side effects and cost of the vaccine (Hsu, 2009., Kang, 2010., Sami, 2010., Kwan, 2007). In this study

these barriers was found highly significantly influence intention to get HPV vaccine among young females in Hanoi. Meanwhile, factors such as high knowledge on HPV and HPV vaccine, recommendation from health care providers, perceived of benefit would be facilitating factors towards intention to get HPV vaccine among young Vietnamese females.

5.2 Conclusion

In general, the results from previous chapter suggest that the majority of young females, who are living in Hanoi, intend to get HPV vaccine in the future. However, their intention is influenced by both facilitating factors such as high knowledge on HPV vaccine, perceived benefit on HPV vaccine and health care provider' consultation and barrier factors as perception of risk and the cost of HPV vaccine.

In bivariate analysis, the results showed that:

- Socio-demographic characteristics: Age and occupation status were significantly related to intention to get HPV vaccine ($p < 0.05$). There was no significant relationship found between intention to get HPV vaccine and marital status, income, education, sexual behavior, Pap test experience and family history of cervical cancer.
- Knowledge on HPV and HPV vaccine were closely related to young female's intention to obtain HPV vaccine ($p < 0.05$).
- Perception of HPV vaccine such as perceived barriers, perceived benefit were highly related to intention to get HPV vaccine ($p < 0.05$).
- To be advised by a health care providers about HPV and HPV vaccine was a contributing factor that influence the intention to accept HPV vaccine among young women ($p < 0.001$). In addition, respondents reported that internet and magazine/newspaper were main sources of information that help them to find information on HPV and HPV vaccine.
- Lack of information about HPV vaccines was the important reason for no intention to get HPV vaccine.

The result of multivariate analysis showed that

- Knowledge on HPV vaccine, the perception of benefit of HPV vaccine and being informed by health care providers were directly associated with young females' intention to get HPV vaccine.
- Perceived barrier was inversely associated to intention to get HPV vaccine.

5.3 Limitations

This study used self-administrated questionnaire, hence, the results may be affected by participants' bias or dishonesty.

This study only assessed women who were living in urban area of Hanoi, hence it cannot be generalized for all Vietnamese women.

There are some limitations in the measurement tool such as:

- No preliminary question with participants who have ever heard about HPV and HPV vaccine prior to the survey
- History of sexual behaviour (e.g. duration, frequency and number of sexual partners).
- Imprecise questions on condom use

5.4 Recommendations

• **Recommendations at policy level**

1. To adopt a health policy which partly finance the HPV vaccination to reducing the out-of pocket cost of the vaccine for young women and to encourage them to get vaccination.
2. Promotion of Pap test and condom use should be developed by Ministry of Health to encourage females to detect cervical cancer and practise condom use to prevent HPV infection.

• **Recommendation at programme implementation level**

To encourage young female to get HPV vaccine by public education through:

- a. many channels such as internet, newspaper, etc... According to the result in this study, internet might be the best channel to educate about HPV and HPV vaccine. Ministry of Health of Vietnam should develop a official website inclusive of information on HPV and HPV vaccine.

- b. emphasizing benefits of HPV vaccine because perceived benefits is one of the most important facilitating factors for intention to take HPV vaccine.
- c. information about the prevalence and the consequences of HPV as well as cervical cancer. It is very important to clarify that HPV vaccine can prevent only some types of HPV those cause cervical cancer.
- d. emphasizing the necessary of continuing to take a Pap smear for all women even if they have been vaccinated with HPV vaccine.

- **Recommendation for future research**

1. Future studies should be conducted in both urban and rural areas to create the whole picture of the intention to get HPV vaccine.
2. To improve measurement tools in future.
 - 2.1 The next studies should follow the standard questions of UNAIDS about condom use. The question should ask about the condom use from last year to present.
 - 2.2 The next studies should ask about history of sexual behaviour such as duration, frequency and number of sexual partners.
 - 2.3 In the section of knowledge, the questions about HPV and HPV vaccine should be added to clarify the knowledge on HPV and HPV vaccine among participants.
 - 2.4 In the perception section, the question about susceptibility on HPV infection should be asked in the past and future.
 - 2.5 The perceived susceptibility and severity should concern about the severity and susceptibility of cervical cancer and not only about HPV infection.
3. For research methodology:
 - 3.1 Further research should add more 10% of total sample size for missing data and for the participants who are not willing to answer.
 - 3.2 The females who already vaccinated for HPV should be excluded from the study.

REFERENCES

- Abood, D.A., Black, D.R., Feral, D. Nutrition Education Worksite Intervention for University Staff: Application of the Health Belief Model. Journal of Nutrition Education Behaviour 35 (2003): 260-267
- Allen, J.D et al. Stage of adoption of the human papillomavirus vaccine among college women. Prev Med 48 (2009): 420–425.
- Ashford A, Blinkhorn, A.S Marketing dental care to the reluctant patient. British Dental Journal 186 (1999): 436 - 441 doi:10.1038/sj.bdj.4800135
- Baer, H., Allen, S., Braun, L. Knowledge of human papillomavirus infection among young adult men and women: implications for health education and research. Journal of Community Health 25 (2000): 67-78.
- Barth, K.R et al. Social stigma and negative consequences: factors that influence college students' decisions to seek testing for sexually transmitted infections. Journal of American College Health 50 (2002): 153-160.
- Boehner, C.W., Howe, S.R., Bernstein, D.I., Rosenthal, S.L. Viral sexually transmitted disease vaccine acceptability among college students. Sexually Transmitted Diseases 30 (2003):774–8.
- Buchanan JA. Comparing the Health Belief Model and Theory of Planned Behavior in Predicting Intent to Vaccinate against the Human Papillomavirus in College Women [online]. (2008). Available at: <http://gradworks.umi.com/33/22/3322201.html> [2010, October]
- Burke, S.C. Getting vaccinated against HPV: Attitudes, intentions and perceived barriers of female undergraduates [online]. (2010). Available at: <http://www.faqs.org/periodicals/201003/1984269101.html> [2011, April]
- Centers for Disease Control and Prevention (CDC). Cervical cancer [online]. (2006). Available at: <http://www.cdc.gov/cancer/cervical/> [2010,November,8]
- Center for Disease Control and Prevention (CDC). FDA Licensure of Bivalent Human Papillomavirus Vaccine (HPV2, Cervarix) for Use in Females and

Updated HPV Vaccination Recommendations from the Advisory Committee on Immunization Practices [online]. (2009). Available at:

<http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5920a4.htm>
[2010,November,11]

Center for Disease Control and Prevention (CDC). Quadrivalent Human Papillomavirus Vaccine - Recommendations of the Advisory Committee on Immunization Practices [online]. (2007). Available at:

<http://www.cdc.gov/mmwr/preview/mmwrhtml/rr56e312a1.htm>
[2010,October, 29]

Daley, E.M et al. Influences on human papillomavirus vaccination status among female college students. Journal of Women's Health (Larchmt) 19 (2010): 1885-91.

Denny-Smith, T., Bairan, A., Page and M.C. A. survey of female nursing students' knowledge, health beliefs, perceptions of risk, and risk behaviors regarding human papillomavirus and cervical cancer. Journal of the American Academy of Nurse Practitioners 18 (2006): 62-69.

Dempsey, A.F., Zimet, G.D., Davis, R.L and Koutsky, L. Factors that are associated with parental acceptance of human papillomavirus vaccines: a randomized intervention study of written information about HPV. Pediatrics 117 (2006):1486–93.

Dinh, T.A et.al. Attitudes of mothers in Da Nang, Vietnam toward a human papillomavirus vaccine. Journal of Adolescent Health 40 (2007): 559-563

Drewry, J., Garces-Palacio, I.C and Scarini, I. Awareness and knowledge about Human Papillomavirus among Latina Immigrants, Ethnicity and Diseases 20 (2010): 327–333

Food and Drug Administration (FDA). Gardasil [online] (2007). Available at: <http://www.fda.gov/cber/label/HPVmer060806LB.pdf>. [2010 November]

- Franceschi, S et al. Differences in the risk of cervical cancer and human papillomavirus infection by education level. British Journal of Cancer 101 (2009): 865-70.
- Friedman, A.L and Sheppard, H. Exploring the knowledge, attitudes, beliefs, and communication preferences of the general public regarding HPV: Findings from CDC focus group research and implications for practice. Health Education and Behaviour 34 (2007): 471-485.
- GAVI Alliance's fact sheet. [online] (2010). Available at http://www.gavialliance.org/resources/HPV_factsheet.pdf [May, 2010]
- Gerend, M. A and Barley, J. Human Papillomavirus Vaccine Acceptability Among Young Adult Men. Sexually Transmitted Diseases 36 (2009): 68-62
- General Statistics Office. The 2009 Vietnam population and housing census: completed results [online] (2009). Available at: <http://www.gso.gov.vn/default.aspx?tabid=512&idmid=5&ItemID=10798> [2011 March]
- Giuseppe, G.D et al. Human Papillomavirus and vaccination: Knowledge, attitudes and behavioural intention in adolescent and young women in Italy. British Journal of Cancer 99 (2008): 225-229
- Han, Y.J et al. Knowledge regarding cervical cancer, human papillomavirus and future acceptance of vaccination among girls in their late teens in Korea. Korean J Obstet Gynecol 50 (2007):1090–1099.
- Holcomb, B., Motino, B.J., Crawford, K and Ruffin, M.T. Adults' knowledge and behaviors related to human papillomavirus infection. Journal of the American Board of Family Medicine 17 (2004): 26-31.
- Hsu, Y.Y., Fetzer, S.J and Hsu, K, F. Intention to obtain Human Papillomavirus vaccination among Taiwanese undergraduate women. American Sexually Transmitted Disease 36 (2009): 686-92
- Hsu, Y.Y., Hsu, K.F., Cheng, M.Y, Fetzer, S.J and Chou, C.Y. Health belief of Taiwanese women seeking HPV vaccination. Vaccine 28 (2010): 4224-4228

- Ingledeue, K., Cottrell, R and Bernard, A. College women's knowledge, perceptions and preventative behaviors regarding human papillomavirus infection and cervical cancer. American Journal of Health Studies 19 (2004): 28-34.
- Julie Roach Gray. Should it be mandatory for entry into Public School?. Nursing for Women's Health. Vol 11, Issue 2, [online] (May, 2007): 133-138. DOI: 10.1111/j.1751-486X.2007.00141.x. Available at:
<http://cvillenow.avenue.org/docs/HPV%20vaccine%20fulltext.pdf>
- Kahn, J. A., Rosenthal, S. L., Hamann, T and Bernstein, D. I. Attitudes about human papillomavirus vaccine in young women. International Journal of STD & AIDS 14 (2003): 300-306.
- Kahn, J et al. Personal meaning of HPV and a pap test results in adolescent and young women. Health Psychology 26 (2007): 192-201.
- Kang, H.S and Moneyham, L. Attitudes toward and intention to receive the human papilloma virus (HPV) vaccination and intention to use condoms among female Korean college students, Vaccine 28 (2010): 811-816
- Kwan, T.T.C et al. Barriers and facilitators to human papillomavirus vaccination among Chinese adolescent girls in Hong Kong: a qualitative-quantitative study. Sex Transm Infect 84 (2008): 227-232.
- Lenehan, J.G et al. Women's knowledge, attitudes, and intentions concerning Human Papillomavirus vaccination: findings of a waiting room survey of obstetrics-gynaecology outpatients. J Obst Gynaecol Can 30 (2008):489-99.
- Le, T.T and Tran V.H. Study on the types of HPV (Human Papillomavirus) infection detected by PCR among women in Hanoi. Ho Chi Minh City Journal of Medical 13 (2009): 185-189.
- Marlow. L., Waller, J and Wardle, J. Socio-demographic predictors of HPV testing and vaccination acceptability: results from a population-representative sample of British women. J Med Screen 15 (2008): 91-6.
- Marlow, L.A.V, Waller, J and Evans, R.E.C Predictors of interest in HPV vaccination: A study of British adolescent, Vaccine 27 (2009): 2483 – 2488

- Maissi, E et al. Psychological impact of human papillomavirus testing in women with borderline or dyskaryotic cervical smear test results: cross sectional questionnaire study. British Medical Journal 328 (2004): 1293-1312.
- Mays, R.M et al. Human papillomavirus, genital warts, Pap Smears, and cervical cancer: Knowledge and beliefs of adolescent and adult women. Health Care for Women International 21 (2000): 361-374.
- Moraros, J et al. A Pilot Study: HPV Infection Knowledge and HPV Vaccine Acceptance among Women Residing in Ciudad Juárez, México. Californian Journal of Health Promotion 4 (2006): 177-18
- National University. Characteristics of intelligentsia [online] (2010). Available at <http://news.vnu.edu.vn/ttsk/Vietnamese/C1736/C1752/C2275/2010/03/N27602/?35> [2011, April]
- Negri, E Et al. Risk of cervical cancer in women with a family history of breast and female genital tract neoplasms. International Journal of Cancer 117 (2005): 880-881
- NIHE (Vietnamese National Institute of Hygiene and Epidemiology). Vietnam population and AIDS indicator survey 2005 [online] (2005). Available at http://pdf.usaid.gov/pdf_docs/PNADG507.pdf [2011, April]
- PATH. Shaping a Strategy to Introduce HPV Vaccines in Vietnam: Formative Research Results from the HPV Vaccines: Evidence for Impact Project [online] (2009). Available from http://www.rho.org/files/PATH_FRTS_Vietnam.pdf [2010, November]
- Pelucchi, C et al. Knowledge of human papilloma virus infection and its prevention among adolescents and parents in the greater Milan area, Northern Italy. BMC Public Health 10 (2008): 378
- Pham, H.A., Nguyen, T.H and Herrero, R. Human papillomavirus infection among women in the South and North Vietnam. International Journal of Cancer 104 (2003): 213 – 220.

- Rachel, C et al. Knowledge and Early Adoption of the HPV Vaccine Among Girls and Young Women: Results of a National Survey. Journal of Adolescent Health 45 (2009): 453-462.
- Read, D.S., Joseph, A. M., Veronika Polishchuk and Suss, A.L. Attitudes and Perceptions of the HPV Vaccine in Caribbean and African-American Adolescent Girls and their Parents, Journal of pediatric and adolescent gynaecology 23 (2010): 242-245.
- Redhwan, A.A.N and Karim, A.J. Perception and Opinion regarding humanpapilloma virus vaccination among young women in Malaysia, Asian Pacific J Cancer Prev 11 (2010): 1515 -1521
- Rosenstock, I.M. Historical origins of the health belief model. Health Education Monographs 2 (1974): 328-335.
- Sami, A.R.A et al. Knowledge, Attitudes and Barriers for Human Papilloma Virus (HPV) Vaccination among Malaysian Women, Asian Pacific Journal of Cancer Prevention 11 (2010): 887-892
- Saigongiaiphong news' website. Vietnam to have HPV vaccine [online] (2007). Available at <http://www.saigon-gpdaily.com.vn/Health/2007/5/55786/> [2010, Nov, 14]
- Smith, P.J et al. Children who have received no vaccines: who are they and where do they live? Pediatrics 114 (2004): 187–95.
- Suba, E.J., Hung, N.C., Duc, N.B and Raab, S.S. The Viet/American Cervical Cancer Prevention Project. De novo establishment and cost-effectiveness of Papanicolaou cytology screening services in the Socialist Republic of Vietnam. Cancer 91 (2001): 928-939.
- Tiro, J.A., Meissner, H.I., Kobrin, S and Chollette, V. What do women in the U.S. know about human papillomavirus and cervical cancer? Cancer Epidemiology Biomarkers Preview 16 (2007): 288-294.
- Tran,T.L and Ho, V.P. Prevalence and related factors of human papillomavirus infection of sexually active women in Ho Chi Minh city. Ho Chi Minh City Journal of Medical 14 (2010): 311 – 320

- Vneconomynews'website. Vietnam's average income per capita reaches USD 1,200 in 2010 [Online] (2010). Available at <http://www.vneconomynews.com/2010/09/vietnams-average-income-per-capita.html> [2010, Nov, 14].
- WHO. Training for mid-level managers: the EPI coverage survey [online] (1991). Available at http://www.who.int/immunization_monitoring/routine/EPI_coverage_survey.pdf [2011 April]
- WHO. Strategy to Prevent Cervical Cancer - Report of a Bi-Regional Consultation [online] (2008). Available at: http://203.90.70.117/PDS_DOCS/B2051.pdf [2010, Nov, 14].
- Waller, J et al. Awareness of human papillomavirus among women attending a well woman clinic. Sexually Transmitted Infections 79 (2004): 320-322.
- Weisberg, E., Bateson, D., McCaffery, K and Skinner, SR. HPV vaccination catch up program – utilisation by young Australian women. Australian Family Physician 38 (2009): 72-76
- Zimet, G. D., Mays, R. M and Fortnenberry, J. D. Vaccines against sexually transmitted infections: Promise and problems of the magic bullets for prevention and control. Sexually Transmitted Diseases 27 (2000): 49-52.

APPENDICES

Appendix A

Time Schedule

Time Schedule of this research:

Project procedure	Time								
	Sep 201 0	Oct 201 0	Nov 2010	Dec 201 0	Jan 201 1	Feb 201 1	Mar 201 1	April 2011	May 2011
Preparatory phase									
1. Research question formulation and literature review	←→								
2. Proposal writing, proposal exam and revising			←→						
3. Field work: Pre-test				←→					
4. Ethic consideration from Chulalongkorn University (CPHS)					←→				
6. Data collection						←→			
8. Data analysis							←→		
9. Discussion report writing							←→		
10. Thesis defense and public to journal								←→	

Appendix B

Budget

Items	Budget
1. Research Materials	
1.1 Photocopy and print the questionnaire	4,000
1.2 Translation the questionnaire to Vietnamese	1,500
1.3 Stationary	1,000
Total budget for research materials	6,500
2. Other expenses such as photocopying fee, accommodation travel expenses, seminar dues, telephone and postal charges	
2.1 Fee for research assistants (4 person x 3000THB)	12,000
2.2 Souvenir (396 person x 20 BTH)	7,920
2.3 Local help (36 persons x 200B)	7,200
2.4 Local transportation	6,000
2.5 Transportation (Hanoi - Bangkok)	10,000
Total budget for other expenses	43,120
3. Total budget	49,620

Appendix C

Measurement Tools

SURVEY ON INTENTION TO ACCEPT HPV VACCINE AMONG YOUNG WOMEN IN HANOI – VIETNAM

Please read the following before beginning the survey.

This survey asks you some questions about your knowledge of and experience with, and other issues related to Human Papilloma virus (HPV) and HPV vaccine. The questions should take about 10 - 15 minutes to answer. We appreciate your answering these questions as honestly as possible. You are free to stop at any time or to skip any questions that you do not wish to answer.

GENERAL INSTRUCTIONS: For each question, place an "X" in the box that matches your answer or fill in the blank. Please pay special attention to the skip cues, which are indicated in the far right column, where relevant. For questions where there are multiple responses, respondents can choose more than one answer

I. SOCIAL DEMOGRAPHIC INFORMATION

A01. In what district and ward do you currently live?

1. Hai Ba Trung
2. Hoan Kiem
3. Cau Giay

A02. How old are you

Record 99 if does not answer.

A03. What is your current marital status?

- | | |
|--|--|
| 1. <input type="checkbox"/> Single | 4. <input type="checkbox"/> Widowed |
| 2. <input type="checkbox"/> Married | 99. <input type="checkbox"/> No answer |
| 3. <input type="checkbox"/> Divorced/separated | |

A04. What is the highest level of education that you have completed?

- | | |
|--|--|
| 1. <input type="checkbox"/> No formal education | 4. <input type="checkbox"/> High school (Grade 10-12) |
| 2. <input type="checkbox"/> Primary school (Grade 1-5) | 5. <input type="checkbox"/> College, and higher levels |
| 3. <input type="checkbox"/> Secondary school (Grade 6-9) | 99. <input type="checkbox"/> No answer |

A05. What is your current occupation?

- | | |
|--|---|
| 1. <input type="checkbox"/> Employed full time | 5. <input type="checkbox"/> Student in University |
| 2. <input type="checkbox"/> Employed part time | 6. <input type="checkbox"/> House worker |
| 3. <input type="checkbox"/> Unemployed | 7. <input type="checkbox"/> Other (Specify _____) |
| 4. <input type="checkbox"/> Student in High school | 99. <input type="checkbox"/> No answer |

A06. What is average monthly income of your family?

1. Less than 3 million VND 4. Over 10 million to 20 million VND
 2. 3 million to 7 million VND 5. More than 20 million VND
 3. Over 7 million to 10 million VND 99. No answer
 VND

II. REPRODUCTIVE HEALTH HISTORY**B01. Have you ever heard about Pap smear?**

1. Yes
 0. No (*Skip to B04*)

B02. Have you ever had a Pap smear?

1. Yes 88. Don't know/Don't remember
 0. No 99. No answer

B03. Have you have an abnormal Pap smear?

1. Yes 88. Don't know/Don't remember
 0. No 99. No answer

B04. Has anyone in your family ever been diagnosed with cervical cancer?

1. Yes 88. Don't know/Don't remember
 0. No 99. No answer

B05. What is your sexual experience status?

1. Currently involved in a sexual relationship
 2. Have had sexual intercourse but not currently
 3. Never had sexual intercourse (*Skip to C01*)
 99. No answer (*Skip to C01*)

B06. Do you use condoms when you have sexual behaviours?

1. Always (100%) 5. Rarely (1 -25%)
 2. Usually (76% -99%) 6. Never (0%)
 3. Sometime (51%- 75%) 99. No answer
 4. Occasionally (26%-50%)

B07. Do you currently use oral contraceptives?

1. Yes 99. No answer
 0. No

C. KNOWLEDGE ON HPV AND HPV VACCINE

C01. What are the diseases caused by HPV infection?

- | | |
|---|---|
| 1. <input type="checkbox"/> Herpes | 3. <input type="checkbox"/> Genital Warts |
| 2. <input type="checkbox"/> Cervical cancer | 88. <input type="checkbox"/> Don't know |

C02. What is the cause of HPV infection? (Check all that apply)

- | | |
|--|---|
| 1. <input type="checkbox"/> Sexual intercourse | 4. <input type="checkbox"/> Family history of HPV infection |
| 2. <input type="checkbox"/> Blood transfusions | 88. <input type="checkbox"/> Don't know |
| 3. <input type="checkbox"/> Not use condom | |

C03. Who are at risk to be infected HPV? (Check all that apply)

- | | |
|---|---|
| 1. <input type="checkbox"/> Everybody (male and female) | 4. <input type="checkbox"/> Adolescent |
| 2. <input type="checkbox"/> Person who has sexual behaviors | 88. <input type="checkbox"/> Don't know |
| 3. <input type="checkbox"/> Middle age group | |

C04. How can HPV be detected? (Check all that apply)

- | | |
|--|---|
| 1. <input type="checkbox"/> The result of an abnormal Pap test | 3. <input type="checkbox"/> Blood test |
| 2. <input type="checkbox"/> The appearance of itchy, red bumps | 88. <input type="checkbox"/> Don't know |

C05. How can the existing case of HPV be treated? (Check all that apply)

- | | |
|---|---|
| 1. <input type="checkbox"/> Antibiotic | 4. <input type="checkbox"/> The new HPV vaccine |
| 2. <input type="checkbox"/> Surgery | 88. <input type="checkbox"/> Don't know |
| 3. <input type="checkbox"/> There is no treatment for HPV | |

C06. How can the risk of contracting HPV be reduced? (Check all that apply)

- | | |
|--|---|
| 1. <input type="checkbox"/> Male condom | 4. <input type="checkbox"/> HPV vaccination |
| 2. <input type="checkbox"/> Female condom | 5. <input type="checkbox"/> An IUD (Inter Uterine Device) |
| 3. <input type="checkbox"/> Oral contraceptive | 88. <input type="checkbox"/> Don't know |

C07. The HPV vaccine is recommended for females in which of the following: (check all that apply)

1. Female aged from 9 to 26 without HPV infection
2. All female with HPV infections
3. People with multiple sexual partners
88. Don't know

C08. What do you know about HPV vaccine? (Check all that apply)

1. It prevented all HPV
2. It prevent all sexually transmitted infections
3. It prevent some types of HPV that cause cervical cancer
88. Don't know

D08. How likely is it that you will get genital HPV in the future?

- | | |
|---|---|
| 1. <input type="checkbox"/> Very unlikely | 4. <input type="checkbox"/> Somewhat likely |
| 2. <input type="checkbox"/> Unlikely | 5. <input type="checkbox"/> Likely |
| 3. <input type="checkbox"/> Somewhat unlikely | 6. <input type="checkbox"/> Very likely |

D09. How safe do you think it is to get the HPV vaccine?

- | | |
|---|---|
| 1. <input type="checkbox"/> Very risk | 4. <input type="checkbox"/> Somewhat safe |
| 2. <input type="checkbox"/> Risk | 5. <input type="checkbox"/> Safe |
| 3. <input type="checkbox"/> Somewhat risk | 6. <input type="checkbox"/> Very safe |

E. HPV VACCINATION**E01. Have you got HPV vaccination?**

- | | |
|---|---|
| 1. <input type="checkbox"/> Yes | 99. <input type="checkbox"/> No answer (<u>Skip to F01</u>) |
| 0. <input type="checkbox"/> No (<u>Skip to F01</u>) | |

E02. In the time before you take HPV vaccine, why did you intend to take it?*(Check all that apply)*

1. Protect yourself from cervical cancer/ genital warts
2. Trust the effectiveness of HPV vaccines
3. Family 's recommendation
4. Doctor's recommendation
5. Influence by advertising, such as pamphlet, TV and radio
6. Other (Specify _____)
99. No answer

E03. Where did you get the information about cervical cancer and HPV vaccine?*(Check all that apply)*

- | | |
|--|---|
| 1. <input type="checkbox"/> TV/radio | 5. <input type="checkbox"/> Friends |
| 2. <input type="checkbox"/> Internet | 6. <input type="checkbox"/> Family members |
| 3. <input type="checkbox"/> Magazine/ Newspaper | 7. <input type="checkbox"/> Other (Specify _____) |
| 4. <input type="checkbox"/> Health care provider | 99. <input type="checkbox"/> No answer |

E04. Who would you consult with in making the decision regarding HPV vaccination? (Check all that apply)

- | | |
|--|---|
| 1. <input type="checkbox"/> Parent | 4. <input type="checkbox"/> Doctors/ healthcare providers |
| 2. <input type="checkbox"/> Sister/Brother | 5. <input type="checkbox"/> Other (Specify _____) |
| 3. <input type="checkbox"/> Friends | 99. <input type="checkbox"/> No answer |

E05. Did you get the consultation from health care providers about HPV vaccine?

1. Yes
0. No (End)

E06. How do you feel about knowledge of doctor on the issues relating to HPV?

- | | |
|--|---|
| 1. <input type="checkbox"/> Adequately understanding | 4. <input type="checkbox"/> Lack of understanding |
| 2. <input type="checkbox"/> Barely understanding | 99. <input type="checkbox"/> No answer |
| 3. <input type="checkbox"/> Inadequately understanding | |

F. FOR THOSE WHO DID NOT RECEIVE HPV VACCINE

F01. If you have not received HPV vaccine yet, do you intend to do so in the future?

1. Yes
0. No (Skip to F03)

F02. Why do you intend to take the HPV vaccine? (Check all that apply)

1. Protect yourself from cervical cancer/ genital warts
2. Trust the effectiveness of HPV vaccines
3. Family 's recommendation
4. Doctor's recommendation
5. Influence by advertising, such as pamphlet, TV and radio
6. Other (Specify _____)
99. No answer

F03. Why do you not intend to take the HPV vaccine? (Check all that apply)

1. I am not sexually active
2. I am married or in a exclusive relationship
3. do not have enough information about vaccine
4. I am concerned about the side effects
5. Family member's recommendation
6. I cannot afford the cost of the vaccine
7. Vaccine is not available
8. Other (Specify _____).
99. No answer

F04. Where did you get the information about cervical cancer and HPV vaccine?*(Check all that apply)*

- | | |
|--|---|
| 1. <input type="checkbox"/> TV/radio | 5. <input type="checkbox"/> Friends |
| 2. <input type="checkbox"/> Internet | 6. <input type="checkbox"/> Family members |
| 3. <input type="checkbox"/> Magazine/ Newspaper | 7. <input type="checkbox"/> Other (Specify _____) |
| 4. <input type="checkbox"/> Health care provider | 99. <input type="checkbox"/> No answer |

F05. Who will you consult with in making the decision regarding HPV vaccination?*(Check all that apply)*

- | | |
|--|---|
| 1. <input type="checkbox"/> Parent | 4. <input type="checkbox"/> Doctors/ healthcare providers |
| 2. <input type="checkbox"/> Sister/Brother | 5. <input type="checkbox"/> Other (Specify _____) |
| 3. <input type="checkbox"/> Friends | 99. <input type="checkbox"/> No answer |

F06. Did you get the consultation from health care providers about HPV vaccine?

1. Yes
 0. No (End)

F07. How do you feel about knowledge of your doctor on the issues relating to HPV?

- | | |
|--|---|
| 1. <input type="checkbox"/> Adequately understanding | 4. <input type="checkbox"/> Lack of understanding |
| 2. <input type="checkbox"/> Barely understanding | 99. <input type="checkbox"/> No answer |
| 3. <input type="checkbox"/> Inadequately understanding | |

VITAE

Full name: Nguyen Hoang Phuong
Nationality: Vietnamese
Gender: Female
Date of Birth: October, 22nd 1985

EDUCATION

June 2004 - June 2008 Bachelor of Italian
Ha Noi University
Vietnam

EMPLOYMENT HISTORY

June 2008 – June 2010: Project officer
Centre for Community Health and Development
Vietnam