KNOWLEDGE PERCEPTION AND PRACTICE AMONG FEMALE INTERNATIONAL STUDENTS TOWARDS CERVICAL CANCER SCREENING IN CHULALONGKORN UNIVERSITY BANGKOK THAILAND

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A Thesis Submitted in Partial Fulfillment of the Requirements
for the Degree of Master of Public Health Program in Public Health
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ความรู้ การรับรู้ และการปฏิบัติตัวเกี่ยวกับการตรวจคัดกรองมะเร็งปากมดลูกของนิสิตหญิง หลักสูตรนานาชาติ จุฬาลงกรณ์มหาวิทยาลัย กรุงเทพมหานคร ประเทศไทย

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Thesis Title	KNOWLEDGE PERCEPTION AND PRACTICE AMONG FEMALE INTERNATIONAL STUDENTS TOWARDS CERVICAL CANCER SCREENING IN CHULALONGKORN UNIVERSITY BANGKOK THAILAND
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โอวุลลา เลิฟเวอลีน โอกุงวานยี : ความรู้ การรับรู้ และการปฏิบัติตัวเกี่ยวกับการตรวจคัดกรองมะเร็งปากมดลูกของนิสิตหญิงหลักสูตรนานาชาติ จุฬาลงกรณ์มหาวิทยาลัย กรุงเทพมหานคร ประเทศไทย. (KNOWLEDGE PERCEPTION AND PRACTICE AMONG FEMALE INTERNATIONAL STUDENTS TOWARDS CERVICAL CANCER SCREENING IN CHULALONGKORN UNIVERSITY BANGKOK THAILAND) อ.ที่ปรึกษาวิทยานิพนธ์หลัก: ผศ. ดร.เขมิกา ยามะรัต, 85 หน้า.

มะเร็งปากมดลูกเป็นมะเร็งที่พบบ่อยในสตรีทั่วโลกรองจากมะเร็งเต้านม เป็นมะเร็งที่สามารถป้องกันได้จากการตรวจคัดกรองมะเร็งปากมดลูกในระยะเริ่มแรก การศึกษานี้เป็นการศึกษาความรู้ การรับรู้ และการปฏิบัติตัวของนิสิตหญิงหลักสูตรนานาชาติของจุฬาลงกรณ์มหาวิทยาลัย เกี่ยวกับมะเร็งปากมดลูกและการตรวจคัดกรองมะเร็งปากมดลูก เป็นการศึกษาเชิงพรรณาชนิดตัดขวางในช่วงระยะเวลาหนึ่ง โดยใช้แบบสอบถามชนิดให้เขียนตอบเองเป็นเครื่องมือในการศึกษาเพื่อตอบวัตถุประสงค์ แสดงลักษณะทางประชากร และพฤติกรรมของกลุ่มตัวอย่างที่ศึกษา ใช้การสุ่มตัวอย่างแบบเจาะจง นิสิตหญิง 172 คน การวิเคราะห์ข้อมูลใช้ค่าร้อยละ ค่าเฉลี่ย ค่าเบี่ยงเบนมาตรฐาน รวมทั้งการวิเคราะห์ความสัมพันธ์ระหว่างตัวแปร 2 ตัวและหลายตัว

ผลการศึกษาพบว่ากลุ่มตัวอย่างมีอายุระหว่าง 18-40 ปี ร้อยละ 25 เป็นผู้มีอายุระหว่าง 18-20 ปี อายุเฉลี่ย 24.4 ปี (ค่าเบี่ยงเบนมาตรฐาน 5.5) กลุ่มตัวอย่างส่วนมาก (52.3 %) เป็นนิสิตระดับปริญญาตรี รองลงมาเป็นระดับปริญญาโท ร้องละ 40.1 และปริญญาเอกร้อยละ 7.6 นิสิตส่วนใหญ่เป็นชาวเอเชีย ซึ่งมาจากเอเชียตะวันออกเฉียงใต้ร้อยละ 29 เอเชียตะวันออกร้อยละ 18.6 เป็นชาวอเมริกันร้อยละ 5.8 และเป็นชาวอาฟริกันเพียง 7 ราย นิสิตเกือบทั้งหมด (99.4 %) มีความตระหนักรู้ในความสำคัญของมะเร็งปากมดลูก แต่มีความรู้เกี่ยวกับเรื่องดังกล่าวน้อย ถึงแม้ว่านิสิตร้อยละ 56.4 ของกลุ่มตัวอย่างระบุว่าตนให้ความสำคัญกับการตรวจคัดกรองมะเร็งปากมดลูก แต่มีนิสิตเพียงครึ่งหนึ่งหรือร้อยละ 50 ของกลุ่มนี้ที่มีความรู้ถูกต้องเกี่ยวกับวัตถุประสงค์ในการตรวจคัดกรองมะเร็งปากมดลูก นิสิตกว่าครึ่ง (51 %) ที่มีการรับรู้ในเชิงบวก และมีเพียงร้อยละ 12.2 เท่านั้นที่มีประสบการณ์ในการตรวจคัดกรองมะเร็งปากมดลูก การศึกษานี้พบความสัมพันธ์ระหว่างความรู้เกี่ยวกับมะเร็งปากมดลูกและการตรวจคัดกรองมะเร็งปากมดลูกอย่างมีนัยยะสำคัญทางสถิติ (p value = 0.014)

สาขาวิชา สาธารณสุขศาสตร์ ลายมือชื่อนิสิต .....

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OWUALAH LOVELEEN UGONWANYI: KNOWLEDGE PERCEPTION AND PRACTICE AMONG FEMALE INTERNATIONAL STUDENTS TOWARDS CERVICAL CANCER SCREENING IN CHULALONGKORN UNIVERSITY BANGKOK THAILAND. ADVISOR: ASST. PROF. DR. KHEMIKA YAMARAT, 85 pp.

Cervical cancer a female genital tract cancer is the second commonest cancer of females worldwide after breast cancer. This cancer can be prevented through early detection by cervical screening.This study seeks to assess the knowledge, perception and practices of these female international students at Chulalongkorn University relating to cervical cancer and cervical screening. This research was a cross-sectional descriptive study which made use of self- administered anonymously structured questionnaires to achieve the set objectives as well as assess the socio-demographic characteristics and behavioral profile of the target population. Using purposive sampling technique, a total of 172 questionnaires were analyzed as percentage, mean, standard deviation, bi-variate and logistic regression model. This study shows that about 25% of respondents were 18-20 years old, mean age was 24.4 years (standard deviation 5.5) the range is from 18 to 40 years, the majority of them were undergraduates (52.3%) while 40.1% were in the master's degree level, with 7.6% in the PhD degree level. The majority of the respondents are from Asia origin with South East Asians comprising of 29.0 % East Asians about 18.6 % South Asians 14.0 % the respondents from the European countries were about 28.5%, Americans 5.8% and Africans were the least with only 7 respondents. Awareness about cervical cancer was significantly high among female international students (99.4%), whilst knowledge on the risk factors was insufficient. Although, 56.4% of the respondents claimed to be aware of Pap smear, only 50.0% correctly knew its purpose as a screening method for cervical cancer. Overall perception was positive by more than half (51%) of the respondents and practice of cervical screening among respondents was only 12.2%. Further statistical analysis showed a significant association between knowledge of cervical cancer and practice of cervical screening among the respondents (p-value=0.014). About 60.5% of the respondents have the intention to uptake cervical screening in the future with age (OR: 3.4., 95%Cl: 1.04-2.0), seen to be the predictor of respondents' intention to uptake cervical screening in the future. This study shows that overall awareness of cervical screening was low among female international students at Chulalongkorn University while uptake of cervical screening was equally poor.Therefore to improve the knowledge gap reported in this study, further health education is recommended for this class of respondents.

Field of Study: Public Health Student's Signature .....

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LIST OF ABBREVIATIONS

ACOG	American Congress of Obstetricians and Gynecologists
ACS	American Cancer Society
ASCUS	Atypical Squamous Cell of Undermined Significance
CC	Cervical Cancer
CCGCC	Cervical Cancer Global Crisis Card
CCS	Cervical Cancer Screening
CIN	Cervical Intraepithelial Neoplasia
DNA	Deoxyribonucleic
GP	General Practitioner
HBM	Health Belief Model
HCIN	High Cervical Intraepithelial Neoplasia
HPV	Human papillomavirus
ICC	Intercultural Cancer Council
KPP	Knowledge, Perception and Practice
NDHS	National Demographic and Health Survey
PATH	Programme for Appropriate Technology in Health
RA	Research Assistant
STDs	Sexually Transmitted Diseases
STIs	Sexually Transmitted Infections
VIA	Visual Inspection using Acetic-acid
WHO	World Health Organization

CHAPTER I

INTRODUCTION

1.1 Background

The cervix or the neck of the womb is a part of the female reproductive system which connects the uterus to the vagina. Cervical Cancer is a disease in which the cells of the cervix which are either squamous cell carcinoma arising from the squamous (flattened) epithelia cells that line the cervix or adenocarcinoma which arises from the glandular epithelia cells is the second most common type of cervical cancer where these cells develop abnormally and start to grow uncontrollably forming tumors (Amosu., Degun. et al. 2011) This is usually caused by certain types of human papillomavirus (HPV). The link between genital HPV and cervical cancer was demonstrated in the early 1980s by a German virologist Harold Zur Hausen and it showed that the magnitude of the association of HPV and cervical squamous cell carcinoma was higher when compared to that between smoking and lung cancer (Franco 1995) There are more than 80 types of HPV among which 30 types can be transmitted sexually, including those that cause warts (papilloma) (Bosch. 2007). Based on their association with cervical cancer, HPV can be grouped into the high risk and the low risk groups, the high-risk HPVs cause gradual mild cervical intraepithelial neoplasia (CIN1) to uncontrollably and more severe degrees of neoplasia and micro invasive lesions (CIN2 and CIN3) and finally to invasive disease (Bosch. 2007), (Zur 1999). Some researchers have correlated HPV type with distinct degrees of CIN1 and have shown that CIN1 and CIN2-CIN3 have different processes, CIN1 indicated a self- limited sexually transmitted HPV infection and the true cervical cancer precursor were the CIN2 and CIN3 respectively(Kiviat. and Koutsky. 1993) Although there are HPV vaccines which are effective against these high-risk HPVs that cause this cancer, these vaccines are Gardasil produced by Merxk, White house, NJ which is made from L1 protein of HPV types 6, 11,16 and 18 which are combined with an aluminum adjuvant, a series of three doses are recommended for girls of ages 11-15 years although it can be administered at as early as 9years of age and has been found to be 100% effective in preventing intraepithelial neoplasia 2 and 3 and also adenocarcinoma in situ with 98% effect on HPV types 6 and 11 and about 100% effective against types 16 and 18 therefore preventing vulval intraepithelial neoplasia and is most effective if the patient was not infected with any of these HPV types before the administration of the vaccine (Pallecaros. and Vonau. 2007) The second vaccine is Cervarix produced by Glaxo Smithkilne. Philadelphia which has a

combination of virus-like particles of major capsid L1 protein of HPV 16 and 18 types, it is administered on girls age 10-15 to prevent cervical cancer CIN2 and CNI 1 which are caused by HPVs 16 and 18, cervarix is also approved in the European union to be used in females by determination of efficiency to those aged 15-25 year and those determination of immunogenicity ages 10-25 (VRBPAC. 2009).These vaccines are both administered as prophylactic vaccines that is they are meant for prevention against possible HPV infections and do not act as therapeutic vaccines which treat already acquired infections, hence this vaccine is best administered before a woman is sexually active WHO (2007). Cervical cancer is the most common cancer second to breast cancer affecting women in developing countries (WHO 2007) This condition affects not only the health and lives of the women, but also their families and communities at large (Hoque. and Hoque. 2009).

1.2 STATEMENT OF PROBLEM

Cervical cancer has been reported to affect about 16 per 100,000 women yearly and causing death of 9 per 100,000 women yearly worldwide (GLOBOCAN 2002) . WHO recommendations suggests that cervical cancer screening programs need to cover over 80% of the target population at risk of cervical cancer, with success determined by reduction in the incidence of invasive cancer (WHO. 2002). Globally, in 2012, there were nearly a billion women between 30 and 49 years old, most of whom have never been screened even once in their life(WHO. 2013) (WHO. 2013). Therefore, it has been reported as the third common cause of cancer death in women worldwide (Ferlay. 2005)The majority of this disease which is preventable is seen in the developing countries where cervical screening facilities and early treatment practices are usually limited due to the high prices of some of the cervical screening test (e.g. pap smear and vinegar test) and also the knowledge barrier about this disease (Amosu., Degun. et al. 2011); (Vikrant. 2011). This is usually the opposite when compared to high income countries, where cervical screening facilities are well available and women can afford them. Effective preventive strategies are made available that has the potential to reduce the morbidity and mortality from this disease in low, medium and also high-income countries. (Arbyn. 2008) The majority of cervical cancers (over 80%) observed in Sub-Saharan Africa are detected in late stages, due to lack of adequate information about the ailment and prevention service *(WHO. 2012).* The variations in rates of mortality caused by this disease are more disturbing when focus is made on subcontinents. The following data was computed by GLOBACON, 2008 and it shows that overall, the lowest mortality was

noted in Australia/New Zealand with 1.4/100,000, Northern America as 1.7/100,000, and Western Europe as 2.0/100,000, whereas the highest was found in Eastern Africa 25.3/100, 000, while Western Africa 24.0/100,000, and Southern Africa had 14.8/100,000, South America 10.8/100,000 and Melanesia 16.6/100,000. While in Asia where cervical cancer ranks as the third most frequent cancer in women but seen as the second most common cancer in women aged 15-44years, has a population of 1.528million women aged 15 years and older who are at risk of developing cervical cancer with current estimates which indicate that yearly 284,823 women are diagnosed with cervical cancer and 144,434 die from the disease (Bruni. 2014) Asian Americans have been reported by studies to have high rate of cancer (ICC. 2012) . A study on Vietnamese American women and Korea women showed a higher rate of cervical cancer and a lower pap test usage when compared with non-Hispanic and Latino white women and some of them have never heard of the pap smear test (Schulmeister. and Lifsey. 1999). India alone has about 26.4% of women dying from cervical cancer, with China, Bangladesh, Pakistan, and Nepal also showing high death incidence in Asia region (Garland et al., 2008). According to the data collected from WHO, United Nations and IARC Globocan, the cervical cancer crisis card, showed that global inequality seen in cervical cancer incidence makes it difficult for younger women to access these services depends on where they live (CCGCC, 2013). In a study conducted in south Asia and eastern Asia which showed that HPV 16 and 18 were more prevalent in most of the countries, the risk factor observed most was early age at first sexual intercourse and most countries had cervical cancer screening done within 1-3 year interval as either opportunistic and some national programs were seen in countries like Japan, Korea and Singapore (Farid. 2011)

1.3 RATIONALE

Carcinoma of the cervix is a preventable disease; its prevention, among other ways, is through detection of early stages of the disease and treatment. Detection of the premalignant lesions requires knowledge on the disease so that people are aware and hence have positive perception towards practice of screening for premalignant cervical lesions. Evaluations of alternative screening methods in screening programmes have continuously been studied to verify screening effectiveness by comparing the various screening technique available. The performance of the various screening methods are also monitored to ascertain if they are precise and able to correctly give accurate feedback and also help to correctly identify the right testing

ages and the suitable intervals for the different screening methods available (Anttila., Hakama. et al. 2006) This study aims at assessing the knowledge, perception and practice of these female international students towards cervical cancer screening.

This study is also imperative since only a few studies in Thailand have been conducted on this group of international students on this topic which is a public health problem. The students in this study are to get more awareness that by far prevention of this disease is more important than to cure, which also saves more money since treatment of cancer is overly expensive, also knowledge on cervical cancer and cervical screening will be provided to this students in a brochure.

Since most females at some point in life will be infected with HPV and hence are at risk of CC, it is imperative to study their various beliefs and perceptions towards CCS. To do this, the Health Belief Model (HBM) which aims at explaining preventive health behaviors of individuals, for instance, why people will like to take actions to prevent, screen for or control a disease will be used to assess the gynecological screening attitude and beliefs of these females (Glanz., Rimer. et al. 2008) With this study the knowledge, perception and practice of these international students on this disease will be assessed and hence recommendations will be given on the preventive measures against cervical cancer.

1.4 RESEARCH QUESTION

- What are the socio -demographic characteristics and behavioral profile among female international students?
- What are the levels of knowledge towards cervical cancer and cervical screening among female international students?
- What are the perception regarding cervical cancer among female international students?
- What are the association between social-demographic characteristic, behavioral profile, knowledge, perception and practices towards cervical cancer screening among female international students?

1.5 RESEARCH OBJECTIVES

- To describe the socio-demographic and behavioral status of the female international students at Chulalongkorn University.
- To assess the knowledge of female international students towards cervical cancer and cervical screening.
- To assess the perception and practice among female international students at Chulalongkorn University regarding cervical cancer screening
- To describe if there is an association between socio-demographics, behavioral profile, the knowledge, perception and practice among female international students at Chulalongkorn University on cervical cancer screening.

1.6 Conceptual framework

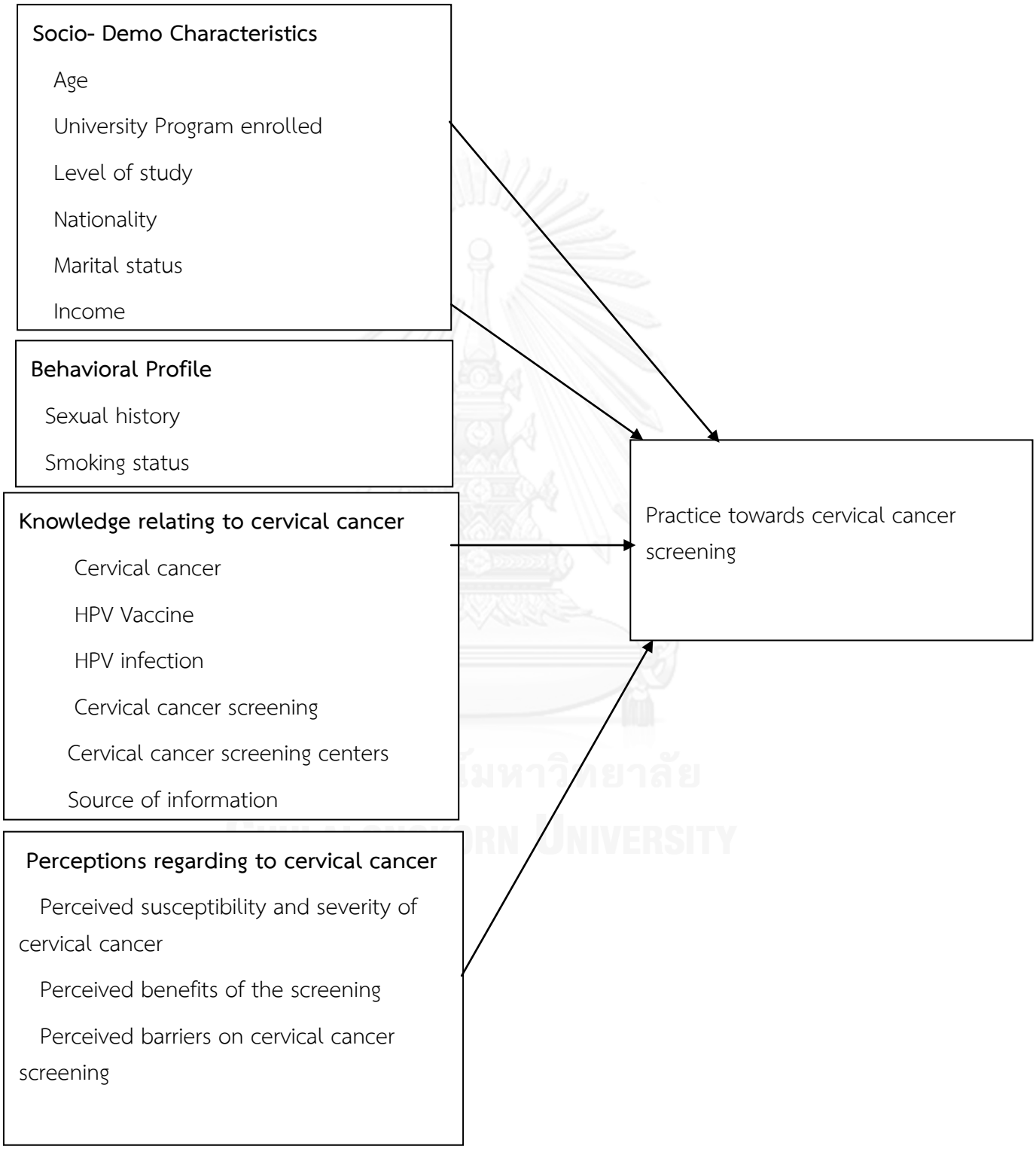

Figure 1 Conceptual Framework.

1.7 OPERATIONAL DEFINITIONS

Age: Number of years of latest completed birthdate.

University program enrolled: The international female students enrolled in the faculties of Sciences, Medicine, Political science, Economics, Arts, Public health, Engineering, Architecture, Accountancy and Commerce, Communication Arts of the Chulalongkorn University.

Level of study: The international undergraduates programs, master degree and doctoral degree of the Chulalongkorn University.

Nationality: International female students' countries of origin, females from countries in Africa, America, Europe, South Asia, South East Asia and East Asia.

Marital status: To assess students who are single, married, in a stable union or an uncommitted union

Income: Amount spent by respondents monthly in Thai baht.

Behavioral profile: Certain health behaviors which put women at risk of cervical cancer such as smoking and sexual history.

Smoking status: Basically to asses if students are current smokers, ever smoked and never smoked.

Sexual history: This is a woman's age at first onset of sexual intercourse, condom use, the number of sexual partners, age at first full time pregnancy and grand parity.

Knowledge regarding cervical cancer: Is the understanding the respondents have about carcinoma of the cervix with respects to symptoms, HPV infection, HPV Vaccine, source of information, screening method and screening centers.

Cervical cancer: Is a cancer that forms in the cervix (the organ connecting the uterus to the vagina). It is usually a slow growing cancer that may not have symptoms at early stages but can be found with regular pap tests (a procedure where cells are scraped from the cervix and looked at under a microscope) with late stages of cancer showing symptoms such as abnormal vaginal bleeding, post-coital bleeding, pain during sexual intercourse and is almost always caused by HPV infection.

HPV Vaccine: A vaccine is used to prevent genital warts, cervical cancer, vulvar cancer. It is also used to prevent lesions that are caused by those viruses that can lead to cervical cancer

HPV Infection: Human Papillomavirus a virus which causes abnormal tissue growth and other changes to cells. Infection for a longtime with certain types of HPV can cause cervical cancer over time.

Cervical cancer screening: This is a method of preventing cancer by detecting and treating early abnormalities. This study will include pap smear (a procedure where cells are scraped from the cervix and looked at under a microscope) and Visual Inspection using acetic acid (VIA) (the use of acetic acid to look for changes in the cervix) methods.

Cervical cancer screening centers: These are facilities which offer screening services to women for cervical cancer and in this study includes university hospital, public hospitals, private clinic, GPs office and STI clinics.

Source of information: The various means where female students learn about cervical cancer which in this study include friends, family members, the internet, lectures, heath care personnel or the media.

Perception regarding cervical cancer: The respondents' way of thinking and feeling about screening for premalignant cervical lesions.

Perceived susceptibility and severity of cervical cancer. These combine to form a perceived threat and it influences on how females process health information and how motivated they may be to engage in a particular health activity. i.e. a feeling of how serious cervical cancer maybe if she contracted it.

Perceived benefits of cervical cancer screening: belief that the various actions available to people will be effective in reducing the threat of the disease. The females' belief that getting a screening will decrease their chances of having cervical cancer.

Perceived barriers of cervical cancer screening: The belief about the cost and negative aspect of an action. This is females own thought about the obstacles in the way of adopting a cervical cancer screening which include, not knowing where to get screened, embarrassment , cost of screening, finding time out of school work to get screened.

Practice towards cervical cancer screening: the action taken or intention by individual respondents to go for regular cervical cancer screening by methods as Pap smear or Visual inspection using acetic acid. As the recommendation of the American Congress of Obstetricians and Gynecologists which allows women of 21-29 years of age to be screened once in 3 years using the conventional pap or the liquid- based

method and HPV co-testing is not included for this age bracket (21-29) as co-testing should only look for high risk types which are not usually present in this age bracket but co-testing should be used on women 30- 65 years of age by ACOG. (2012) and the Visual inspection using acetic acid (VIA) as recommended method of screening in resource low setting by WHO. (2002).

CHAPTER II

LITERATURE REVIEW

This chapter looks at the literature review on this topic of cervical cancer and its screening in different parts of the world, also the assumptions such as the health belief model in relation to cervical cancer and screening.

Assumptions

2.1 Health Belief Model

The HBM is a conceptual framework developed in the 1950s as a way to explain why medical screening programs offered by the U.S Public Health Service, particularly for tuberculosis were not very successful (Hochbaum. 1958) HBM is used to understand health behavior and possible reasons for non-compliance with recommended health actions (Becker. and Rosenstock. 1984) This model is spelled out using four constructs for compliance for recommended health action representing the perceived susceptibility this is the logic that when people believe they are at risk of a disease, they will be more likely to do something to prevent it from happening. perceived severity this speaks to an individual's belief about the seriousness or severity of a disease, perceived benefits is a person's opinion of the value or usefulness of a new behavior in decreasing the risk of developing a disease and perceived barriers this is a person's assessment of the obstacles in the way of him or her adopting a new behavior and to the four beliefs the HBM suggests that behavior is also influenced by Cues to action as factors, people or things that move people to change their behavior would include media, health professionals personal relationships just to mention but a few. In addition, self-efficacy was added to the original four belief of the HBM (Rosenstock., Strecher. et al. 1988) Self-efficacy is the belief one has that he can successfully engage in the behavior required to produce an outcome (Bandura. 1997) This explains that people tend to generally do not try to do something new unless they can do it, if someone believes a new behavior is useful (perceived benefit), but does not think he or she is capable of doing it (perceived barrier), chances are that it will not be tried.

- Feels that a negative health condition (cervical cancer) can be avoided.
- An individual has a positive expectation that taking a recommended health action e.g. female can avoid a negative health condition (regular pap smear screening can be effective at preventing cervical cancer)

- A person believes that she can take a recommended health action (she can use CCS comfortably and with confidence.

Basic Elements of Health Belief Model modified by (Hanover. 2013)

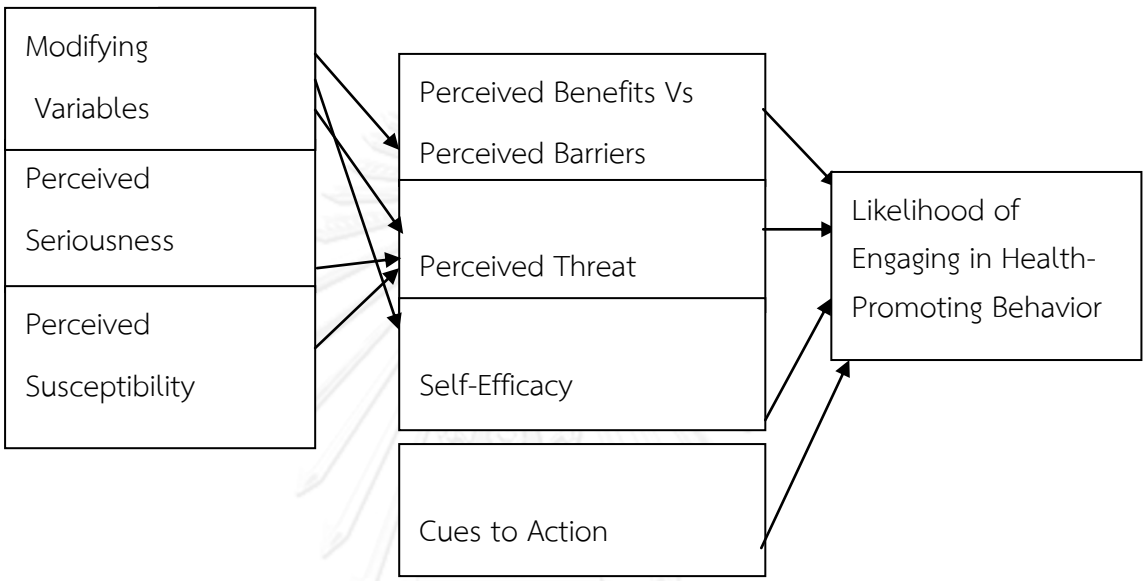

Figure 2 Health Belief Model

In a study among female employees at a university in England, it was seen that there was good knowledge on pap smear as 97.3% of the respondents identified it as a test to look for abnormal cells while only 2.3% said it was a test for identifying sexually transmitted disease, the respondents were able to mention early age at first sexual intercourse, numerous sexual partners and less than half of the respondents thought smoking as a risk factor for cervical cancer (Maria. and Tracy. 2002). According to a study in Zambia which is reported as the World's second country with the highest annual incidence of this disease, the prevention practices are integrated with those of HIV/AIDS prevention infrastructures, thus has assisted in screening women of cervical cancer since funding for standalone cancer preventive measures have not been made available in most low resource countries *(Vikrant. 2011)*.

A study in Zimbabwe showed that 91 per cent of women had never been screened and 81 percent do not have knowledge of cervical cancer tests, this study noted that for cervical cancer screenings to be successful, its incorporation into the

immunization system will be of a large benefit and also health education of women should be increased in the country(Mupepi., Sampselle. et al. 2011)

In a study conducted in an international university in Japan, about half of students who returned the questionnaire were Japanese (119/245, 49%), and 125 students (51%) were from China (21), Vietnam (17), South Korea (15), Thailand (12), Indonesia (10) & other countries; 40 non- Japanese students (16%) did not mention their nationality, this study showed less knowledge and attitude towards sexual risk factors among the students and this was even more disturbing when compared with students from the Europe and North America as the Japanese students had more sex partners and the use of condom was quit low (Nader. and Akane. 2012).

According to another study done in Fiji, most of the women who had a pap smear did not know the actual benefits and so did not show up for follow-up, this also shows the knowledge barriers about the disease (Nakalevu. 2009). There was also the issue of pain while screening and the fact that most women wanted to be screened my female health workers, this study suggests that more awareness on this disease is needed to improve the follow –up record of Fijian women (Nakalevu. 2009).

2.2 Socio-Demographic Characteristics

Characteristics such as age, marital status, income, education, may also influence perception and hence indirectly affect health related behavior. According to (Glanz., Rimer. et al. 2008) Socio demographic factors especially education is believed to have an indirect effect on behavior towards CCS, by influencing their perception of susceptibility to getting the disease, severity of the disease and benefits of the screening behavior that can overcome the perceived barriers. Age has been seen as important in studying HPV infection as most cervical cancer arise at the squamocolumnar junction i.e between the columnar epithelia of the endocervix and the squamous epithelium of the entocervix where continuous metaplastic changes occur and since greatest risk of HPV infection is associated with greater metaplastic activity which usually occurs at puberty and first pregnancy then declines after menopause, hence HPV infection is most common in sexually active young women of about 18 to 30 years of age, with a sharp decrease of the prevalence after 30 years of age (Adam., Berkova. et al. 2000) (Burk. 1996) While an Increase in age could increase the risk of CC, as it is seen at the 4^{th} and 5^{th} decade (Juneja. A. 2003). According to a study in Ibadan, Nigeria HPV prevalence peaked at age 25 but persisted in older ages (Thomas J.O, Tunsaku. et al. 2005).

Program enrolled, Study done in South African found medical students to have more knowledge about cervical cancer and screening by pap smear than non-medical students (Kalu. 2012) Also in Ibadan Nigeria where similar findings showed that students from medical and health related faculties had more knowledge about the disease (Aniebue. and Aniebue. 2009)

Level of study was seen as a characteristic from a study in South African which witnessed high respondents from the 1st and 2nd year students with just few students in the late year, showing that the older students were not comfortable with the topic (Kalu. 2012) Another study in Malaysia on students in health sciences showed that students in the 1st year had little knowledge about the disease compared to their senior counterparts thus suggesting that higher education produced higher knowledge about the disease (Tan *et al*., 2008). Marital status produced a consistent association between high parity and CC in HPV positive women (Bosch., Lorincz. et al. 2002). This associated increased with parity could be seen since the number of pregnancy increases the number of unprotected sex and thus high HPV risk.

Monthly income also was associated with perceived severity as shown in a study done on students in South Africa, showed that more students who participated in the study with more knowledge on the seriousness of the disease about 147 were from high class status families and only 47 who were from low income families had knowledge on the disease (Kalu. 2012).

2.3 Behavioral profile.

Smoking has been reported to have an association with HPV (McIntyre-Seltman., Castle. et al. 2005) . Although the exact mechanism was not clear but it may be due to the fact that a smoker's immune system is impaired and hence the difficulty in clearing of the Virus and the mutagenic activity of cigarette components which have been demonstrated in cervical cancer thus can lead to the persistence of the HPV in smokers (Vaccerella., Herrero. et al. 2008), (Yang., Jin. et al. 1996). According to a study smoking shows little or no association to low grade of cervical disease but appears to be an important risk factor independent of HPV infection for higher grades of cervical cancer (Adam., Berkova. et al. 2000) . It has been shown that HPV infected women who smoke 20 cigarette a day, have a more risk of progressing to a higher grade CIN 2.5times more than a woman who have never smoked plus a three times increased risk of CIN treatment failure (Shafi. and Welton. 2007) ; (Frega. 2003). Also, smokers may have more sexual partners' hence high risk of getting the HPV (McIntyre-Seltman., Castle. et al. 2005). Sexual history of respondents is very

important as this disease is strongly related to the sexual behavior of females, the age at first sexual intercourse, at the age of peri-menarche (or age 17 approximately) is partly linked to the age of first exposure to HPV, but primarily to the idea that the developing cervix is at a higher risk of persistent HPV infection to establish (Bosch., Lorincz. et al. 2002), (Todd. and Shafi. 2004). In a study done in South Africa, recorded student who were sexually active before 18 years had more sexual partners (Kalu. 2012). Women with more sexual partners are at a higher risk of contracting HPV and CC since they are exposed to different variant of the virus from different partners who may also have or have had several partners (Appleby. 2007). Studies have shown that women reporting over nine sexual partners had a HPV incidence rate of about 69% (Moscicki. 2005). In some other cases, HPV infection cells may be generated faster through direct carcinogenic actions which are aided by long term use of oral contraceptives (5 years or more), these contraceptive act as generative agents with an increase of 2.2 folds increase risk level (Likes. and Itano. 2003). Women who have had three or more full term pregnancies are also said to be high risk patients, this is due to the different hormonal changes that make the women more prone to HPV infection. It is also considered a high risk for women about 17 years of age or younger when they have their full time first pregnancies as they are 2 folds more at risk of having cervical cancer later in their life compared to women who got pregnant at age 25 and over when the cervix is well developed (American Cancer Society 2010). Family medical history can be a major risk factor for any female whose mother or sister had the disease, has a 2 to 3 times higher risk of getting cervical cancer than when no one in the family had it and this could be that the women are less able to fight off HPV hence cervical cancer (Herbert and Coffin, 2008, ACS, 2013). Chlamydia trachoma is a bacteria that infects the reproductive tract is the most common sexually transmitted bacterial infection that has been found to have effect on cervical intraepithelial neoplasia (CIN) grade 2, it is a high risk factor in aiding development of early stages of cervical carcinogenesis (Lehtinen. 2011) . Like most STD's Chlamydia can be prevented by the use of condoms, in the case of HPV infections the use of condoms as a primary prevention strategy has been scientifically identified as unsuccessful but condoms are a way of reducing the risk brought by other STD's like HIV/AIDs and Chlamydia (Herbert and Coffin, 2008).

Gardasil and cervarix are HPV vaccines which are both administered as prophylactic vaccines that is they are meant for prevention against possible HPV infections and do not act as therapeutic vaccines which treat already acquired infections, hence this vaccine is best administered before a woman is sexually active (WHO 2007). Diet high

in vegetable and fruits have been studied to have protective effect against several cancers as these also tend to reduce obesity which is a risk factor for most cancer (Steinmetz. and Potter. 1996). A case control study of in situ cervical cancer reported an inverse association for salad vegetables and fruit juices (Brock., Berry. et al. 1988).

2.4 Knowledge relating to cervical cancer

Knowledge and structural variables may also influence perception and thus indirectly affect the health related behavior of females towards CC as different groups of people have different beliefs about the causes of the disease and subjects such as transmission of Human Papillomavirus (Glanz., Rimer. et al. 2008)**.** HPVs are a family of viruses that are common in the world and are deoxyribonucleic acid (DNA) viruses affecting skins and mucosal. They are estimated to cause 100 percent of cervical cancer cases (WHO 2007). HPV transmission is very common and most men and women will be infected sometimes in their life, this is because it is usually associated sexually and its highly transmissible, HPV infection usually clears in at most two years while some may persist leaving a small portion of the infection which can progress to cervical cancer (WHO 2007).This progression to cervical cancer can be enhanced by factors which act in concert with cancer -associated HPV types leading to cervical cancer i.e. the primary immune response to HPV infection is cell mediated, hence , conditions like human immunodeficiency virus disease that impair cell mediated immunity increases the progression of HPV (Calore., Pereira. et al. 2001) (Cubie., Seagar. et al. 2000). In a study conducted in Nigerian women, among the few who have heard about CC didn't have accurate information about the disease as statements that CC is a deteriorating disease that cause babies of infected pregnant mothers to be delivered with mucus in their eyes, it was also seen as a toilet linked incurable disease (Ndikom. and Ofi. 2012).

Source of information was seen in a study in Malaysia on health science students showed that more information was obtained from the mass media and classes which was not a surprise since they were health students (Tan *et al* ., 2008). Another study in Johannesburg showed that the students had more than one source of information which included the media, internet, health professionals and some from lectures and friends (Kalu. 2012).

In a study conducted in Okada, Nigeria 91.1% of the women had not heard about cancer of the cervix and didn't know anything whatsoever about it while only 8.9% had a little knowledge about the disease and know it is preventable (Igwilo., Igwilo. et al. 2010). This knowledge barrier is responsible for the late cases of this disease

presented when little or nothing could be done to cure these women *(Igwilo., Igwilo. et al. 2010)*.

Risk factors of cervical cancer are factors which increases one's chances of getting the disease, with good knowledge of what the risk factors of cervical cancer are, females can avoid some behaviors and lifestyle which increases their chances of having cancer of the cervix. In a study conducted in 193 students in Johannesburg, among the 178 who knew about cervical cancer, 103 respondents identified early age at first sexual debut as a risk factor while 36 identified smoking as risk factor and 48 didn't know what the risk factors were, among students who had knowledge of the risk factors were more of the medical students (Kalu. 2012). This shows the low level of knowledge about this disease in developing countries, also lower in non-medical students (Kalu. 2012). In study conducted in Somalia, there was a lack of understanding of the risk factors of CC as the women associated the disease with the idea of 'God's Will' this donates that some Somalian women may wrongly interpret Islam as not allowing disease prevention intervention (Abdullahi., Copping. et al. 2009). According to Hoque in their study of about 389 students, only one respondent out of 167 who had heard about CC was able to identify all of the risk factors of cervical cancer with almost half knowing HPV causes CC, while two of the students said CC cannot be prevented and 96 of the students didn't know the disease is preventable (Hoque. and Hoque. 2009). Researchers have also shown that Latinas have more fatalistic perception towards CC as they belief that there was little a person could do to change fate or prevent cancer (Chavez., Hubbell. et al. 1997). As they belief that cancer is God's punishment for improper or immoral behavior (Hubbell., Chavez. et al. 1996). Cervical cancer screening is a method of preventing cervical cancer by early detection of precancerous lesions which are treatable before they can cause cancer in the cervix. This study which will advocate on the regular screening with pap smear and VIA for prevention of cervical cancer and adequate knowledge on why and when a women is to be screened is essential for some of the students who are still young and should make use of the cervical screening test effectively. Study in South Africa, showed about 31% participants had heard about pap smear, with half of them having heard it from medical personnel, among the half who knew about the screening test 33% identified it as been used for the detection or prevention of cervical cancer while the others said pap smear test was used for cleaning of the womb, treatment of STDs and infertility (Hoque. 2010). Another study in a Muslim country Somalia showed that knowledge about the purpose of CCS was limited in Somalian women and this was as result of a mixture

of the tradition of Somali and Islamic beliefs that illness and healing only occurred by the will of God (Abdullahi., Copping. et al. 2009) In a study conducted in Nigeria, some respondents expressed concern that cervical cancer screening could lead to the loss of their virginity (Aniebue. and Aniebue. 2009). Knowledge on cervical cancer is essential for women and on screening centers is also necessary, so location of these centers should be made so that women can get easy access to them. A study conducted in South African showed that more screening centers were found in private hospitals which are usually more expensive when compared to public hospitals (Kalu. 2012). Another study in Zimbabwe showed that women who lived in re- settlements villages had more access to the screening centers than their counterparts in traditional rural reserve villages (Mupepi., Sampselle. et al. 2011). According to a study in Nigeria some respondents noted that sufficient information on centers providing the screening facilities be made available to them (Aniebue. and Aniebue. 2009)

2.5 Perception regarding to Cervical Cancer

Some women have their own perception regarding CC and the Cervical cancer screening, literature reviewed have provided more information on some beliefs of women that attending screening programs as they have neither been engaged in overly active sexual lifestyle nor contracted a sexually transmitted infections (STIs) was a waste (Khoo. 2011). Such perception could be responsible for the late stages of CC condition most women are faced with. Also some women avoid CCS since they want to avoid emotional distress and distraction as it brings worries on their families (Wong., Wong. et al. 2009). Perceived susceptibility and severity which combine to form a perceived threat is explained by the HBM prediction that women will adhere to CCS recommendations only if they feel they are susceptible to CC (Glanz., Rimer. et al. 2008). In a study done in Nigeria, some of the women felt not been aware of the disease will prevent them from having it , 49.2% believed it was transmitted sexually while 54.2% believed any woman of childbearing age can have it, about 55.3% of the respondents in the study perceived that only Caucasians can have the disease, on the perception of severity, 64.6% believed the disease is deadly and 57.7% believed the disease cannot make them infertile, while 35.2% believed cervical cancer does not kill (Amosu., Degun. et al. 2011). In a study in New England where HBM was used to assess the gynecological beliefs of 400 college girls, the respondents were less sure about their susceptibility to CC, 40% had the belief that it was unlikely that they would be infected with the disease in their lifetimes

while 16% believed it was likely that they could get the disease while the other 40% responded neutral , the respondents in this study had strong beliefs about the severity of CC with more than 98% who believed that the disease was a serious condition, only two respondents believed that CC was not serious. Nearly half of the respondents strongly agreed that CC was not easily treatable and curable in most women, while less than 10% of the respondents agreed that CC was an easily treatable or curable condition (Burak. and Meyer. 1997). Also perceived benefit of the screening which are belief that the various actions available to people will be effective in reducing the threat of the disease, this can be used to access the knowledge and belief of women on the need for getting a screening and how often it should be done to help reduce the number of women who get this disease. In a study conducted in Nigeria where the HBM was used to access the behavior of women towards the benefit of screening, a good number about 64.5% showed willingness to go for screening in future

A study in England witnessed most of the respondents with strong and positive beliefs about regular CCS being essential for their reproductive health and recorded pain, cost and embarrassment as barriers (Burak. and Meyer. 1997). Also the belief about the cost and negative aspect of an action was observed in a Zimbabwean study, which showed that the perceived barriers recorded included lack of knowledge about cervical cancer screening, lack of advice and encouragement from health professionals on screening, most women couldn't afford the money due to lack of health insurance, long distances walk to the nearest health facility and some women didn't believed they are at risk of cancer of the cervix (Mupepi., Sampselle. et al. 2011).

2.6 Practice on cervical cancer screening

The pap smear screening technique or conventional cytology screening has been used from as far as 1927 and has been used for many years, this technique involves the collection of pap smear from the cervix and the endocervical canal by the use of spatula and cytobrush, samples are smeared on a slide which is then fixed on a cytology fixation, this method has been proven to be successful in detecting cervical cancer, although errors like cytotechnologist failure to detect the presence of abnormal cells on a slide may occur but reduction of the workload of the cytotechnologist to a maximum of 100 slides per day has helped to curb some of the errors (Nouvo., Melnikow. et al. 2001).

Visual screening using acetic acid which is less tedious in preparation, suitable for its cost effect and do not require much skilled as non-physician health care providers for example midwives can be involved. In this method, precancerous conditions turn white when exposed to the solution of acetic acid therefore making it easy to identify them. In some other cases where an iodine-based solution is used which turns normal cervical cells browns and the abnormal cells remain yellow or unstained making them more visible (PATH 2000).

HPV and DNA Co-testing is aimed at detecting h igh risk HPV types 16, 18, 31, 33,35, 39, 45, 51, 52, 56,59 and 68 which are usually seen in high grade cervical intraepithelial neoplasia (HCIN) and invasive cancer of the cervix. The Bethesda system which was initiated in 1988 and reviewed in 2001 is a guideline used alongside the HPV DNA test, it was made to identify precancerous lesion in the cervix but is now also used in detecting and treating of high grade cervical intraepithelial lesions (HSL). For women with Atypical squamous cells of undermined significance (ASCUS) the HPV and DNA test is found to be more sensitive in detecting appropriate triage of women about 31% to 60% of the women with ASUSC test positive for high risk HPV DNA. Women tested positive are referred to colposcopy, about 98% of the women found to have positive results for other HPV virus from pap test are referred to further determine the need for colposcopy for patients (kerkar. and Kulkarni. 2006). The Visual inspection using acetic acid (VIA) is a recommended method of screening in resource low setting by WHO. (2002). The recommendation of the Obstetric -Gynecologists USA which allows women of 21-29 years of age to be screened once in 3 years using the conventional pap or the liquid- based method and this group of females should also be aware of some certain steps to follow 48 hours prior the pap test such as discontinue of the use of tampons, vaginal creams, vaginal sprays or powder, medicines, douche, no sex and 10-20 days after the first day of period. HPV co-testing is not included for this age bracket (21-29) since there is no role for tests that look for low-risk types as co-testing should only look for high risk types which are not usually present in this age bracket but co-testing should be used on women 30 years of age and above, while cervical cancer screening should be discontinued in women older than 65 years if they if they have no history of cervical intraepithelial neoplasia (CIN) 2, CIN 3, adenocarcinoma in situ, or cervical cancer and who have also had either three consecutive negative Pap test results or two consecutive negative co-test results within the previous 10 years, with the most recent test performed within the past five years while women regardless of their ages who have had a hysterectomy with removal of the cervix (total hysterectomy) and

have no history of CIN 2 or CIN 3 should discontinue routine cervical cancer screening and HPV-vaccinated women should follow the same cervical cancer screening guidelines as unvaccinated women, also that women with a history of cervical cancer, or who are HIV-positive, immunocompromised, or were exposed to diethylstilbestrol (DES) in utero should not follow routine cervical cancer screening guidelines. These women may need more frequent screening (ACOG. 2012).

Practice on cervical cancer screening can be explained by the HBM that includes the concept of cues that can trigger actions since readiness to act could only be potentiated by other factors particularly by cues to instigate action such as bodily events or environmental events like the mass media *(Glanz., Rimer. et al. 2008)*. Since women will be more willing to take preventive measures like using the pap smear facilities when they are reminded by family members or health care providers. Ackerson studied the roles of cues for obtaining Pap smear and health care providers were influential since they provided respondents with information on the importance of CCS (Ackerson and Preston. 2009). According to a study in Somali, participants attended their first screening as it was advised by their GPs and the women also demanded for more information in their local language or better still they preferred verbal responses such as being told to obtain a pap test by a friend (Abdullahi., Copping. et al. 2009). It was reported in Nigeria that greater public awareness by the physicians is needed since only about 15% of gynecologist request for cervical cancer screening of their patients and for the patients who did a CCS did because it was asked by a health worker (Ezem. 2007). Also women must feel themselves competent to overcome perceived barriers to take actions (perceived self-efficacy) i.e. women should be confident that they could obtain Pap smear in a regular manner. In a South African study on students, only 16 respondents had a pap smear of which 11 knew their result and about those who knew about pap smear didn't get a test mainly due to personal factors such as fear of the procedure, embarrassment, religious reasons and others said they were not ill so not necessary also, no access to where a pap was done and some respondents were discouraged by partners (Hoque. and Hoque. 2009)

CHAPTER III

RESEARCH METHODOLOGY

This chapter describes the step by step processes of the research methodology.

3.1 Research Design

This study followed a cross sectional descriptive design, it was quantitative in nature to assess the knowledge, perception and practices of female international students of Chulalongkorn University relating to cervical cancer screening.

3.2 Study Area

This study was carried out in Chulalongkorn University which is the oldest university in the Thai modern education system, founded in 1917. Located 13.73826°N 100.532413°E Bangkok, Thailand and comprises of nineteen faculties, ten associated institutes and 37,625 students in 2013. The number of international programs offered in the university was considered in choosing it as a study area since this study considered international students which the university has a good number of them. The study was conducted among the faculties of Economics, Faculty of Arts, and Faculty of Communication Arts, Faculty of Science Faculty of commerce and Accountancy, Faculty of Engineering, College of Public Health Sciences, Faculty of Medicine, Political Science and Faculty of Architecture.

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3.3 Study Period

This study was conducted from January 2014 to April 2014.

3.4 Study Population

This study was conducted on a total of 330 female international students at Chulalongkorn University comprising of undergraduates, Master degree student and Doctoral degree students of the faculties of Economics, Faculty of Arts, Faculty of Communication Arts, Faculty of Science, Faculty of commerce and Accountancy Faculty of Medicine, Faculty of Engineering, College of Public Health Sciences, Political Science Faculty of Architecture.

Table 1 showing the number of female international students in each international faculty at each level in 2013/2014 (Source Chula International Communication Center)

Name of faculty/College	Bachelor	Master degree	PhD	Total No
Faculty of Economics	21	29	1	51
Faculty of Arts	29	14	3	46
Faculty of Communication Arts	29	7	0	36
Faculty of Science	4	18	10	32
Faculty of commerce and Accountancy	47	8	1	56
Faculty of Medicine	0	20	2	22
Faculty of Engineering	11	10	7	28
College of Public Health Sciences	0	13	4	17
Faculty of Architecture	8	7	0	15
Faculty of Political science	2	25	0	27
Total	151	151	28	330

3.4.1 Inclusion criteria

Female international students from the international bachelor degree, master degree and doctoral degree programs of Chulalongkorn University.

3.4.2 Exclusion criteria

International female students below 18 years of age.

International female students who do not want to be in the study.

3.5 Sampling Technique

A purposive sample size of 197 was selected from a total of 330 from ten international faculties of the Chulalongkorn University. This sampling method was used as researcher identified the international faculties with at least fifteen female students compared to those with more male students.

3.6 Sample and Sample size

Cochran formula was used to estimate sample size. $\frac{Z^2 P(1-P)}{d^2}$

$$\frac{1.96^2 * 0.88 * 0.12}{0.0025} = 163$$

Z = Confidence level at 1.96

P = Practice of the students on the cervical cancer screening from previous student conducted in Nigeria was low at about 12%, by Owoeye. and Ibrahim. (2013) was used and a 20% non-response rate. 163 +34= 197

P = 0.12

q = 1- the prevalence (1-p)

d = Expected error at 5% =0.05.

3.7 Measurement Tools

Anonymously Structured self-administered questionnaire was used in collecting socio-demographic characteristics and behavioral profile of respondents and in assessing knowledge, perception and practice of cervical cancer screening among female international students at Chulalongkorn University it was designed from review of previous studies which assessed the knowledge, attitude and practice of students in Tanzania and Johannesburg respectively, also for certain objectives of this study (James. 2011), (Kalu. 2012), (Hema. 2012). The questionnaire was validated by experts in the field of reproductive health in College of Public Health Sciences Chulalongkorn University: Dr Khemika Yamarat, Dr Panza Alessio and Dr Nanta Auamkul and changes and corrections were made according to experts' suggestions. Also the questionnaire was pretested on 30 international students from Assumption University and Stamford International University all in Bangkok for readability and also for the determination of the appropriate time to be allocated for the filling of questionnaire which was set as 15 minutes. These Universities were chosen as they offer international programs similar with those offered in Chulalongkorn University.

Pretest was done and changes were made to the questionnaire, word" contraception" was changed to family planning and protection, question on HPV DNA

+Co-testing was removed from the questionnaire as students seemed not to understand what it meant while question asking if respondents know about pap smear test and Vinegar test were added to the questionnaire also HPV Vaccine was rephrased as vaccine to prevent cervical cancer. The negative questions in section D where rephrased for easy understanding by respondents.

Reliability was done by checking the internal consistency of the perception part of the questionnaire using Cronbach alpha which gave a reliability of 0.72, while the Kuder- Richardson (K-R20) was used to measure internal consistency to the knowledge questions with a reliability of 0.89.

The questionnaire which had 46 questions was divided into five parts:

The Demographic and behavioral characteristics with 10 questions and subsets.

Knowledge on cervical cancer with 6 questions and subsets covering on cervical cancer, the risk factors of cervical cancer and symptoms with a 1 point score was given for a right answer, 0 point was given to “don’t know” and a 0 point score for a wrong answer, making a maximum of 23 points to be scored and a minimum of 0 point too. The mean total score was calculated as 10 points and the respondents with a score below the mean were categorized as low level. The knowledge part score was categorized as follows

(i) 16-23 high knowledge

(ii) 10-15 moderate knowledge

(iii) 0-9 low knowledge

Knowledge on cervical cancer screening had 8 questions and subsets covering respondents view on how cervical cancer is detected, who should be screened, screening intervals and preparedness for a screening.1 point was also given for a right response, 0 point for a “don’t know” score and 0 point for a wrong response making a maximum of 19 points and a minimum of 0 point. The mean total score of the respondents was calculated and was Mean=7. The knowledge part categorized with respondents below the mean score as low knowledge. The categorize are as follows

(i) 16-19 high knowledge

(ii) 7-15 moderate knowledge

(iii) 0-6 poor knowledge

Perception towards cervical cancer screening with 11 questions and practice with 4 questions. Perception questions were on 5 point Likert's scale containing positive responses that ranged from strongly agree with a score of 5 to strongly disagree with a score of 1 and negative questions that range from strongly disagree with a score of 5 and strongly agree with a score of 1. The highest score was expected to be 55 points and the lowest 11 points. The various responses by the respondents was calculated and a respondent with a score above the mean score which is 40 were categorized as positive perception, while those with a score less than the mean score were categorized as negative perception towards cervical screening. The practice part had four questions asking questions on cues to actions, intention to get cervical screening and uptake of cervical screening. A good practice was when respondent had been screened within three years prior to this study while a poor practice was when an eligible for a screening respondent had not been screened.

3.8 Data Collection

The researcher identified the international programs with more female students and requested the College of Public Health Sciences Chulalongkorn University to send a notification letter to the International Faculties telling them about the purpose of my research, the inclusion criteria and the request was sent one week before the data collection began. Then the researcher contacted international faculties afterwards before administering her questionnaire. Using an anonymously structured questionnaire, the researcher pleaded for part of a lecture's time, to enable her describe the purpose of the study to the respondents and assured them of free participation and also withdrawal from the study if one wasn't comfortable with the study.

The researcher created a good rapport with the respondents to increase their confidence to enable the respondents answer the sensitive part of the questionnaire telling them that their answers were confidential. Respondents who agreed to be in the study gave their oral consent. The researcher then distributed her questionnaires to the potential respondents who gave their consent, with the help of two research assistants who were students from Chulalongkorn University and Bangkok University who were given day training on the purpose of the research, data collection process, inclusion criteria, usefulness of the result and were involved in pretesting of the questionnaire. Time about 15 minutes was given for the answering of questionnaire. Researcher and the assistants were available to answer questions by the respondents

for easy understanding and filling of the questionnaire. At the end of the section, the respondents dropped their answered questionnaires into a collection bag provided by the researcher so that the respondents felt safe about their answers and the respondents were given a brochure on the topic of cervical cancer such as the risk factors, prevention measures, also a writing pad or a pen was given to the respondents by the researcher as a sign of appreciation for their time. E-mails were also sent to the respondents by their faculties and about 20 responses were received. This was done since the initial target sample of 197 could not be obtained by classroom distributions; this was because data was collected in April 2014 when some of the international programs were on summer break.

3.9 Data Analysis

Coding was done in the data collection instruments. The questionnaires collected were tested for completeness and consistency. The data analysis was done using SPSS V16. Descriptive statistics was calculated as frequencies and percent, ratio and interval variables were calculated as standard deviation, mean, minimum and maximum.

While inferential statistics was calculated using Chi-Square test and Fisher's Exact test were used to find the association between

Socio-demographics characteristics and practice on cervical cancer prevention.

Knowledge regarding CC and their practice towards cervical cancer prevention.

Perception related CCS and their practice towards cervical cancer prevention.

Respondents' intention to uptake cervical screening was calculated using logistic regression model.

3.10 Ethical Consideration

This study was approved by the Ethic Review Committee for Research involving Human as Research Subjects Health Science Group Chulalongkorn University (No 048.1/57). The objective and purpose of the study was explained to the students and informing them that participation was voluntary, with their answers kept confidential, students were approached to answer anonymously structure questionnaire. The students who refused to participate were not asked to give any reason and the data collected was used strictly for this project.

3.11 Expected Benefits

The real situations of these students' practice on cervical screening would be understood through this study, barriers that hinder international students from obtaining a regular cervical screening. Hopefully suggestions will be given to university authority so that more health education topics will be made available for students. This study can also be useful for policy makers and educators in these females' respective countries to help improve the knowledge barrier of females on this topic.

CHAPTER IV

RESULTS OF THE STUDY

This section focuses on describing the socio-demographic information of the respondents, behavioral profile, and sources of information of the respondents on cervical cancer, knowledge and perception towards cervical cancer and cervical screening, cues to action and their practices on cervical screening. The second part looks at the association between these factors and their intention to uptake cervical screening.

4.1 Descriptive analysis

4.1.1 Socio-demographic descriptions

Table 2 gives a detailed description of the socio-demographic characteristics of the respondents and it shows that about 25% of respondents were 18-20 years old, mean age was 24.4 years (standard deviation 5.5) the range is from 18 to 40 years old. Amongst these respondents 79.7% were single 11.0% were in a stable union while 8.1% were married. The majority of the respondents are from Asia origin with South East Asians comprising of 29.0 % East Asians about 18.6 % South Asians 14.0 % the respondents from the European countries were about 28.5%, Americans 5.8% and Africans were the least with only 7 respondents.

Among the respondents, the majority of them were undergraduates (52.3%) while 40.1% were in the master's degree level, with 7.6% in the PhD degree level. Almost half of the respondents were enrolled in the Social sciences (44.2%) with a few from the health sciences (16.9%).

Table 2 Socio-demographic Information of respondents (n=172)

Variable	Frequency	Percent
Age (n=172)		
18-20	43	25.0
21-29	101	58.7
30-40	28	16.3
Nationality (n=172)		
Africans	7	4.1
Americans	10	5.8
Europeans	49	28.5
South Asians	24	14.0
South East Asians	50	29.0
East Asians	32	18.6
Amount spent monthly (n=172)*		
<5000baht	21	12.2
5000-10000baht	52	30.3
10,001-20000baht	62	36.0
>20000baht	37	21.5
Level of study (n=172)		
Undergraduates	90	52.3
Master degree	69	40.1
PhD	13	7.6
Marital status (n=172)		
Single	137	79.7
Married	14	8.1
In a stable union	19	11.0
In uncommitted union	2	1.2
University program enrolled (n=172)		

Sciences	10	5.8
Health sciences	29	16.9
Social sciences	76	44.2
Arts	38	22.1
Engineering	19	11.0

*Note Amount spent monthly, 1USD=32.22baht.

4.1.2 Behavioral profile of respondents: These are behaviors which put females at a higher risk of cervical cancer.

Behavioral profile of the respondents shown in table 3 showed that more than half of the respondents are sexually active 56.4% while 43.6% are not and among the sexually active, about 43 of the sexually active respondents engaged in sexual intercourse first at the age of 16-17 years, while the early starters were about 4 of them at the age of 13-15 while 16 respondents started sexual intercourse at a later age above 21 years old. About 39.2% of the sexually active respondents had two sexual partners, 36.1% had multiple sexual partners while only about 24.7% had one sexual partner. Majority of the respondent have never smoked (69.7%), with 16.9 % of them having smoked in the past and about 13.4% of the respondents are current smokers.

This table also shows that only 12 respondents have been pregnant and the ages of pregnancy varied from 20 to 31 years old with number of pregnancy as 9 respondents had just one pregnancy and 3 had two pregnancies.

Table 3 Behavioral profile of respondents (n=172)

Variable	Frequency	Percent
Smoking status (n=172)		
Current smoker	23	13.4
Ever smoked	29	16.9
Never smoked	120	69.7
Sexually active (n=172)		
Yes	97	56.4
No	75	43.6

Age at first coitarche for the sexually active respondents (n=97)		
13-15 years	4	4.1
16-17 years	43	44.3
18-21	34	35.1
>21 years	16	16.5
Number of sexual partners for sexually active respondents (n=97)		
One partner	24	24.7
Two partners	38	39.2
Multiple partners	35	36.1
Pregnancy history of respondents (n=97)		
Yes	12	12.4
No	85	87.6
Age at first pregnancy (n=12)		
20years	3	25.0
21	2	16.7
27	1	8.3
29	2	16.7
30	3	25.0
31	1	8.3
Number of pregnancies (n=12)		
One pregnancy	9	75.0
More than one pregnancies	3	25.0

Table 4 illustrates the types of contraception used by the respondents who are sexually active, although respondents used more than one type of contraception, condom use which can help to prevent transmission of STIs was the most used about 74.2%, while long term use of oral pills which can increase a woman's risk for

cervical cancer, here oral pills had a total response use of 60.8% while emergency pills were the less used and recorded about 19.6% of the total response.

Table 4 shows the contraception used by sexually active respondents (n=97)

Variable	Frequency	Percent*
Condom use	72	74.2
Oral pills	59	60.8
Emergency pills	19	19.6
Injections	22	22.7

* Respondents chose more than one option, so the percentages are not according to respondents but responses.

4.1.3 Knowledge on cervical cancer

Table 5 shows that more than a half of the respondents know the cervix 70.3% while 20.3% and 9.4% respectively did not know the cervix. When asked on whether respondents have heard about cervical cancer, almost all respondents about 99.4% have heard about cervical cancer with only one respondent who did not hear about cervical cancer until the time of this study. Questions assess the respondents knowledge on the risk factors of cervical was asked and less than half of the respondents 32.0% chose smoking as a risk factor while 28.5% and 39.5% of the respondents did not know or chose the 'no" option. About 58.1% of the respondents agreed that having multiple sexual partners is a risk factor while 26.2% respondents did not know if this is a risk factor.

Among the respondents, about 52.9% identified HPV as a risk factor; long term use of oral contraceptives witnessed a low correct answer as only about 32.6% of the respondents identified it as a risk factor. No condom use and early age at first sex as risk factors also witnessed low correct answers of about 49.4% and 32.6% respectively. STIs had more than half of the respondents 62.8% identifying it as a risk factor, also history of mother or sister having cervical cancer attracted about 52.3% correct answers by the respondents while diet low in fruits and vegetables (20.9%), HIV with 34.3%, poverty with 8.1% and more than three completed pregnancies with 12.2% correct answers respectively.

Table 5 knowledge on cervical cancer and risk factors of cervical cancer (n=172)

Variable	Correct n (%)	Incorrect n (%)	Don't know n (%)	Total n (%)
Do you know the cervix of the uterus	121(70.3)	35(20.3)	16(9.4)	172(100)
Ever heard of cervical cancer	171(99.4)	0(0)	1(.6)	172(100)
Smoking is a risk factor	55(32.0)	49(28.5)	68(39.5)	172(100)
Multiple sexual partners as a risk factor	100(58.1)	27(15.7)	45(26.2)	172(100)
HPV as a risk factor	91(52.9)	11(6.4)	70(40.7)	172(100)
Long term use of Oral Contraceptives	56(32.6)	38(22.1)	78(45.3)	172(100)
No condom use as a risk factor	85(49.4)	25(14.6)	62(36.0)	172(100)
Early age at first sex as a risk factor	56(32.6)	47(27.3)	69(40.1)	172(100)
STIs as risk factors	108(62.8)	16(9.3)	48(27.9)	172(100)
Diet low in fruits and vegetables	36(20.9)	58(33.7)	78(45.4)	172(100)
Poverty	14(8.1)	74(43.0)	84(48.9)	172(100)
HIV as a risk factor	59(34.3)	39(22.7)	74(43.0)	172(100)
Mother / sister with cervical cancer as a risk factor	90(52.3)	20(11.6)	62(36.1)	172(100)
More than 3 completed pregnancies as a risk factor	21(12.2)	39(22.7)	112(65.1)	172(100)

Table 6 shows that about 77.3% of the respondents correctly chose that any woman can acquire cervical cancer, 70.9% agreed it occurs in sex workers while cervical occurrence in rich women recorded about 48.8% and its occurrence in the poor about 52.3% of the respondents agreeing to it.

About the early symptoms of cervical cancer, vaginal bleeding was the most agreed symptoms accounting for 43.0%, pain during sexual intercourse (36.6%) most of the

respondents did not know if kidney problems was a symptom (66.9%) but 22.7% identified kidney problem as not a symptom while having no symptoms witnessed correct answers of 22.7% as well.

Table 6 Knowledge on women who can acquire cervical cancer and the early symptoms of cervical cancer (n=172)

Variable	Correct n (%)	Incorrect n (%)	Don't know n (%)	Total n (%)
Cervical cancer occurs in rich women	84(48.8)	36(20.9)	52(30.3)	172(100)
Cervical cancer occurs in poor women	90(52.3)	34(19.8)	48(27.9)	172(100)
Cervical cancer occurs in sex workers	122(70.9)	8(4.7)	42(24.4)	172(100)
Cervical cancer occurs in any woman	133(77.3)	12(7.0)	27(15.7)	172(100)
Vaginal bleeding as an early symptom	74(43.0)	19(11.1)	79(45.9)	172(100)
Bleeding after sexual intercourse	51(29.7)	28(16.2)	93(54.1)	172(100)
Pain during sex	63(36.6)	19(11.0)	90(52.4)	172(100)
Kidney problems	39(22.7)	18(10.5)	115(66.8)	172(100)
No symptoms	39(22.7)	41(23.8)	92(53.5)	172(100)

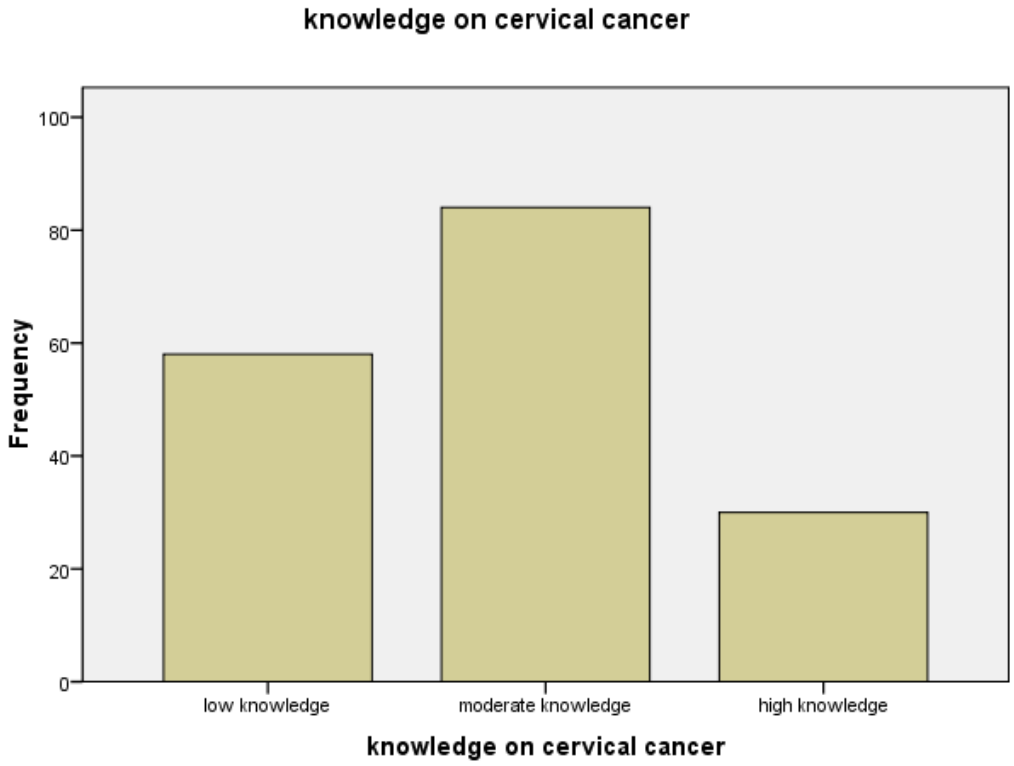
Figure 3 illustrates the levels of knowledge on cervical cancer of the respondents and it shows the knowledge gap as only 17.4% of the respondents have high knowledge about cervical cancer and 48.9% have moderate about 33.7% had low knowledge among the respondents. This shows that female international students at Chulalongkorn University have insufficient knowledge concerning cervical cancer.

Table 7 showing levels of knowledge of respondents on cervical cancer (n=172)

Variable	Knowledge score	Frequency	Percent
Low knowledge	0-9	58	33.7
Moderate knowledge	10-15	84	48.9
High knowledge	16-23	30	17.4

Figure 3 Distribution of levels of knowledge on cervical cancer (N=172)

Mean: 10.2, Median: 10, Mode: 12, SD: 4.94, Range 21, Max: 22, Min: 1



4.1.4 Knowledge of respondents on cervical screening

Table 8 shows that the method of cervical screening most known to the respondents was Pap smear known by 56.4% while only 24.4% know about the visual inspection

using acetic acid, about 41.3% and 42.2% wrongly chose blood test and scanning as a screening method for cervical cancer. Although respondents know cervical cancer can be prevented, Human papillomavirus vaccine was the most identified means of prevention and only about 43.0 % chose regular pap smear test as a means of prevention and 50.6% chose the "don't know" option.

Table 8 Knowledge of respondents on cervical screening (N=172)

Variable	Correct n (%)	Incorrect n (%)	Don't know n (%)	Total n (%)
Heard of pap smear test	97(56.4)	37(21.5)	38(22.1)	172(100)
Know Visual Inspection using acetic acid (VIA)	42(24.4)	74(43.0)	56(32.6)	172(100)
Cervical cancer is detected by pap smear test	86(50.0)	11(6.4)	75(43.6)	172(100)
Blood testing	25(14.5)	71(41.3)	76(44.2)	172(100)
Scanning	17(9.9)	73(42.4)	82(47.7)	172(100)
Detection by visual inspection using acetic acid	37(21.5)	11(6.4)	124(72.1)	172(100)
Cervical cancer cannot be detected	93(54.1)	4(2.3)	75(43.6)	172(100)
Menopause women should be screened	71(41.3)	26(15.1)	75(43.6)	172(100)
Any age should be screened	42(24.4)	84(48.8)	46(26.8)	172(100)
Age bracket 21-65 should be screened	120(69.8)	5(2.9)	47(26.4)	172(100)
Women vaccinated with HPV Vaccine should be screened	96(55.8)	7(4.1)	69(40.1)	172(100)
Cervical cancer can be prevented	134(77.9)	3(1.8)	35(20.3)	172(100)
Prevention using Human papillomavirus vaccine	98(57.0)	1(.6)	73(42.4)	172(100)
Prevention by regular pap	74(43.0)	11(6.4)	87(50.6)	172(100)

smear test				
Regular Vinegar test(VIA)	34(19.8)	9(5.2)	129(75.0)	172(100)
No washing of vagina prior to cervical screening	58(33.7)	32(18.6)	82(47.7)	172(100)
No using of vagina cream few days before screening	50(27.3)	46(26.8)	79(45.9)	172(100)
No sex before (10days) screening	47(27.3)	46(26.8)	79(45.9)	172(100)
No using of tampon prior to cervical screening	43(25.0)	37(21.5)	92(53.5)	172(100)

The levels of knowledge on cervical cancer screening was low among the respondents as about half 50.0% have low knowledge concerning cervical screening and only about 16.3% had high knowledge on this issue.

Table 9 showing levels of knowledge of respondents on cervical screening (n=172)

Variable	Knowledge score	Frequency	Percent
Low knowledge	0-6	86	50.0
Moderate knowledge	7-15	58	33.7
High knowledge	16-19	28	16.3

Figure 4 Distribution of levels of knowledge on cervical screening (n=172)

Mean: 7.3, Median: 6.5, Mode: 4, SD: 4.49, Range: 18, Minimum: 0, Max: 18

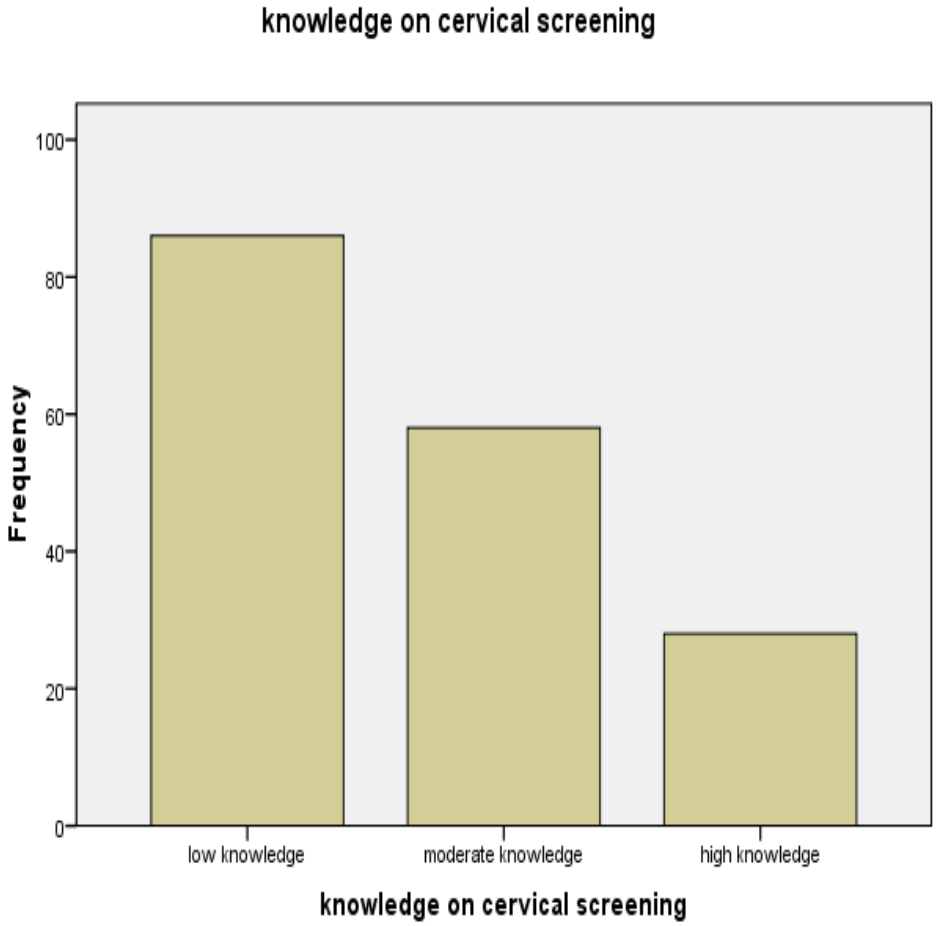


Table 10 shows the screening frequencies identified by respondents and it showed that most of the respondents had wrong clue as to the right screening frequencies, (50.0%) of the respondents wrongly chose once a year for cervical screening, only about 12.8% correctly mentioned once every three years which is the recommended frequency of screening by ACOG. (2012), for these respondents who are within the age bracket (21-65years), this is also about the percent of respondents who have had their cervical screening in this study and 25.0% did not know any screening frequency.

Table 10 showing cervical screening frequency mentioned by respondents (n=172)

Variable	Frequency	Percent
Once a year	86	50.0
Once every three years	22	12.8
Once every five years	13	7.5
Others	8	4.7
Don't know	43	25.0

*others gave their opinion with some saying every 6months and two respondents mentioned once in ten years.

The following table below shows the facilities identified by respondents where they can assess cervical screening and public hospital was the most mentioned by about 73.3% of respondents, private hospital also had a total response of 61.0% and 7.6% did not know where to get cervical screening.

Table 11 showing facilities where respondents can assess cervical screening

Variable	Frequency	Percent*
Sexually transmitted infection clinics(STIs)	88	51.2
Family doctor's office	51	29.7
Private clinic	105	61.0
Public hospital	126	73.3
University hospital	58	33.7
Don't know	13	7.6

Note *the percentages are taken to a total responses and not respondents as some respondents identified more than one facility for cervical screening.

Table 12 shows the varying cost of cervical screening by respondents (n=172)

Variable	Frequency	Percent
Cost of cervical screening		
It is free of charge	27	15.7
It is moderately expensive	80	46.5
It is very expensive	22	12.8
Don't know	43	25.0

4.1.5 Perceptions on cervical cancer and cervical screening

Perception section includes 11 questions three questions for cervical cancer and eight for cervical screening, the questions consist of both negative and positive statements. Perceptions included perceived benefits, perceived barriers, perceived susceptibility, perceived severity and self-efficacy questions**.**

Mean 40.3, Median: 40.0, Mode: 39.0 SD: 5.21 Range: 29, Minimum: 23, Maximum: 52

4.1.5.1 Perception on cervical cancer

Perceived severity of cervical cancer

Table 13 shows that a sum of (strongly agree and agree) gives more than half (53.5%) of the respondents who agreed that cervical cancer is a serious cause of death of women in their countries and 71.6% reported that having cervical cancer will change their whole life

Conversely about 19.3% expressed their disagreement with these statements as 15.1% and 4.1% of respondents stated that they strongly disagree with "cervical cancer being a serious cause of death of women in their country" and "having cervical cancer will change their whole life. Generally, the perception on severity of cervical cancer was positive.

Table 13 Respondents' perception on the severity of cervical cancer (n=172)

	Percentage				
Statement	**Strongly agree**	**Agree**	**Neutral**	**Disagree**	**Strongly disagree**
Cervical cancer is a serious cause of death of women in my country	22.1	31.4	35.5	10.5	0.5
Having cervical cancer will change my whole life	37.2	34.3	20.3	4.7	3.5

Perceived susceptibility to cervical cancer

Susceptibility question was asked to determine the respondents' perception of their susceptibility to cervical cancer in the future and about 84.4% of respondents said they are at risk of acquiring cervical cancer, (strongly agree to agree). Table 14 shows that 54.7% of the respondents agreed that any adult woman including them can acquire cervical cancer while 11.0% were neutral about it and only 1.7% strongly disagreed that they can acquire cervical cancer. Conclusively, a high number of the respondents see themselves as susceptible to acquiring cervical cancer.

Table 14 Participants perception on susceptibility to cervical cancer (n=172)

	Percentage				
Statement	**Strongly agree**	**Agree**	**Neutral**	**Disagree**	**Strongly disagree**
Any adult woman including you can acquire cervical cancer	29.7	54.7	11.0	2.9	1.7

4.1.5.2 Perception on cervical screening

Perceived barriers to cervical cancer screening

Table 15 shows that about 43.0% of the respondents agreed that they can afford cervical screening when they want it, 20.9% were neutral about this and only about

5.3% either strongly disagreed or disagreed with this statement. This shows a positive perception and hence cost of the screening was not seen as a barrier by respondents in this study.

Other questions on barrier to cervical screening as feeling "embarrassed to get screened" "cervical screening as painful" and "not knowing where to get cervical screening if they wanted were asked and as shown in table 15 that about 45.9% of the respondents were neutral about screening being painful, while about 19.2% either strongly disagreed and disagreed with the statement. About 68% of the respondents disagreed to not knowing where to get screening and "feeling embarrassed about screening" and 38.9 % strongly disagreed to these statements.

Table 15 Perceived barriers on cervical screening (n=172)

	Percentage				
Statement	**Strongly agree**	**Agree**	**Neutral**	**Disagree**	**Strongly disagree**
I can afford cervical screening if I want it	30.8	43.0	20.9	4.1	1.2
Cervical screening may be painful*	8.7	26.2	45.9	16.3	2.9
I don't feel comfortable to open my legs for cervical screening*	10.5	20.3	29.7	27.3	12.2
I don't know where to get cervical screening if I want it*	4.7	11.0	16.9	40.7	26.7

*Negative statements.

Perceived benefits of cervical screening

Table 16 shows that about 79.6% respondents reported that regular cervical screening helps to prevent cervical cancer, while 5.3% of respondents disagreed with this statement. With the statement "Cervical screening is unnecessary if I don't have symptom" 51.7% disagreed and 23.8% strongly disagreed to the statement while about 15.1% respondents where neutral about it, only 9.3% either strongly agreed or agreed to the statement. This gives a positive perception on the benefits of cervical screening by the respondents.

Table 16 Perceived benefits of cervical screening (n=172)

	Percentage				
Statement	**Strongly agree**	**Agree**	**Neutral**	**Disagree**	**Strongly disagree**
Regular cervical screening helps to prevent cervical cancer	34.3	45.3	14.5	5.3	0.6
I don't need cervical screening if I don't have symptoms*	2.3	7.0	15.1	51.7	23.9

*Negative statements

Table 17 shows that 30.8% and 35.5% of the respondents reported that they agree with the statements "I know that I will do whatever it takes to get regular cervical screening" and I am very confident in my ability to get regular cervical screening, 40.7% and 41.3% were neutral about the statements respectively while 2.9% and 2.9% strongly disagreed with the statements. Generally this gives a low self-efficacy on the part of the respondents.

Table 17 Self-efficacy on cervical screening (n=172)

	Percentage				
Statement	**Strongly agree**	**Agree**	**Neutral**	**Disagree**	**Strongly disagree**
I know that I will do whatever it takes to get regular cervical screening	18.6	30.8	40.7	7.0	2.9
I am very confident in my ability to get regular cervical screening	15.7	35.5	41.3	4.6	2.9

4.1.5.3. Cervical cancer practice among respondents.

Among the total number of respondents in this survey, 129 respondents are eligible to cervical screening while 43 respondents are not since they are below 21 years old. About twenty one persons have been screened for cervical cancer (12.2%), and four of who are below 21 years old and hence considered as not correct practice, for those with correct practice, about fifteen persons have done the screening within three years of this study which is considered a good practice, and two of the respondents have not been screened for more than three years prior to this study, this is considered as poor practice by this study, the table below shows the screening history of eligible to screen respondents in this survey.

Table 18 showing cervical screening history for eligible to screening respondents (n=129)

Variable	Frequency	Percent
Ever screened for cervical cancer (n=129)		
Yes	17	13.2
No	112	86.8
Last time of cervical screening for respondents who have been screened (n=17)		
Good practice	15	90.5
Poor practice	2	9.5

4.1.6 Reasons for not getting cervical screening by respondents.

Table 19 illustrates the various reasons why respondents did not obtain cervical screening and the most reason given (49.4%) was “being healthy” with about 28.5% response for “have not just decided”(12.8%) responses was for feeling shy others 10.5% gave comments such as “I am busy” and when I get married I will check it out”

Table 19 showing reasons for not obtaining cervical cancer screening mentioned by respondents (respondents chose more than one option)

Variable	Frequency	Percent*
It may be painful	8	4.7
I feel shy	22	12.8
I am healthy	85	49.4
My partner/ husband will not agree	0	0
I haven't just decided	49	28.5
It is expensive	9	5.2
I am not informed	14	8.1
Others	18	10.5

4.1.6.1 Cues to action

Table 20 shows that about 29.7% of the respondents got cues to get screened by health personnel; family members also played a role in cues to action while about 36.0% of the respondents did not get any form of advice from anyone.

Table 20 showing Cues to action (n=172)

Variable	Frequency	Percent
A friend	12	7.0
Mother /sister	47	27.3
Health personnel	51	29.7
No advice	62	36.0

4.1.6.2 Source of information of respondents

Table 21 shows the mass media was the most source of information used by the respondents accounting for about 50.6 % of the total responses, the internet with 47.1% while the health personnel as a source of information had a total response of 34.3%.

Table 21 Sources of information of respondents about cervical cancer (Respondents chose more than one option).

Variable	Frequency	Percent*
Mass media	87	50.6
Friends	64	37.2
Family member	51	29.7
Lectures	58	33.7
Internet	81	47.1
Health personnel	59	34.3

Note *the percentages are taken to a total responses and not respondents as some respondents had more than one source of information.

Table 22 Distribution of the respondents' level of perception towards cervical cancer and cervical screening (n=172)

Variable	Score	Frequency	Percent
Positive perception	40-55	87	50.6
Negative perception	0-39	85	49.4

4.2 Description of association between socio-demographics, behavioral profile, the knowledge, perception and practice among respondents on intention to get cervical screening.

Table 23 shows that sexually active respondents have an association with practice on cervical screening (p-value=0.000) with 21.6% of the respondents who have been screened were all sexually active, respondents who are older (38.5%) of the PhD also had the screening done (p-value=0.004). Amount spent monthly (p-value=0.000) also showed a significant association as 21.2% of the respondents who had the screening done spent above ten thousand baht monthly. No significant association was seen among university program enrolled, marital status and smoking status of the respondents.

Table 23 Association between socio- demographic, behavioral profile and practice on cervical screening

Variable	Not correct practice n (%)	Correct practice n(%)	χ^2	p-value=<0.05
Age (n=172)*F				
18-20	4(9.3)	39(90.7)	10.112	0.006
21-29	93(92.1)	8(7.9)		
30-40	19(67.9)	9(32.1)		
Nationality (n=172)*F				
Africans	5(71.4)	2(28.6)	11.427	0.044*
Americans	7(70.0)	3(30.0)		
Europeans	41(83.7)	8(16.3)		
South Asians	24(100.0)	0(0)		
South East Asians	43(86.0)	7(14.0)		
East Asians	31(96.9)	1(3.1)		
Amount spent monthly (n=172)*F				
≤10,000baht	73(100.0)	0(0)	17.638	0.000**
≥10,000baht	78 (86.9)	21(13.1)		
Level of study (n=172)				
Undergraduates	84(93.3)	6(6.7)		
Master degree	59(85.5)	10(14.5)	11.274	0.004*
PhD	8(61.5)	5(38.5)		
Marital status (n=172)*F				
Single	124(90.5)	13(9.5)	4.692	0.096
Married	11(78.6)	3(21.4)		
In a stable union	16(76.2)	5(23.8)		
University program				

enrolled (n=172)*F				
Sciences	28(96.6)	1(3.4)	2.857	0.240
Health sciences	24(82.8)	5(17.2)		
Social sciences	99(86.8)	15(13.2)		
Smoking status (n=172)*F				
Current smoker	19(82.6)	4(17.4)	0.856	0.652
Ever smoked	25(86.2)	4(13.8)		
Never smoked	107(89.2)	13(10.8)		
Sexual activity (n=172)*F				
No	75(100.0)	0(0)	18.495	0.000**
Yes	76(78.4)	21(21.6)		
Age at first sex (n=97)*F				
13-15 years	3(75.0)	1(25.0)	2.327	0.492
16-17 years	35(81.4)	8(18.6)		
18-21	24(70.6)	10(29.4)		
>21 years	14(87.5)	2(12.5)		
Number of sexual partners (n=97)*F				
One	22(91.7)	2(8.3)	3.776	0.135
Two	27(71.1)	11(28.9)		
Multiple	27(77.1)	8(22.9)		
Ever been pregnant (n=97)*F				
No	64(75.3)	21(24.7)	6.309	0.064
Yes	12(100.0)	0(0)		

*=significant at p-value< 0.05

**= significant at p-value<0.001

F* Fisher's exact test= places with cells count less than 5

Table 24 shows an association between respondents knowledge on cervical cancer and practice on cervical screening (p-value=0.014). Among respondents with moderate knowledge and this significance was seen using the Fisher's Exact test.

Table 24 Association between knowledge on cervical cancer and practice (n=172)

	Practice			
Knowledge level	Not correct practice n (%)	Correct practice n (%)	χ^2	p-value=0.05
High knowledge	27(90.0)	3(10.0)	8.105	0.014*
Moderate knowledge	68(81.0)	16(19.0)		
Low knowledge	56(96.6)	2(3.4)		

Although the table below shows no significant association between knowledge on cervical cancer screening and practice, a relationship is seen as respondents with high knowledge had the screening (17.9%) when compared to respondents with low knowledge on cervical cancer screening as only 9.3% had the screening done.

Table 25 Association between knowledge on cervical cancer screening and practice (n=172)

	Practice			
Knowledge level	Not screened n (%)	Screened n (%)	$\chi 2$	p-value=0.05
High knowledge	23(82.1)	5(17.9)	**1.647**	**0.439**
Moderate knowledge	50(86.2)	8(13.8)		
Low knowledge	78(90.7)	8(9.3)		

Table 26 shows a significant association between perception and practice as respondents with positive perception, about 20.7% of them had the cervical screening while those with negative perception only 3.5% of them had the screening done.

Table 26 Association between perception and practice (n=172)

	Practice			
Perception	Not screened n (%)	Screened n (%)	$\chi 2$	p-value
Positive	69(79.3)	18(20.7)	**12.985**	**0.001***
Negative	82(96.5)	3(3.5)		

Table 27 shows intention and no intention to get cervical screening of the respondents since this is a continuous process, all respondents intentions were assessed and it shows that about 60.5% of the respondents the have intention to get screened in the future while 39.5% did not have any intention.

Table 27 showing intention and no intention to screen by the respondents (n=172).

Variable	Frequency	Percent
Intention to get screening	104	60.5
No intention	68	39.5

Table 28 shows a significant association with having multiple sexual partners and intention to get cervical screening (p-value=0.049), age (p-value=0.041), Pregnancy status (P-Value=0.046) shows that females who have not been pregnant before have intentions to uptake screening than those who have been. All other variables showed no significant association, smoking status (p-value=0.369), level of study (p-value=0.974).

Table 28 Association between socio demographics, behavioral profile and intention to get cervical screening

Variable	Intention n (%)	No intention n (%)	$\chi 2$	p-value=<0.05
Age (n=172)				
18-20	19(44.2)	24(55.8)	6.395	0.041*
21-29	67(66.3)	34(33.7)		
30-40	18(64.3)	10(35.7)		
Nationality (n=172)*F				
Africans	5(71.4)	2(28.6)	3.455	0.639
Americans	8(80.0)	2(20.0)		
Europeans	30(61.2)	19(38.8)		
South Asians	17(70.8)	7(29.2)		
South East Asians	33(66.0)	17(34.0)		
East Asians	17(53.1)	15(46.9)		
Amount spent monthly (n=172)				
≤10,000baht	43(58.9)	30(41.1)	1.403	0.236
≥10,000baht	67(67.7)	32(32.3)		
Level of study (n=172)				
Undergraduates	56(62.2)	34(37.8)	0.370	0.831
Master degree	46(66.7)	23(33.3)		
PhD	8(61.5)	5(38.5)		
Marital status (n=172)				
Single	77(62.1)	47(37.9)	3.637	0.162
Married	6(54.5)	5(45.5)		
In a stable union	6(37.5)	10(62.5)		
University program enrolled (n=172)				

Sciences	16(55.2)	13(44.8)	4.075	0.130
Health sciences	23(79.3)	6(20.7)		
Social sciences	71(62.3)	43(37.7)		
Smoking status (n=172)				
Current smoker	13(56.5)	10(43.5)	0.780	0.677
Ever smoked	18(62.1)	11(37.9)		
Never smoked	79(65.8)	41(34.2)		
Sexual activity (n=172)				
No	39(52.0)	36(48.0)	2.966	0.085
Yes	50(44.8)	26(34.2)		
Age at first sex (n=97)*F				
13-15 years	3(75.0)	1(25.0)	4.218	0.227
16-17 years	24(55.8)	19(44.2)		
18-21	26(76.5)	8(23.5)		
>21 years	12(75.0)	4(25.0)		
Number of sexual partners (n=97)				
One	18(75.0)	6(25.0)	6.025	0.049*
Two	29(76.3)	9(23.7)		
Multiple	18(51.4)	17(48.6)		
Ever been pregnant (n=97)				
No	60(70.6)	25(29.4)	3.979	0.046*
Yes	5(41.7)	7(58.3)		

*=significant at p-value< 0.05

F* Fisher's exact test= places with cells count less than 5

Table 29 shows a significant association between knowledge on cervical cancer and intention to screen (p-value=0.001). Among respondents with high and moderate

knowledge, about 56.7% and 77.4% intend to get screened for cervical cancer in the future while 51.7% of respondents with low knowledge on cervical cancer have no intention to uptake cervical screening in the future.

Table 29 Association between knowledge on cervical cancer and intention to screen (n=172)

	Intention	No intention	χ^2	p-value
Knowledge level	n (%)	n(%)	13.444	0.001*
High knowledge	17(56.7)	13(43.3)		
Moderate knowledge	65(77.4)	19(22.6)		
Low knowledge	28(48.3)	30(51.7)		

Table 30 shows a significant association between knowledge on cervical cancer screening and intention to be screened (p-value=0.010), this association is seen among respondents with high knowledge only about 14.3% who do not intend to get cervical screening, as compared to 45.3% 0f the respondents with low knowledge who do not intend to get cervical screening in the future.

Table 30 Knowledge on cervical screening and intention to screen of respondents (n=172)

	Intention	No intention	χ^2	p-value
Knowledge level			9.252	0.010*
	n (%)	n (%)		
High knowledge	24(85.7)	4(14.3)		
Moderate knowledge	39(67.2)	19(32.8)		
Low knowledge	47(54.7)	39(45.3)		

Table 31 shows that there is a significant association between positive perception about cervical cancer and intention to screen by the respondents (p-value=0.001)

About 79.3% of respondents with positive perception intend to get screened in the future while about 51.8% of respondents with negative perception do not intend to get screened in the future.

Table 31 Association between respondents' perception on cervical cancer and

Cervical screening and intention to screen (n=172)

Perception	Intention	No intention	$\chi 2$	p-value
	n (%)	n (%)	18.010	0.000**
Positive	69(79.3)	18(20.7)		
Negative	41(48.2)	44(51.8)		

4.3 Multivariate analysis

This part uses multivariate analysis to examine the independent variables in a relationship with respondents' intention to get cervical screening in the future. All the independent variables which had a significant association with respondents' intention to get cervical screening in bivariate analysis such as age, number of sexual partners for sexually active respondents and their pregnancy status have been put into a logistic regression model after controlling all other variables, which help to identify the significant factors.

After controlling other independents variables, age (p=0.043), was found to be a significant predictor for intention to get cervical screening in future. The respondents' intention to get screened was associated with age (OR: 3.4., 95% CI: 1.04-2.0) This means that respondents who are older are likely to get cervical screening in the future 3.4 times more than the younger respondents. However, number of sexual partners (OR: 0.1., 95%CI: 0.05-0.6) and pregnancy history (OR: 0.1., 95%CI: 0.01-0.2) have negative relationship with intention to get cervical screening.

Table 32 Logistic regression analysis of respondents' intention to get cervical screening in the future (172)

Variable	B	Odds Ratio	95.0%C.1 for EXP(B)		P-value
			Lower	Upper	
Age	1.241	3.460	1.040	2.036	0.043*
Pregnancy history	-2.947	0.053	0.011	0.248	0.000**
Number of sexual partners	-1.671	0.188	0.054	0.656	0.009*

CHAPTER V

DISCUSSION, CONCLUSION AND RECOMMENDATION

5.1 Discussion

The main purpose of this study include to describe the socio-demographic characteristics and behavioral profile of the study population, to determine the levels of knowledge, perception and practice on cervical screening among female international students at Chulalongkorn University, as well as look for association between the socio-demographic characteristics, behavioral profile, knowledge, perception and practice. Also the intentions of the respondents who have not been screened for cervical cancer were assessed.

5.1.1. Socio-demographic information

In this study, the mean age was 24.4 years; respondents aged 18-20 years old who according to this study are not eligible for cervical screening were 25.0% but their intentions to uptake screening in the future was assessed.

The majority of respondents were single (79.7%) only 8.1% were married, this could be due to the fact that this study had more respondents in the undergraduate level of education who are usually not expected to be married in Asia when compared to a study by Ofori., Ebu. et al. (2014) in Ghana were 51% of the students were single and 49.0% were married. The study witnessed respondents from the ten international faculties of the university but were summed into bigger groups for statistical analysis and these groups are the social science program (n=76, 44.2%), health sciences n=29 (16.9%), Arts n=38 (22.1%), Engineering n=19 (11.0%) and Faculty of science witnessed a low number of respondents n=10 (5.8%), this was because the international program had more graduate female students in attendance and who at the time of this study were also busy with their thesis and therefore were not available at the faculty for questionnaires answering.

5.1.2 Behavioral profile of respondents

There were n=23 (13.4%) current smokers in this study which is higher than that reported by Hoque. (2010), with only 7 smokers, this could be as result that this study had females from different nationalities were females smoked as compared to a South African female population where usually most women may not smoke or may not be sincere about their smoking status. Sexually active respondents in this study were n=97 (56%). This is more than that reported in a study by Kalu. (2012) in

University of Witwatersrand Johannesburg where 47% of students in that study were sexually active but lower than another study in University of Transkei in Eastern Cape (Buga. 1998), with 87% of students were said to be sexually active. Among the sexually active, condom use which can help to reduce transmission of sexually transmitted infections (STIs) recorded a total response use of 41.9% in this study, this low use of condom was also reported by Nader. and Akane. (2012) among students in an international university in Japan only 42% who reported using condom mainly to prevent pregnancy and not necessarily for STIs prevention.

5.1.3 Knowledge of respondents on cervical cancer and cervical screening.

About 99.4% of the respondents have heard about cervical cancer, their major source of information was the mass media (50.6%) and the internet (47.1%), a study recorded that mass media (32.2%) was the main source of information among the population who had heard about cervical cancer (James. 2011). Knowledge on some of the risk factors among respondents in this study was moderate as HPV attracted correct response of 52.9% this was higher as compared to that reported by Chamaraja., Surekha. et al. (2013) where only 32.9% of their nurse population corrected knew the link between HPV and cervical cancer. In this study, having multiple sex partners (58.1%), infection with STIs (62.8%) while smoking was seen as a risk by only about 32.0% of the respondents, having more than three completed pregnancies (12.2%), this was not a surprise since majority of the population had no pregnancy history. Only about 22.7% of the students correctly understood that kidney problems were not associated as a symptom of cervical cancer, knowledge on the symptoms was poor among the respondents in this study.

In this study, about 56. 4% had heard about the pap smear and about 24.4% had heard about the Visual inspection using acetic acid, although there were some misunderstanding of what these test were used for since only about 50.0% of those who had heard about pap smear and 21.5% of those who had heard about VIA knew it was a screening method for detection of cervical cancer, this is higher than 44.9% reported by Owoeye. and Ibrahim. (2013) among students in a Nigerian university who have heard about pap smear, blood testing (41.3%) and scanning (42.4%) were wrongly understood as a screening method. More than half of respondents in this study (77.9%) agreed cervical cancer can be prevented; this is higher knowledge as compared to 49% reported by Kalu. (2012) in her study and 29% reported by another study conducted in Eastern Cape (Buga. 1998). Among the respondents who thought cervical cancer is preventable, 57.0% identified human papillomavirus

vaccine as a preventive measure; only 43.0% chose regular Pap smear as a means of prevention. This further show the low level of knowledge on cervical screening, emphasis should be made on the preventive nature of cervical cancer so that females can make use of the screening programs, HPV vaccine and even check certain lifestyles which put them at risk of cervical cancer. Respondents' knowledge on how to prepare themselves for cervical screening was assessed since these are young people and should know how to prepare for a screening and this study shows that only 29.1% corrected understood that vagina creams are not to be used few days prior to cervical screening. About half of the population (50.0%) wrongly understood cervical screening frequency to be once every year, the correct screening frequency of once in three years for female in this study was only identified by 12.8% which is just about the percentage of females in this study who have had cervical screening, this shows that cervical screening gives females more knowledge on the right screening frequency.

5.1.4 Perception

This study looked at the respondents perceptions towards cervical cancer and cervical screening. Overall perception was positive by more than half (51%) of the respondents. Studies have shown that women who perceived themselves as susceptible to cervical cancer were more likely to get screening (Nakalevu. 2009) In this study, More than half (84.4%) of the respondents perceived themselves as susceptible to acquiring cervical cancer in the future, with 79.6% who agreed that regular cervical screening is important. Perceived benefits in this study was seen to overcome the barrier as 75.5% of the respondents reported cervical screening was necessary even when they don't have symptoms, (39.5%) reported not embarrassed to get screened compared to 30.8% who said cervical screening is embarrassing, this positive perception towards the benefits of cervical screening was also reported by Nakalevu. (2009) where more than 80% of the women in the study felt that there were a lot of benefits from obtaining a cervical screening. In this study, 73.8% of the respondents did not report cost of screening as a barrier when compared to a quarter of Ghanaian population (Abotchie., Peter. et al. 2009) of students who reported cost as a barrier and this could be since some of the students in this study are from high income countries hence do not see cost as problem also most of their countries have screening programmes in place which provide screening services at moderate cost when compared to an African country where such facilities may not be well in place.

5.1.5 Practice on cervical screening

Among the respondents in this study only n=21, 12.2% had the cervical screening done at least once. This is slightly higher than (9.8%) as recorded among students in South Africa by Hoque. and Hoque. (2009) About n=151, 87.9% did not have the test done mainly because of reasons like not being ill (49.4%), haven't just decided (28.5%), feeling shy to screen (12.8%) while others mentioned being busy (10.5%).

Associations between socio-demographics and practice towards cervical cancer showed a significance with age (p-value=0.041),the older age group were more likely to have screened for cervical cancer, this may be since they have the knowledge that HPV infection persists as one gets older than the younger age group, this was also reported by Tshering. (2014) in a study conducted in Bhutan among University graduates with age >26 years old having more cervical screening and level of study showed a strong significance (p-value=0.004), this has been reported by studies (Jia., Shuang. et al. 2013), where higher educated population tend to be more knowledgeable about the benefits of cervical screening. Amount spent monthly also showed a significance (p-value=0.000) with respondents who have had their screening seen to be those who spend above 10000baht monthly, also being sexual active showed a significant association (p-value=0.000) with practice on cervical screening.

Association between the levels of knowledge on cervical cancer screening did not show any significance with practice, this is not a surprise since the general high knowledge level of respondent on cervical screening in this study was poor (16.3%) but surprisingly respondents with moderate knowledge on cervical cancer showed a high practice level than those with high knowledge about cervical cancer showing a significant association with (p-value=0.014). Perception also showed a strong significant association with practice (p-value=0.001), respondents with positive perception about cervical cancer and cervical screening (20.7%) had the screening done, an association was reported in a study conducted in Nigeria (Abiodun., Fatungase. et al. 2014) where positive perception of cervical cancer was a predictor to uptake of cervical screening.

5.1.6 Intention to uptake cervical screening

This study assed the intention to uptake screening in the future by all the respondents, this is because cervical screening is a continuous process in a female life, so the intention of continual screening by respondents who have had a

screening was also assessed . Significant associations were seen with knowledge on cervical cancer (p-value=0.001), knowledge on cervical screening (p-value=0.010), perception on cervical cancer and screening (p-value=0.000) and intention to uptake screening. Most socio-demographics did not show any significant association to intention to get screened in the future, association were seen, age group 21-29, showed more intention when compared to the other age groups being single was also related to having more intention to those who are married, students in the health sciences also showed more intention to be screened in the future than students in enrolled in other programs, this is as expected since they have more knowledge on the issue of cervical cancer from lectures. Having multiple sexual partners (p-value=0.049), pregnancy history (p-value=0.046) showed that females who have not been pregnant had more intention to get screened and respondents with multiple sexual partners showed less intention to get screened. In the multivariate analysis, age retained it significant association, this could be that older respondents have some kind of knowledge that as they grow older, cervical screening becomes more important, while number of sexual partners and pregnancy status had a negative significance as respondents with multiple partners tend not to have intentions to screen, this could be due to the insufficient knowledge on cervical screening.

5.2 Conclusion

Findings in this study shows insufficient knowledge on some of the risk factors of cervical cancer, detection and prevention measures. Respondents misunderstood scanning and blood testing as means of detecting cervical cancer, also the wrong notion that humanpaillomavirus vaccine was the major preventive measure as identified by most respondents in this study should be corrected. Risk factors such as smoking and having multiple sex partners were seen among respondents in this study. However, the respondents source of information was the internet and mass media, this could not have been taken seriously by the respondents as when been educated by a health personnel, the seriousness of health care personnel as a cue to action was also reported by Abotchie., Peter. et al. (2009) as students in the study were only willing to uptake a cervical screening if it was recommended by a health care personnel

Although the respondents belief of being susceptible to cervical cancer was high, and also they had positive perception towards cervical screening, this did not

influence the practice on screening, this could be due to lack of knowledge on cervical screening which was very low in this study, hence students feel they are healthy and do not need to uptake screening some respondents left comments supporting their view about not screening for cervical cancer that " they were not married yet and will check it out after marriage" but the positive perception translates into more than half (60.5%) having intention to get screened. Good health education will certainly improve students' knowledge on cervical cancer and screening.

The multivariate analysis showed that age and knowledge on cervical cancer, retained their significant association while level of study became significant with intention to screening in the future, this could be since the word cancer is involved hence female tend to want to prevent it as they reported that having cervical will change their whole life.

Finally the Health Belief Model prediction was seen in this study since perception of susceptibility and seriousness to a disease translated to positive perception on cervical cancer screening and the benefits of the screening overcame the barriers as seen that feeling shy which was the most mentioned barrier in this study recorded 39.5% who think the benefits cervical screening are more important as compared to 30.9% who feel shy to get screened.

5.3 Limitations

The research was conducted when some students were busy with their thesis and some faculties like political science were closed for summer break hence the researcher could not meet the targeted sample size.

This study also made use of e-mails for data collection and some respondents may have used books or the internet before answering the questions, there by not giving their right knowledge on some questions.

The limited number of respondents in this study could also be a limitation to statistical analysis

5.4 Recommendation

The university should give more sexual education to its students in form of brochure or such information can be put on the school website to help reduce the knowledge gap found among students especially those in non-health science related programs.

Although only about 33.7% of respondents agreed to assessing health care from the University hospital, the health care workers in the University hospital should serve as cues to actions for international students, hence this could give them more in-depth knowledge on issues about reproductive health.

The results of this study can also be useful for policy makers and educators in the females' various countries to help improve the knowledge gap and also encourage women participation in cervical screening.

5.4.1 Recommendation for further research.

a. Future study should be conducted in more than one international school, to get a whole picture of more international students and also this will increase the sample size giving more room for statistical analysis.

b. The next study should ask about history of cervical cancer in immediate family member (mother/sister), to balance the knowledge on cervical cancer found in this study, this because the respondents seemed to have more knowledge on the connection between cervical cancer and its history in family as a risk factor.

c. The next study should ask for how long oral contraceptives are used by the respondents, since long term use is a risk factor and this study didn't ask the period of use.

The next study should ask about the reasons why those who did not intend to get cervical screening in the future.

d. Future study should also ask for history of STIs among the respondents, this will also help to balance the link as respondents knew (62.8%) the link with STIs and cervical cancer.

e. If sensitive questions are included in the questionnaire, use of envelopes or better still online survey will be most appropriate since respondents did not feel comfortable answering such questions as it was face to face administered.

f. Future research should include questions about HPV DNA +Co-testing since this study did not include it.

g. The next study should ask for reasons for uptake of cervical screening to identify reasons why those females below 21 years old who had the screening done.

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APPENDIX

Appendix A Questionnaire

The following questionnaire is voluntary and entirely confidential. Ensure that your name doesn't appear on it. This questionnaire is for my Master Thesis from College of Public Health Sciences Chulalongkorn University and it is to help find out about what females know about cervical cancer and cervical screening and their actual experiences. Please fill out the form if you can. Thank you.

Knowledge Perception and Practice towards cervical cancer among female international students at Chulalongkorn University Bangkok, Thailand.

Instruction: Kindly fill in the blanks and tick (/) the selected answer(s) where appropriate.

Questionnaire No

Section A Demographic and behavioral Characteristics

1 What is your age?.....

2 What is your nationality?.....

3 How much do you spent monthly.

☐1Less than 5000baht.

☐2 (5000 -10000 baht.

☐3 (11000- 20000 baht.

☐4 Above 20000 baht.

4 What is your gender?

☐1Female

☐2 Male

5 What is your level of study?

☐1 Undergraduate

☐2 Master Degree

☐3PhD

6 What is your marital Status?

☐1Single

☐2 Married

☐ 3In a stable union

☐ 4 In uncommitted union

7 What University Program are you enrolled in?

☐1 Sciences.

☐2 Medicine.

☐ 3Political science.

☐4 Economics.

☐5 Arts.

☐6 Public health.

☐7 Engineering.

☐8 Architecture.

☐9 Accountancy and Commerce.

☐10 Communication Arts.

☐11Others please mention.....

8 What is your Smoking status?

☐1 Current smoker

☐2 Ever smoked

☐3 Never smoked

9a Have you been pregnant before? If no please go to section B.

☐ 1Yes

☐2.No

9b If yes, what was your age at first pregnancy?.....

9c How many pregnancies? Please specify.....

Section B Knowledge on cervical cancer

		Yes	No	Don't know
1	Do you know the cervix of the uterus?	☐	☐	☐
2	Have you ever heard of cervical cancer?	☐	☐	☐
3	Where did you hear about it? You may choose more than one option ☐ 1Friends ☐2Family ☐3Lectures ☐4.Internet ☐ 5.Mass media ☐6 Health care personnel ☐7 Others please mention.....			
4	A female increases her chances of getting cervical cancer by?	Yes	No	don't know
	Smoking?	☐	☐	☐
	Having multiple sex partners?	☐	☐	☐
	Human papillomavirus infection?	☐	☐	☐
	Long term use of oral contraceptives?	☐	☐	☐
	No condom use?	☐	☐	☐
	Early age at first sex?	☐	☐	☐
	Sexually transmitted infections?	☐	☐	☐
	Diet low in vegetables and fruits?	☐	☐	☐
	Poverty?	☐	☐	☐
	Human immunodeficiency virus Infection (HIV)?	☐	☐	☐
	Mother /Sister having cervical cancer?	☐	☐	☐
	More than 3 completed pregnancies?	☐	☐	☐

5	Cervical cancer occurrence in women.	Yes	No	Don' know
	Does cervical cancer occur in Rich women?	☐	☐	☐
	Does cervical cancer occur in Poor women?	☐	☐	☐
	Does cervical cancer occur in Sex worker?	☐	☐	☐
	Does cervical cancer occur in any woman?	☐	☐	☐
6	What are the early symptoms of cervical cancer?	Yes	No	Don't know
	Vaginal bleeding?	☐	☐	☐
	Bleeding after sex?	☐	☐	☐
	Pain during sex?	☐	☐	☐
	Kidney problems?	☐	☐	☐
	No symptoms?	☐	☐	☐
C	Knowledge on cervical cancer screening	Yes	No	Don't know
1	Do you know pap smear test?	☐	☐	☐
2	Do you know Visual inspection using acetic acid test?(VIA) Vinegar test	☐	☐	☐
3	How is cervical cancer detected?	Yes	No	Don't know
	Pap smear test?	☐	☐	☐
	Blood test?	☐	☐	☐
	Scanning?	☐	☐	☐
	Visual Inspection using Acetic acid (Vinegar test)?	☐	☐	☐
	Cannot be detected?	☐	☐	☐
4	Who should be screened for cervical cancer?	Yes	No	Don't know
	Menopause women?	☐	☐	☐
	Any age?	☐	☐	☐

	Age 21-65?	☐	☐	☐
	Should women vaccinated with vaccine to prevent cervical cancer be screened?	☐	☐	☐
5	Can cervical cancer be prevented?	☐	☐	☐
6	If yes to the above question, how can it be prevented?	Yes	No	Don't know
	Human papillomavirus vaccine?	☐	☐	☐
	Pap smear test?	☐	☐	☐
	Visual Inspection using acetic acid test (Vinegar test)?	☐	☐	☐
7	How frequent do you think cervical screening is? ☐1.Once a year ☐2.Once every three years ☐ 3Once every five years ☐ 4Others please mention..... ☐ 5Don't know			
8	How do you prepare yourself for cervical screening?			
	No washing of the vagina?	☐	☐	☐
	No using of vagina cream?	☐	☐	☐
	No sex?	☐	☐	☐
	No using of tampon?	☐	☐	☐
9	Where can you get cervical screening? You may choose more than one option. ☐1Sexually transmitted infection clinic(STIs Clinic) ☐2Family doctor's office ☐3Private Clinic ☐4 Public hospital ☐ 5University hospital ☐ 6 Others please mention.....			

	☐7 Don't know.	
10	How expensive do you think cervical screening is in your country? ☐1It is free of charge ☐ 2It is moderately expensive ☐ 3It is very expensive ☐ 4 Don't know	

Section D. Perception towards cervical cancer and cervical screening.

		Strongly agree	Agree	Neither agree nor disagree	Disagree	Strong disagr
1	Cervical cancer is a serious cause of death of women in my country	☐	☐	☐	☐	☐
2	I don't need to do cervical screening if I don't have symptoms	☐	☐	☐	☐	☐
3	Any adult woman including you can acquire cervical cancer	☐	☐	☐	☐	☐
4	Cervical screening helps to prevent cervical cancer	☐	☐	☐	☐	☐
5	I can afford cervical screening if I want to take it.	☐	☐	☐	☐	☐
6	Having cervical cancer will change my whole life	☐	☐	☐	☐	☐
7	Cervical screening may be painful	☐	☐	☐	☐	☐
8	I don't feel comfortable to open my legs for cervical screening	☐	☐	☐	☐	☐
9	I know that I will do whatever it takes to get cervical screening regularly	☐	☐	☐	☐	☐
10	I don't know where to get cervical screening if I want it	☐	☐	☐	☐	☐

11	I am very confident in my ability to get a cervical screening	☐	☐	☐	☐	☐

Section E. Practice towards cervical screening.

1a. Have you ever screened for cervical cancer?

☐1.Yes ☐2.No. If No please go to question 2

1b. If yes, how many times have you been screened

☐1.Once ☐2. More than once

1c.When was the last time you were screened for cervical cancer?

☐1Within 3years ☐2 More than 3year ago. Please go to question 5

2. If no, why? You may choose more than one option.

☐1.It may be painful ☐2 I feel shy ☐3.I am healthy

☐4 My partner/husband will not agree

☐5 It is expensive ☐6 I haven't just decided

☐7 I am not informed ☐8 Others please specify .....

3. Who of the following advised you to go for cervical screening?

☐1A friend ☐2. My mother/sister

☐3Healthpersonnel ☐4 No one ☐Others please specify.....

4. If cervical cancer screening is free will you screen?

☐1.Yes ☐2.No ☐3.Don't know

5a.Have you ever had sex?

☐1 Yes. ☐ 2No

5b. If yes, what was your age at first sex? Please mention.....

5c.How many sexual partners have you had?

☐1.one ☐2.two ☐3 more than two

5d. Do you use any protection/ family planning.

☐ 1Yes ☐ 2. No ☐3. Don't know

5e If yes in question 5d above which one? You may choose more than one option

☐ 1.Condom ☐2 Oral pills ☐ 3.injections

☐ 4.emergency pills ☐5 Implant. ☐ 6 Others please mention..... ☐7 Don't know

Appendix B Brochure

Brochure on cervical cancer and cervical screening for respondents

Master in Public Health, Chulalogkorn University, Bangkok, Thailand

What is cancer of the cervix?

The cervix is the lower part of the uterus (womb). The uterus has 2 parts: the upper part, called the body of the uterus where a fetus grows & the cervix, the lower part which connects the body of the uterus to the vagina, or birth canal.

Cancer of the cervix (cervical cancer) begins in the cells lining the cervix. These cells do not suddenly change into cancer. Instead, the normal cells of the cervix first slowly change into pre-cancer cells which mature into cancer. These changes may be called dysplasia. The change can take many years, but sometimes it happens faster. They can be found by the Pap test and treated to prevent cancer.

What are the risk factors of cervical cancer?

A risk factor is anything that affects a person's chance of getting a disease like cancer. Some, such as smoking, can be controlled while others such as one's age or race can't be changed. But having a risk factor, or even several, does not mean that one will definitely have the disease. Women without any risk factors rarely get cervical cancer. On the other hand, while these risk factors increase the odds of getting cervical cancer, many women with these risks do not get affected.

Considering these risk factors, it helps to focus on those that can be changed. Still, those that are unchangeable also serve to remind women about the importance of getting screened for cervical cancer.

Cervical cancer risk factors include

The most important risk factor for cervical cancer is infection with a virus known as HPV (human papilloma virus). HPV is a group of more than 150 related viruses that can infect cells on the surface of the skin, and the cells lining the genitals, anus, mouth, and throat. HPV is passed from one person to another by skin-to-skin contact such as during vaginal, anal, or oral sex. Although sex isn't the only route to spread HPV. A skin-to skin contact with the infected part of someone with HPV is all that would is required for infection.

The Pap test can identify cell changes that point to HPV infection. Other tests investigate the infections themselves by finding genes (DNA) from HPV in the cells. There is no cure for HPV, but the abnormal cell growth they cause can be treated.

Vaccines have been made that can prevent infection with some types of HPV. Even though HPV is an important risk factor for cervical cancer, most women with this infection do not get infected with cervical cancer. Doctors believe other factors must come into play for this cancer to occur. Not all of these factors are known, but some are listed below:

Smoking: Women who smoke are about twice as likely to get cervical cancer as those who don't. Smoking also makes the immune system less able to fight HPV infections.

Weakened immune: HIV (human immunodeficiency virus) is the virus that causes AIDS it is not the same as HPV. Women infected with HIV are more likely to get cancer of the cervix. Having HIV seems to make a woman's immune system less able to fight both HPV and early cancers.

Chlamydia infection: This is a common kind of bacteria that can infect women's sex organs. It is spread during sex. A woman may not know that she is infected unless she is tested for chlamydia when she gets her pelvic exam.

Diet: Women with diets low in fruits and vegetables may have an increased risk for cervical Cancer.

Being overweight: Overweight women are more likely to develop adenocarcinoma of the cervix.

Birth control pills: Long-term use of birth control pills increases the risk of cervical cancer.

Family history: Cervical cancer may run in some families. If your mother or sister has/had cervical cancer, your chances of having the disease are 2 to 3 times higher.

Can cancer of the cervix be prevented?

A well-proven way to prevent cancer of the cervix is to have testing (screening) to find pre-cancers before they can turn into cancer. The Pap test (Pap smear) and the HPV test are the tests used for this. If a pre-cancer is found and treated, it can stop cervical cancer before it really starts. Most cervical cancers are found in women who have not had Pap tests when they should.

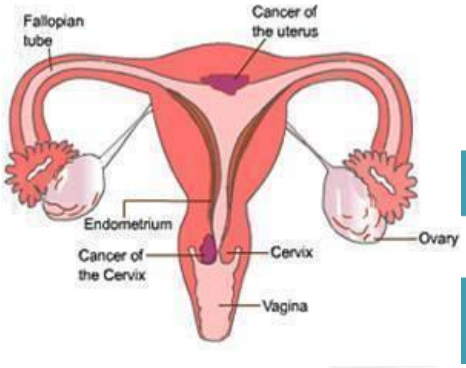
Here are some things you can do to make your Pap test more accurate:

· Try to have the test when you are not expecting or on your period.

· Do not douche for 2 days before the test.

· Do not have sex for 2 days before the test.

· Do not douche or use tampons, birth control foams, jellies, or other vaginal creams or medicines for 2 days before the test.



Appendix C Reliability Test Result

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.735	.724	11

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
CC is a serious cause of death of women in my country	31.5200	33.927	.521	.410	.698
I don’t need CC screening if I don’t have symptom	32.7600	39.690	.062	.830	.751
Any adult woman including you can acquire CC	30.4400	33.923	.533	.658	.697
CCScreening helps to prevent CC	31.1200	34.277	.434	.645	.709
I can afford CCS if I need it	31.6000	41.500	-.094	.217	.767
Having cervical cancer will change my whole life	30.7200	31.210	.590	.430	.682
Cervical screening may	31.7600	32.607	.511	.518	.696

be painful					
I don’t feel comfortable to open my legs for CC screening	31.8400	35.140	.293	.353	.731
I know that I will do whatever it takes to get cervical screening regularly	31.3600	33.073	.544	.667	.693
I don't know where to get cervical screening	32.1200	36.027	.238	.775	.738
I am confident in my ability to get a cervical screening	31.5600	33.340	.557	.658	.692

VITA

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