SCREENING FOR CARCINOMA OF CERVIX BY VISUAL INSPECTION WITH ACETIC ACID (VIA) METHOD AND PAP SMEAR AMONG WOMEN IN AMNAT CHAROEN PROVINCE, THAILAND

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ABSTRACT

Carcinoma of cervix is the most common cancer among Thai women which result in high mortality rate. At present there are several methods of screening for carcinoma of cervix. The objectives of this research was to study the rate of screening for carcinoma of cervix by Visual Inspection with aceticAcid (VIA) method and with Pap smear among women in Amnat Charoen Province, a rural area in North-eastern part of Thailand and to study the association of factors with attendance of study course of VIA among acceptance VIA method. The research was a descriptive study collecting data from record books of screening for carcinoma of cervix in Natae Sub-district, Mueang Amnat Charoen Province of 375 women during 2004-2007. Descriptive statistics applied to analyze the data are rate, percentage, mean and standard deviation. The study of association used Chi-square test to test the significance level of $\alpha = 0.05$ by using SPSS./PC^{+} computer program.

The result showed that during 2000-2003 the screening for carcinoma of cervix by Pap smear was done among women at risk at average cases the rate of 4 per 1,000 women at risk (4-12 cases annually). After the year 2004 screening for carcinoma of cervix increased significantly. The highest coverage in 2006 was 269 cases (VIA 180 cases and Pap smear 89 cases).Which resulted in the rate of screening for carcinoma of cervix of 136 cases per 1,000 women at risk. After the year 2006 the level of coverage decreased. Most of the screening was don at Natae Health Center 96.5 %.The result of screening for carcinoma of cervix showed abnormality of 0.7% and 1.% by VIA and Pap smear respectively. There was no significant factors associated with attendance of study course and screening by VIA method.

In conclusion, the acceptance of screening for carcinoma of cervix among rural Thai women was influenced by campaigning program for women who are at risk to convince them to come for the screening procedure. Communication between persons and motivation would also play on important role.

KEY WORDS : SCREENING / CARCINOMA OF CERVIX / PAP SMEAR / VIA

60 pp.

การตรวจคัดกรองมะเร็งปากมดลูก โดยวิธีมองด้วยตาเปล่าภายหลังป้ายด้วยน้ำส้มสายชู และวิธี PAP smear ของสตรีในจังหวัดอำนาจเจริญ
(SCREENING FOR CARCINOMA OF CERVIX BY VISUAL INSPECTION WITH ACETIC ACID (VIA) METHOD AND PAP SMEAR AMONG WOMEN IN AMNATCHAROEN PROVINCE)

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บทคัดย่อ

มะเร็งปากมดลูกเป็นมะเร็งที่พบบ่อยที่สุดในสตรีไทย และทำให้มีอัตราการตายสูง ปัจจุบันมีวิธีคัดกรองมะเร็งปากมดลูกได้หลายวิธี การศึกษานี้มีวัตถุประสงค์เพื่อศึกษา อัตราการตรวจคัดกรองมะเร็งปากมดลูก โดยวิธี มองด้วยตาเปล่าภายหลังป้ายด้วยน้ำส้มสายชู (Visual Inspection with acetic Acid ,VIA) เปรียบเทียบกับ วิธี Pap smear และศึกษาความสัมพันธ์ของปัจจัยต่างๆ กับการรับการอบรม เรื่องการตรวจคัดกรองมะเร็งปากมดลูกวิธี VIA ของสตรีไทยที่ มารับบริการตรวจด้วยวิธี VIA การศึกษาครั้งนี้เป็นการศึกษาเชิงพรรณนา เก็บข้อมูลโดยใช้แบบบันทึกข้อมูลการตรวจมะเร็งปากมดลูก ทั้งวิธี VIA และวิธี Pap smearจำนวน 375 ราย ในตำบลนาแต้ อำเภอเมืองอำนาจเจริญ จังหวัดอำนาจเจริญ ระหว่างปี พ.ศ. 2547-2550 โดยใช้สถิติวิเคราะห์ข้อมูลด้วยสถิติเชิงพรรณนาได้แก่ จำนวน อัตรา ร้อยละ ค่าเฉลี่ย ค่าเบี่ยงเบนมาตรฐาน การศึกษาความสัมพันธ์ ใช้สถิติ chi-square test, โดยใช้ $\alpha = 0.05$

ผลการศึกษาพบว่า ในปี พ.ศ. 2543-2546 สตรีกลุ่มเป้าหมายมารับการตรวจคัดกรองมะเร็งปากมดด้วยลูกวิธี Pap smear ประมาณ ปีละ 4 - 12 ราย หรือมีอัตราการตรวจเฉลี่ย 4 รายต่อ 1,000 ราย ของสตรีกลุ่มเป้าหมาย หลังจากปี 2547 เป็นต้นมา การตรวจคัดกรองมีความครอบคลุมมากขึ้น ซึ่งในปี 2549 สามารถตรวจได้สูงสุด คือ 269 ราย (โดยวิธี VIA และวิธี Pap smear จำนวน 180 และ 89 ราย ตามลำดับ) คิดเป็นอัตราการตรวจคัดกรองมะเร็งปากมดลูก เท่ากับ 136 รายต่อสตรีกลุ่มเป้าหมาย 1,000 ราย ภายหลังจากปี พ.ศ. 2549 อัตราการตรวจลดลง สตรีส่วนใหญ่จะมารับการตรวจที่สถานีอนามัย ร้อยละ 96.5 ผลการตรวจคัดกรองมะเร็งปากมดลูก พบความผิดปกติ ร้อยละ 0.7 และ 1.0 โดยวิธี VIA และวิธี Pap smear ตามลำดับ การศึกษาความสัมพันธ์ ของปัจจัยต่างๆ กับการรับการอบรมเรื่องการตรวจคัดกรองมะเร็งปากมดลูกวิธี VIA ในสตรีที่มารับบริการ พบว่า ไม่มีนัยสำคัญทางสถิติระหว่าง สตรีที่ได้รับการอบรม และไม่ได้รับการอบรม

สรุป การยอมรับ และการรับบริการตรวจคัดกรองมะเร็งปากมดลูก ของสตรีไทยในชนบทขึ้นอยู่กับการรณรงค์ให้สตรีมารับการตรวจ และการถ่ายทอด หรือสื่อสารระหว่างบุคคล หรือมีการชักจูงเพื่อกระตุ้นให้สตรีกลุ่มเสี่ยงเหล่านั้น ให้ตระหนักถึงความสำคัญ ของการดูแลตนเองตนเอง ในการมารับการตรวจคัดกรองมะเร็งปากมดลูก

60 หน้า

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CHAPTER I
INTRODUCTION

Significance of the problem

Cervical cancer is the third most common cancer in the world and the leading cause of cancer death among women in developing countries(1). Worldwide, an estimated 470,000 new cases occur and 233,000 women die annually from cervical cancer (2, 3). Eighty percent of these deaths occur where resources are the most limited (4). In developed countries it is the fifth most common cancer in all women under the age of 50 years. World standardized, age-adjusted incidence rates range from5 to 42 per 100,000(5).

Where organized comprehensive detection, treatment, and referral program never been implemented, the incidence and mortality of the cancer has decreased dramatically(6).Given the recognized obstacles to implementing cytology based screening and limited range of treatment method available in low-resource setting, other program options are needed. Such option must be feasible and sustainable and the optimal strategy for a particular setting will necessarily vary given local resources constrains: disease prevalence and capacity for training supervision, and infrastructure (7,8,9,10). To increase screening and treatment coverage, innovative approaches to cervical cancer prevention are being investigate. In some less-developed countries Pap smear-based screening is available, but usually only in urban area or in the private health sector that serves a small proportion of the female population. Screening programmers based on Pap smear require technical capabilities and systems for transportation, communication, follow-up, and training that are beyond the capacity of healthcare infrastructure in most less - eveloped countries(11-14). In the year 2000, a team from the USA(JHPIEGO Corporation) and Thailand, Royal Thai college of Obstetricians and Gynaecologists (RTCOG), in collabation with the Thai Ministry of Public Health (hereafter Ministry), initiated a multisite demonstration project in rural

Thailand, where screening coverage remains low. The project aimed to establish the safety, acceptability, and feasibility of efficiently implementing a VIA (Visual Inspection with Acetic Acid) and cryotherapy- based, single-visit approach to cervical cancer prevention in a rural, low-resource setting. Cryotherapy was selected because it has cure rate comparable to other common outpatient procedures (15,17) is easily learn; does not need electricity; requires few consumables; has a documented history of low complication rates; (16,18) and has an established performance record in the hand of non- physicians in developed countries(19). They described key result of the demonstration project in Thailand, with an alternative, field-based, resource-appropriate approach to cervical-cancer prevention. Amnat Charoen province is one of the sites of the described project. The cooperation began since 2004 and the case records of VIA and other screening program were on going kept. It is our objective to describe the performance of VIA screening at a District in Amnat Charoen Province.

Objectives of the study

1.The rate of screening for carcinoma of cervix by VIA method and Pap smear at Natae Sub- district, Mueang Amnat Charoen Province.

2. The results of screening for carcinoma of cervix by VIA and Pap smear at Natae Sub-district, Mueang Amnat Charoen Province.

3. The association between demographic factors and the attendance of study course of method of screening for carcinoma of cervix by VIA among acceptance of VIA at Natae Sub-district, Amnat Charoen Province.

Hypothesis of the study

1. The rate of screening for carcinoma of cervix by VIA and Pap Smear methods amongwomen in Amnat Charoen Province increase when new method was introduced.

2. There are associations between demographic factors and the attendance of study course with screening for carcinoma of cervix by VIA

Limitations of the study

This study was conducted with the comparison of the rate of the screening for carcinoma of cervix by VIA and Pap Smear methods and finding the positive cases among the women in Natae Sub-district, Mueang District , Amnat Charoen Province. The log book of case record is assumed to be complete. The result was only applied to performance in a rural area of Thailand.

Scope of the study

In this research, the study included the rate of the screening for carcinoma of cervix by VIA and Pap smear at Natae Sub-district, Mueang District , Amnat Charoen Province. VIA and Pap smear were included only those done at Natae Health Center and Amnat Charoen hospital. The migration and use of VIA or Pap smear at other places in Thailand were not included.

Definitions of term

Carcinoma of cervix means an invasive abnormal growth of the uterine cervix. It is one of sexual transmitted diseases caused by HPV (human papilloma virus) which change cervical cells from their normal condition to abnormal invasive growth.

Screening for carcinoma of cervix means the basic test of cervix for the target patients in order to find if it has abnormal cells leading to carcinoma of cervix. There are two methods; Pap smear for women age 35,40,45,50,55 and 60 years old and VIA method for women age 30-45 years old. The women have to screen for carcinoma of cervix at least once in 5 years by one or the other method.

VIA (Visual inspection with acetic acid) method means that the screening method that spreads acetic acid of 3-5 % into cervix and leaves it for 1 minute, then check the result by eyes. If the cervix cells are unusual, the white board inside the cervix will be seen.

Cryotherapy treatment means the method of using carbon dioxide at -60°C or -76°F to touch at the cervix about 3 minutes and follow by dissolving process for 5 minutes then completing by another 3-minute touch of carbondioxide.

Place of screening means the different places where screening for carcinoma of cervix by VIA and Pap smear methods. It included were performance the general hospital and health centers.

Benefits of the study

1. To improve or encourage women for screening for carcinoma of cervix by VIA and Pap smear in the rural area of Thailand.

2. To establish appropriate methods to encourage women for screening for carcinoma of cervix by VIA and Pap smear in the rural area of Thailand.

CHAPTER II
LITERATURE REVIEW

In this study, the researcher has studied about with screening for carcinoma of cervix among the women in Amnat Charoen Province. The focus will be on the amount of people having carcinoma cervix in the groups who had the screening each month, the of VIA and Pap smear methods, and study the association of screening for carcinoma cervix by VIA with the attending in Amnat Charoen Province. Related literatures and research papers were reviewed for the study as presented below in the following orders;

1. Carcinoma of cervix and incidence.
2. Screening for carcinoma of cervix.
   - Pap smear screening.
   - Thin prep screening
   - VIA screening
   - HPV method
   - Other methods
3. Knowledge of carcinoma of cervix and the relate theories
4. Research relevant to screening for carcinoma cervix.

1. Carcinoma of cervix and incidence.

Worldwide, cervical cancer is the fifth most deadly cancer in women. It affects about 1 per 123 women per year and kills about 9 per 100,000 per year (20). In the United States, it is only the 8 most common cancer of women. In 1998, about 12,800 women were diagnosed in the US and about 4,800 died (21). Among gynecological cancers it ranks behind endometrial cancer and ovarian cancer. The incidence and mortality in the US are about half those for the rest of the world, which is due in part to the success of screening with the Pap smear. In Great Britain, the incidence is 8.8/100,000 per year (2001), similar to the rest of Northern Europe, and mortality is 2.8/100,000 per year (2003) (Cancer Research UK Cervical cancer

statistics for the UK). With a 42% reduction from 1988-1997 the NHS implemented screening programme has been highly successful, screening the highest risk age group (25-49 years) every 3 years, and those ages 50-64 every 5 years.

Cervical cancers start in the cells on the surface of the cervix. There are two types of cells on the cervix's surface: squamous and columnar. The majority of cervical cancers are from squamous cells. The development of cervical cancer is very slow. It starts as a pre-cancerous condition called dysplasia. This pre-cancerous condition can be detected by a Pap smear and is 100% treatable. That is why it is so important for women to get regular Pap smears. Most women that are diagnosed with cervical cancer today have not had regular Pap smears or they have not followed up on abnormal results. Undetected, pre-cancerous changes can develop into cervical cancer and spread to the ladder, intestines, lungs, and liver. It can take years for pre-cancerous changes to turn nto cervical cancer. Patients with cervical cancer do not usually have problems until the cancer is advanced and has spread almost all cervical. Cancers are caused by HPV (human papilloma virus). HPV is a common virus that is spread through sexual intercourse. There are many different types of HPV, and many do not cause problems. However, only certain strains of HPV actually lead to cervical cancer. (Other strains may cause genital warts.)

Other risk factors for cervical cancer include:

- Having sex at an early age
- Multiple sexual partners
- Sexual partners who have multiple partners or who participate in high-risk sexual activities
- Women whose mothers took the drug DES (diethylstilbestrol) during pregnancy in the early 1970 to prevent miscarriage
- Long-term use of birth control pills (more than 5 years)
- Weakened immune system
- Infections with genital herpes or chronic chlamydia infections
- Poor economic status (may not be able to afford regular Pap smears)

Exams and Tests

Pre-cancerous changes of the cervix and cervical cancer can not be seen with the naked eye. Special tests and tools are needed to spot such conditions. Pap smears screen for pre-cancers and cancer, but do not offer the final diagnosis. If abnormal changes are found, the cervix is usually examined under magnification. This is called colposcopy. Pieces of tissue are surgically removed (biopsies) during this procedure and sent to a laboratory for examination. Other tests may include:

The public health criteria in prevention and control of carcinoma of cervix

World Health Organization (WHO) has set the aims to prevent and control the carcinoma of cervix in order to decrease the ratio of patients and mortality from carcinoma of cervix and improve the life quality of carcinoma of cervix patients.

The criteria in prevention and control of this disease are as follow;

1. The primary prevention is the way to prevent the carcinoma of cervix by increasing the immunity and avoiding the cancer factors such as no smoking, eating healthy food, exercising regularly, resting and sleeping adequately, keeping good mental with no stress and keeping physical cleanness.

2. The secondary prevention is the goal to decrease the ratio of patients and mortality by screening and searching for the invasive patients at the early stage. The good screening has to be feasible, acceptable by general people, cheap and high efficient like the utility of Pap smear to find carcinoma of cervix and the self breast-checking to find breast cancer which is very important prevention and it can ease the treatment to recover from the disease.

3. The tertiary prevention is the way to prevent the complicated cases and to rehabilitate the patients' health by giving knowledge and take good care of them regularly and take action immediately when the complicated cases occur.(22)

2. Screening for carcinoma of cervix

2.1 Pap smear method

A Pap smear, also known as a Pap test, is a procedure that collects cells from the cervix, (lower, narrow end of the uterus). Laboratory analysis of the sample

is used to detect any abnormalities that might suggest the presence of infection, inflammation or cervical cancer. The American Cancer Society (ACS) recommends that women have their first Pap smear three years after first having sexual relations, or at age 21 if they have not been sexually active. Other experts suggest these tests should begin no later than age 18(23). Dr. George Papanicolaou developed the Pap smear more than 60 years ago, and it is now a standard gynecological screening test. As a result, the rate of death from cervical cancer has dropped dramatically over the years. Women who have regular Pap smears are unlikely to develop invasive cervical cancer as the test is effective in detecting precancerous conditions. In addition, it allows for the disease to be detected in its early stages when the cervical cancer is highly treatable. A Pap smear is a simple, quick, and relatively painless screening test. Its specificity – which means its ability to avoid class abnormal, while very good, is not perfect. The sensitivity of a Pap smear detect every single a extremely good, is also not perfect. Thus, a few women develop cervical cancer despite having regular Pap screening. In the vast majority of cases, a Pap test does identify minor cellular abnormalities before they have had a chance to become when the condition is most easily treatable. The Pap smear is not intended to detect other form of cancer such as those of uterus. Cancer of these organs may be discovered during the course of the gynecologic exam, which usually is done Pap smear. National Cancer- Institute. Approximately 6 percent of these show abnormal results that require medical follow-up. The American Cancer Society (ACS) recommends that women have their first Pap smear three years after first having sexual relations, or at age 21 which ever occurs first. Other experts suggest these tests should begin no later than age 18. After the age of 21 years, the ACS recommends the following schedule**.**

Table 1: Recommended Schedule for that women after the age of 21 have their first Pap smear three years and, after first having sexual relations.

Age	Frequency
21 to 29	Once yearly using the regular Pap smear, or every two years using the liquid-based Pap smear
30 to 69	Every two or three years after three consecutive normal Pap smears
70 or older	Stop having Pap smears after three consecutive normal Pap smears and normal Pap smears over a 10-year period

Source: The American cancer Society 2008 : Joanne Poje Tomasulo, M.D., ACOG

Women with certain risk factors may need to be screened annually or on a more frequent schedule if recommended by their physician. These women may have the following lifestyle risk

factors:

- History of sexual activity as a teen, especially if there is a history of more than one sexual

partner.

- Multiple sex partners at present.

- Partner who began sexual activity at an early age or who had many previous sexual partners. Infection with the human papilloma virus (HPV), the virus that can cause genital warts. Although the types of HPV that cause genital warts (e.g., HPV types 6 and 11) are considered low risk for precancerous cervical changes, infection with certain high-risk

- Forms of the virus (e.g., HPV types 16 and 18) are a major cause of cervical cancer and are also associated with other genital cancers including vulva and anal.

- History of other sexually transmitted diseases (e.g., herpes, chlamydia).
- Tobacco use.

Other factors that may warrant an annual or more frequent Pap smear include:

- Family history of cervical cancer.
- Diagnosis of cervical cancer or previous precancerous Pap smear.
- Exposure to DES (diethylstilbestrol) before birth. DES is a potent synthetic estrogen that was used from 1940 to 1970.
- Weakened immune system due to chronic illness (e.g., HIV/AIDS), organ transplant, chemotherapy treatment or prolonged corticosteroid use. A Pap smear is typically conducted as part of a woman's pelvic examination during a regular gynecological visit. Pelvic exams include examination of the uterus, vagina, ovaries, fallopian tubes, bladder and rectum. Women who have had a total hysterectomy (surgical removal of the uterus and cervix) should ask a physician whether they need to continue to have Pap smears. In many cases, women who have had hysterectomies performed for non cancerous reasons – such as uterine fibroids – may be allowed to skip Pap smears as long as they continue to have regular pelvic examinations. However, in cases where the results indicate cervical malignancies, a Pap test will be used to screen for vaginal or vulva abnormalities that could indicate a recurrence. In these situations, a yearly Pap test will likely be recommended.

Before and during the Pap smear

Women should follow all of the preparatory steps recommended by their physician. In addition, they should:

- Avoid sexual intercourse for two days prior to the test.
- Avoid douching or using any vaginal medicines or spermicidal foams, creams or jellies for two days before the Pap smear. These may wash away or obscure abnormal cells.
- Try not to schedule a Pap smear during a menstrual period. The best time for a Pap smear is 10 to 20 days after the first day of the last menstrual period. Pap smears are usually performed as part of a woman's regular pelvic exam, which will also include an examination of the external genitals, uterus, ovaries, other reproductive

organs and the rectum. A Pap smear is performed in just a few minutes in a physician's office. The patient will usually be asked to remove her clothing and change into a hospital gown. The patient then lies down on an examination table with her knees bent and to the sides, and heels resting in supports called stirrups. A sheet covers he woman's legs and stomach. The physician (or physician assistant, nurse-midwife or nurse practitioner) gently inserts an instrument called a speculum into the woman's vagina to widen it and cleans the cervix with a cotton swab. The swab, a small brush or a tiny spatula are used to obtain a sample of cells from the cervix. The cells are then smeared onto a glass slide for examination in a laboratory. A newer approach to cell transfer has the physician obtain the cell sample before rinsing the instruments in a special liquid that preserves the cells for examination. The specimen is then filtered in a machine that reduces the amount of blood and mucus (thin prep). This can help make the sample easier to interpret A Pap smear. Is generally painless, although some women report minor discomfort during the procedure.

After the Pap smear

It can take up to several weeks to receive test results from a Pap smear. The cell sample will be sent to a laboratory for analysis by a cytotechnologist, who is trained to detect abnormal cells. The cytotechnologist works with a physician known as a pathologist (expert in cellular abnormalities) to examine the cells under a microscope. The pathologist then makes a diagnosis as to the status of the cells (e.g. normal, precancerous, cancerous). If the cell sample has been preserved using the newer liquid technique, a technician at the laboratory will be able to prepare a slide that is cleaner and easier to interpret than a traditional sample. In addition, new computer–automated readers are being used to analyze Pap smears. The technology uses a microscope that feeds an image to a computer. The image is then analyzed for the presence of abnormal cells. The potential findings of a Pap smear are classified according to the Bethesda System, and include:

- Normal. The test is negative, and no abnormal cells are found. No further treatment will be necessary until the next pelvic examination.
- Atypical squamous cells (ASC). Squamous cells are the thin, flat cells that grow on the cervix's surface. This diagnosis indicates the presence of slightly

abnormal cells that might be the result of infection, inflammation or a precancerous condition (cervical dysplasia). A second Pap smear or another test may be performed to help pinpoint the cause of the abnormal cells.

- Atypical glandular cells (AGC). Glandular cells produce mucus and grow in the center of the opening of the cervix and within the lining of the uterus. Further testing is necessary to determine whether the cells are cancerous.

- Endocervical adenocarcinoma in situ (AIS). Cells that are likely precancerous and are found in the glandular tissue. Patients with endocervical AIS may require additional diagnostic testing.

- Squamous intraepithelial lesion (SIL). Indicates that the cells seen on the Pap smear are consistent with cervical dysplasia, a precancerous condition. Diagnostic testing is likely after such a result. Low-grade squamous intraepithelial lesion indicates early changes that are considered to be mild abnormalities. High-grade squamous intraepithelial lesion indicates more pronounced changes in the size and shape of the abnormal cells, and a greater likelihood of cervical cancer. A negative result means that abnormal cells were not found. A positive result means that abnormal cells were found, but does not necessarily indicate cancer. The only way to confirm a diagnosis is to remove a sample of tissue (biopsy) and send it to a laboratory for analysis. In addition to cancer, abnormal cells may be the result of inflammation caused by infection with the human papillomavirus (HPV), herpes virus, yeast infection or other infections.

Potential risks with Pap smears

In some cases, Pap smears may produce a false positive (incorrectly indicating a problem) or false negative (failing to indicate a problem). False negative tests may occur up to 20 percent of the time, but false positives are extremely rare. False negatives can be caused by many factors, including:

- Inadequate collection of cells
- Small number of abnormal cells
- Inaccessible location of the lesion
- Small size of the lesion
- Abnormal cells mimicking benign cells

- Blood or inflammatory cells obscuring the abnormal cells

Although abnormal cells sometimes go undetected, they are often caught in future screenings, as cervical cancer takes years to develop.

Treatments that may follow Pap smears

In many cases, abnormal cells changes in the cervix resolve without any treatment. In other cases, some form of follow–up diagnosis or treatment may be necessary. These include:

- Colposcopy exam. An instrument resembling a microscope called a colposcopy may be used to examine the vagina and cervix. During the examination, a dilute vinegar solution may be applied to the cervix. Abnormal areas will turn white and under magnification blood vessels and cells acquire certain characteristics as they become abnormal. The physician may also perform a biopsy of these abnormal areas during this procedure.

- Imaging test. Immediately following a colposcopy exam, physicians may now use a new imaging device to determine whether there are other areas of the cervix that need to be biopsied. Approved by the Food and Drug Administration in March 2006, the LUMA Cervical Imaging System shines a light on the cervix and analyzes how the areas of the cervix respond to the light. Based on the response, the LUMA system assigns a score to small areas of the cervix and produces a color map of the surface. The score and color map can help physicians distinguish between healthy tissue and potentially cancerous tissue. With the score and color map, physicians can determine where to perform biopsies on the cervix. It should be noted that the LUMA system is meant to supplement – and not replace – the colposcopy exam. Physicians will perform the cervical biopsies only after reviewing the information from both the colposcopy and LUMA exams.

- Estrogen cream. Women who have atypical squamous cells (ASC) and are in or near menopause may be experiencing cell changes as a result of low hormone levels. These women may be given an estrogen cream to see if this reverses the abnormalities. Endocervical curettage. A procedure in which the mucous membrane of the cervical canal is scraped using a spoon–shaped instrument called a curette. The

sample that is obtained is sent to a laboratory for analysis. In the event of an abnormality, this analysis will determine if it has spread beyond the cervix.

2.2 Thin prep method

Thin Prep

The Thin Prep Pap Test is the first real improvement to the conventional Pap smear in 50 years. While the doctor still collects the cervical cells from you in the same way, it's the way the cells are delivered to the laboratory that makes the Thin Prep Pap Test so different. As a result, the lab can process a higher quality slide to read. Once your cells have been taken, the doctor collects them into a vial of liquid instead of smearing them onto a slide. Because the cells aren't "smeared," they don't clump together. This method also allows the doctor to preserve almost all of the sample, rather than just a portion. The sample vial is then sent to the laboratory, where an instrument separates the cells from unnecessary materials, such as blood and mucus. The remaining, important cells are then placed onto a slide in a clear and un crowded way. This approach makes the Thin Prep Pap Test slide easier for the lab to read.

The Pap test is a screening test that has been very successful at finding signs of cervical cancer, or cells that may turn into cancer cells in the future. To perform the test, your doctor gently scrapes cells from your uterine cervix and then sends the cells to a laboratory for review. The test allows laboratory professionals to spot early signs of cancer so that, if any are found, you can be treated before the disease actually develops.

The conventional Pap smear, developed by Dr. Papanicolaou in the 1940's, is a good test for detecting most cases of cervical cancer. In fact, in the last 50 years, it has helped reduce the number of cervical cancer deaths from 35,000 a year to less than 5,000 today. But, like any procedure that has been around for so long, there are certain aspects of the smear that today's technology can improve upon. The Thin Prep Pap Test is the only liquid-based cytology method approved by the U.S. FDA as "significantly more effective" than the conventional Pap smear for detection of cervical abnormalities. Studies involving hundreds of thousands of women have

consistently shown that the Thin Prep Pap- Test increases detection of precancerous cells over the conventional Pap smear. The Thin Prep Pap- Test is the most widely used method for cervical cancer screening in the United States. It was developed to address the limitations of the conventional Pap smear, and after rigorous clinical trials, it was approved in May 1996 by the U.S. Food and Drug Administration (FDA) as a replacement for the conventional Pap smear. The Thin Prep Pap Test is the only liquid-based cytology method approved by the FDA as "significantly more effective" than the conventional Pap smear for detection of cervical abnormalities. Most importantly, since FDA approval, more than 170 studies have been published, in peer-reviewed medical journals, demonstrating a wide range of clinical benefits of the Thin Prep Pap- Test including increased disease detection, reduction of equivocal diagnoses, improved specimen adequacy, cost effectiveness and the ability to perform additional tests out of the same vial, such as human papilloma virus (HPV), Chlamydia and Gonorrhea (CT/NG). The Thin Prep Pap Test is currently the only liquid-based cytology method approved by the FDA for HPV, CT/NG testing and improved detection of glandular lesions.

2.3 Visual inspection with Acetic acid (VIA)

Cervical cancer is the third most common cancer in the world and the leading cause of cancer death among women in developing countries Worldwide, estimated 470,000 new cases and occur and 233,000 women die annually from cervical cancer Eighty percent of these deaths occur where resources are the most limited. Not only finding in a large numbers but this disease also leads to death 30% of all carcinoma of cervix patients are in the severe stage which are difficult to cure them.

Where organized comprehensive detection, treatment and referral programs have been implemented, the incidence and mortality of this cancer has decreased dramatically, However, implementing programs characteristic of industrialized countries-including testing treatment, quality assurance, follow-up, and information system components on a wide spread basis- requires considerable resources and a high level of program coordination. This is impractical and unaffordable in low- resources settings. Yet, women deserve access to services that can safely, effectively, and affordably prevent cervical cancer.

Given the recognized obstacles to implementing cytology based screening and limited range of treatment method available in low-resource setting, other program options are needed. Such option must be feasible and sustainable and the optimal strategy for a particular setting will necessarily vary given local resources constrains: disease prevalence and capacity for training supervision, and infrastructure. Screening for carcinoma of cervix by VIA is the method that apply the cervix with 3-5% a vinegar and leave it for 1 minute then check the area with bare eyes which is called a Visual Inspection with Acetic Acid (VIA). If it is abnormal, the cells at the cervix will be thick and white and there is clearly rim. This method is used to check effectively for an abnormal of cervix cells before it turns to be a carcinoma. The patients will know the result of checking immediately. This method is easy, simple, no pain, cheap, quick and it is suitable for the health center that has limited budget and resource.

The significantly limited impact of cytology based cervical cancer screening programs in developing countries is now widely recognized. There are several reasons for these limits, ranging from the nature of participation of women in screening programs to the access and timely completion of treatment when necessary, Much of the discussion on how to improve the effectiveness of screening programs has been centered on analysis of the sensitivity and specificity of screening tests. As a result, new potential screening tests are being proposed, among them visual inspection with acetic acid, which is quite appealing for low resource settings. In this publication we review the available evidence which speaks to the accuracy of visual in section with acetic acid. The information and findings provided are directed to health professionals and managers of health services as an aid in the decision making process. As with any new technology, there must be a process of evaluation for this screening method. Ideally, evidence from randomized trials would provide the basis for policy changes. In such trials women are randomly assigned to be screened with either VIA or another method, and then both groups are followed up and compared. Currently, at least two studies of this nature are ongoing. In the meantime, evidence from cross-sectional studies seems to point out that VIA may be equally or more sensitive than cytology; this would signify a reduction in the rate of women with false negative results. The overarching question is how much and what level of evidence is necessary in order to incorporate this technology in to public health programs. It is important at this

preliminary stage to pay attention to the issues of methodology and implementation that merit consideration in the design of public health programs. Visual inspection with Acetic acid (VIA), also called cervicoscopy, consists of naked-eye visualization of the uterine cervix (without magnification) after the application of diluted acetic acid, to screen for cervical abnormalities. A solution of 3% to 5% acetic acid is used, and the cervix is illuminated with a light source, If low- power magnification is used, the technique is called VIA with magnification (VIAM). The purpose is to identify acetowhite areas, which may indicate tissue undergoing precancerous changes. Either ablation (destroying them) or excision (cutting them out) can then eliminate these acetowhite areas.

Early studies of visual inspection involved simply looking at the cervix (Unaided Visual Inspection, or UVI) to identify and treat pre-cancerous lesions as early as possible, a strategy referred to as downstaging. This was the main tool used before conventional cytology and, together with improved treatment and increased public and professional awareness of cervical cancer, contributed to the decline of cervical cancer deaths in northern Europe. The major drawback of this approach is that lesions are not detected early enough to prevent invasion, because a large proportion of the cancers

detected are relatively advanced, requiring complex medical therapy that is difficult to provide in many settings. By contrast, visual inspection after swabbing the cervix with acetic acid causes pre- cancerous cells to turn white, enabling much earlier detection, and treatment, of pre-cancerous lesions.

Table 2: The Benefits and costs of alternative strategies with VIA

Approach	Cost per Woman	Reduction in Mortality	Cost/1% Reduction In Mortality
VIA and Referral	$ 7	12.3 %	$ 0.57
VIA and Immediate Treatment	$ 11	34.9 %	$ 0.31
Pap smear	$ 25	13.5 %	$ 1.85
HPV	$ 78	22.0 %	$ 3.55
VIA and HPV	$ 83	26.2 %	$ 3.17

Source: Mandeiblatt JS, Lawrence WF, Gaffikin L,et al. The benefits and costs of alternative strategies for cervical cancer screening in less developed countries: a case study from Thailand 2002; 94: 1-15.

2.4 HPV method

There are tests for identifying the high-risk types of human papilloma virus (HPV) that are known to cause cervical cancer. The presence of these types is a strong predictor of high-grade aggressive abnormalities or cancer itself. Testing for HPV does not replace the Pap smear, but when used adjunctively with the Pap test this screening combination may help to more accurately detect cervical cell abnormalities than either test alone. In 2003, the FDA approved the Hybrid Capture 2 (HC2) HPV DNA test for use with the Pap test for cervical cancer screening in women over 30 years of age. The HPV DNA test can identify13 types of the high-risk HPV that are most frequently implicated in the development of cervical cancer. At this time, the test

is recommended as an adjunct to the Pap test but not as the sole method for primary screening.

2.5 Others screening test

Other screening tests are being investigated for use in combination with the Pap smear for improving accuracy. For example, combinations with human papilloma virus (HPV) DNA tests or cervicography may prove to be more effective for detecting cervical intraepithelial neoplasia I and II dysplasia (potentially invasive cells) than Pap smears alone. Cervicography uses a photograph of the cervical region (a cervigram), which is then highly magnified and examined. It may prove to be a useful companion to a Pap test, particularly in high-risk younger women. It is painless, easy to use, provides documentation of the area, and is highly sensitive to abnormal changes. (It also, however, picks up abnormalities that are not cancerous.)

Acid Test.

A diluted solution of acetic acid (similar to vinegar) is applied to the cervix. When viewed through a special green lens, this solution makes abnormal cells look white, where as normal cells appear pink. Skilled doctors may also be able to spot abnormal blood vessel patterns indicative of cancer areas on the cervix. This is an inexpensive and simple test.

Fluorescence Spectroscopy

Small noninvasive probes that can be swept across the surface of the cervix to detect cancer are showing promise as an effective screening tool for cervical cancer. One probe emits a laser light. The head of the probe catches the return signals from the woman's cervical cells and compares them with a computer library of cancer cells. In one comparison test, fluorescent spectroscopy was more accurate than the Pap smear but not as effective as other screening methods.

Other investigative tests

Experts are working on an antibody-based method for improving the identification of true cancerous cells in a cervical smear, which could significantly

reduce the need for expensive and distressing tests in women who do not actually have cancer. In addition, they are looking for biologic markers to improve diagnosis, such as specific proteins that indicate the presence of cancer cells (24, 25).

The principles of screening for carcinoma of cervix at an early stage

1. Avoid to used the high technology materials.

2. Use appropriate and feasible technology to reach the populations entirely in the country that lack of basic structures and resources.

3. The frequency of carcinoma of cervix has to high enough to screen effectively and worth. It can be successful if there are enough workers, having the support to get convenient to have early diagnosis and treatment and to follow up the patients.

3. Knowledge of carcinoma of cervix and the related theories

The real cause of carcinoma of cervix has not been known yet. The most recent finding is that carcinoma of cervix is cause by HPV infection. Even if there are many researches about it all over the world, they can find other the hypothesis or the factors concern to the disease which can be concluded as follow;

Sexual factors

These are the most important factors of carcinoma of cervix, especially when concerning to the following terms;

1. Sexual intercourse: The study has never found that virgin women who have never had intercourse before, like a nun in Christian for example, have got carcinoma of cervix. Thus, some people say that carcinoma of cervix is a “cancer of sexual intercourse”.

2. Age at first sexual intercourse: Women who have intercourse or get married when they are younger than 17 years old and have high frequency of intercourse are high risky to get carcinoma of cervix. Because their Epithelium cell of cervix have changed most.

3. Women who have first pregnancy when they are younger than 20 years old and women who have many children are also risky to get carcinoma of cervix as they often have the problems of tearing and fixing their cervix.

Women who have sexual intercourse with many men

Women who get married more than one time are risky to get carcinoma of cervix.

- The average age of women who get carcinoma of cervix tends to be younger. It can find more often in the women of less than 30 years old.

- Race factor, some group of women up to the races are more risky to get carcinoma of cervix than the other. For example, Thai, African and American-African women are more likely to get carcinoma of cervix than Caucasian, Arab and Jewish women .

- Economic and social status factor, women in poor economic and social status have got more chance to get carcinoma of cervix.

- Infection and main germs that cause the disease are Herpes Simplex Virus Type II (HSV-2) and human papilloma virus (HPV).The chemicals cause carcinoma of cervix are Diethyl Stilbestrol, Alkylating agents and the radiation.

- Smoking or getting smoke when other people smoke nearby.

- Insufficient of some nutrients such as carotene and vitamin C

Related concepts and theories

As the psychology relates to the study of human behaviors, so their takes part in making understanding and control the behaviors which relate to the personal health conditions. The models of health beliefs, the theory of logical action and the concepts of social supports are the theories and concepts of psychology that have been developed with the awareness of the subjective world and the strategy of value expectancy approach.(26) They can be described and explained for the women behavior for screening for carcinoma of cervix. The details of the theories are as follow;

Health Belief Model

The Health Belief Model (HBM) was first developed during 1950-1960 by Rosenstock, Hochbaum, Kegeles and Levental , the social psychologists who were working as applied researchers for the U.S. Public Health Services. The model was developed in response to the failure of a free tuberculosis (TB) health screening program. Its framework is based on the Lewinian field theory developed by Kurt Lewin. This theory presented that the individual has one's own life space which is composed of positively valued region or positive valence and the negatively valued region or negative valence included with neutral region or neutral valence. Thus, it assumes that a person will be pulled to the positively region and be pushed from the negatively valued region at the same time. When the concepts of Lewin have been adapted to apply for the health problems, they lead to the assumes that the diseases are the parts of negatively valued region. People are expected to pull themselves deeper into the negatively valued region which is worse. As the result, a person has performed the value expectancy actions of health prevention or promotion in order to push him/her back to the positive valence. That is to say the health behaviors are the parts of positive valence. Later Maiman and Becker played the important roles in developing this model. They said that Lewin's theory would go to the holistic composition and emphasized the changing occurred to a person and to the elements around him/her. So, this theory believes that a person takes health related action purposely. To clarify the main constructs of the Health Belief Model, the followings are the additional details by Rosenstock (27);

1. The perceived susceptibility is an individual's assessment of their risk of getting the condition which is an individual differences because some people may ignore to perceive that they are getting the condition or they may know a little about it even if they don't want t o believe that it would happen to themselves. The risk of getting the condition is different. On the other hand, the other people may perceive that they are high risky to get the condition which they conclude them to be the possibilities or the subjective risks to get the condition or to face the threatened condition of health.

2. The perceived severity is an individual's assessment of the seriousness of the condition, and its potential consequences which can be assessed by the different

levels of emotional motivation happened to the individual who thinks about that disease and by the varieties of the difficulties that he/she believes it causes by that health condition. One will consider the health problem as how serious it is. Will it lead him/her to death, to reduce her working system, both in mental and physical aspects, or will it lead him/her to be a disabled person.

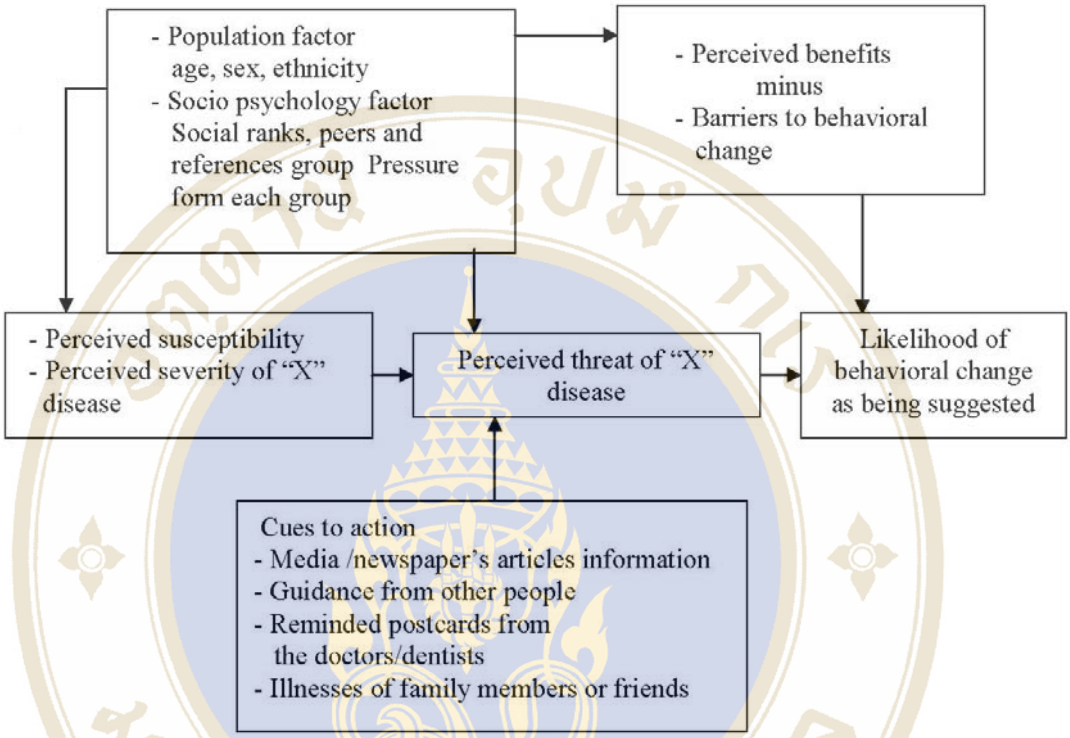
3. The perceived benefits of taking action and barriers to taking action are the individual's assessment of the positive consequences of adopting the behavior or the individual's assessment of the influences that facilitate or discourage adoption of the promoted behavior. The direction of the action will be influenced by the belief of the efficient alternative, the action that may lead to less threatening of health. So, the personal behavior is determined on their trust to choose to act in the most beneficial way for the mselves, in terms of risk avoiding and relieving of their serious health problem. The belief of the alternatives action and their efficiencies are subjective. Moreover, those beliefs and awareness reinfluenced by the personal background and the pressure group in their society. Whenever people believe that their action will relieve their health problems, the curing cost, illness and other negative points will be considered as well. Those barriers will discourage the beneficial action. The beneficial action will be acted when there is less barriers. Both actions can happened if the barriers and benefits are rather high, because the decision will be difficult to be made.

4. The cues to action, Rosenstock has said that there are other factors that will be added into the Health Belief Model which will make the model more complete. These factors will be a cue or trigger to stimulate a proper action. That means the level of merging between knowing the risks and seriousness will lead to the actions.

5. The sufficient intensity of the cues is necessary in order to encourage the expected behaviors. The intensity is needed differently depends on level and the chance of the seriously perceiving. If the chance of illness is less accepted, the intensity cues is highly demanded. In contrast, if the person knows the risks and seriousness, only little intensity cues will be enough to build up the behaviors.

Apart from the main factors that have been mentioned, the Health Believe Model also consider the factors s of the socio-psychology population and the structural factors s to find out if there are any effects to the perceive of the illness opportunity, the seriousness and the benefits of the prevention behaviors. Thus, the Health Believe

Model is developed on the period of relation between different factors as you can see in figure 1.



Figures 1: The Association among factors in Health Believe Model

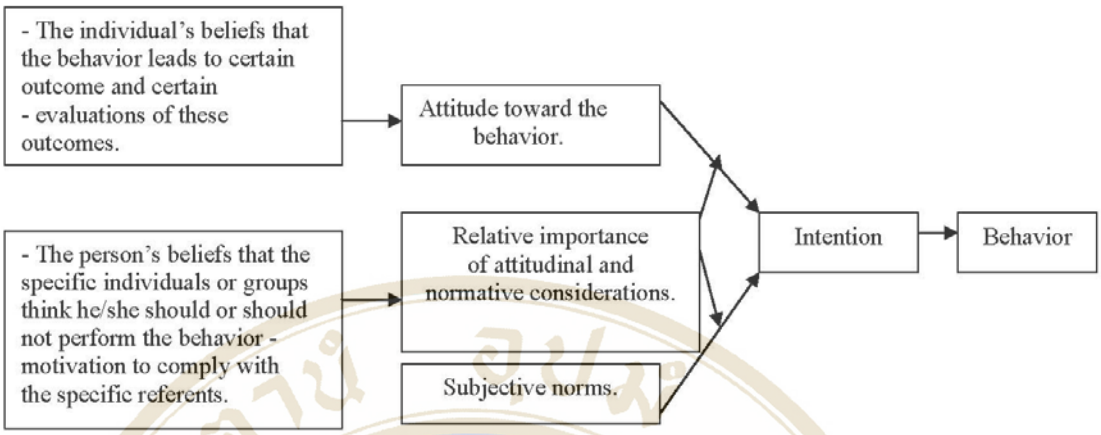
Source: Becker, Marshall H.& Maiman, Lois A."Sociobehavioral Determinants of Compliance with Health and Medical Care Recommendation." Medical Care,13 (January 1975):12

The theory of reasoned action.

The theory of reasoned action. is developed by Fishbein and Ajzen in 1975 and 1980 with the assumption that every behavior will be acted reasonably. This intended behavior is acted by considering the collected information before making any decision which is the volitional behavior. So this theory shows that the intention of people to behave some ways include healthy behavior could be the determination that leads to the action. That means the person is expected to act based on their intention. Nevertheless, the intention can be changed anytime.

According to the theory of reasoned action. of Ajzen, there are two basic elements; the first element is the personal values and the social influences. The personal values is the assessment of their own behaviors in both positive of negative ways which can be called attitude toward the behaviors. For example, the attitude of the dental check. The second element that determines the intention is the perceive of the pressure and the influence of the society. This is also known as the subjective norm, because it is how the person know if the majorities want or don't want them to behave. That means the person will intend to act something whenever it has been assessed as the positive behavior. They also aware of the important of the others. Both elements that as been mentioned are relatively important. Due to the behavioral intentions in some researches, it was found that the attitude to the behavior is more important than the subjective norm whereas the other researches probably had the opposite results and there might be some of the behavioral intentions have been determined by both of the elements equally.

According to the theory of reasoned action, the subjective is the outcome of the belief as well, but it is the individual belief that considers whether they should behave or not which is based on the other's opinions. This belief is called normative belief. It means that if the person believe in their cited persons who suggested that they should behave in some ways. That person will realize of the society pressure on persons. Nevertheless, persons still gets the pressure although the majority of persons cited people do not agree with that behavior. As well as the attitude to the behavior, the subjective is determined by an individual's normative beliefs that significant others think persons should or should not perform the behavior, coupled with motivation to comply with its referents. Significant others are individuals whose preferences about a person's behavior in this domain are important to persons. The result will be the subjective. The correlation of the factors in the theory of reasonable action shows on Table 4 as follows;



Figures 2: The Association among the factors of the theory of reasoned action.

Source: Weena Sirisuk. A Handbook of Health behavioral Research: Volume 1 The concepts: and theory of reasoned action. 1991: 103

The limitations of the theory of reasoned action.

1. It cannot accurately explain or predict the behavior or the action of a person who is
2. being extremely furious or the skillful behavior.
3. It cannot accurately explain the careless behavior.
4. Its empowerment of behavioral prediction is limited as the external variables are not taken in to account.

According to the theory of reasoned action, these are the variables that apply in this research as follow; the dependent variable is the intention behavior and the independent variable is the attitude toward the behaviors and subjective. It is complicated to measure these variables, therefore the concept of the advantages and disadvantages of the behavior and the concept of the social support are applied to measure the variables.

4.3 Social support

There are many reasons that influences the personal behavior include internal and external. The social support is another reason that encourage the behavior.

Gottlieb (28) has divided the levels of social supporters to 3 levels depend on the differences of supports up to the relations between the supporters and receivers as follow;

1. The macro level is the consideration from level of participation in the society in many aspects such as the relation she with social institute, the voluntary participation with different groups and the informal living life in the community.

2. The mezzo level is the relationship at eh specific level to the correspondent persons such as the closed friends.

3. The micro level is the closest level of relationship because it is believed that the importance of social support comes from the deeply emotional support that only some of the supporters such as wife, husband or lover are able to do so because there is the belief that the quality of relationship is more important than the quality.

That meanings of social supports, can conclude that the social supports are the interactions among closed people to express the affection, caring, trusting, positive relationship, providing help for money, materials, labors, time, information to each other which would be the motivation for the receivers to achieve their goals.

7. Research relevant of screening for carcinoma of cervix

Screening for carcinoma of cervix by Pap smear

In 2001, Kobilková J, Pazderník B, Dusková J.(29) studied incidence of cervical carcinoma in the Czech Republic. Investigation of the cause of the unfavorable level of cervical cancer through incidence and laboratory performance was also included. They found that, repeatedly modified screening program measures did not significantly lower the incidence. There has been an important shift in incidence toward teenagers and the elderly. Analysis of laboratory work showed that it is necessary to educate smear takers/clinicians and ensure their cooperation with cytology laboratories. The various types of screening programs did not lower the cervical carcinoma incidence.

In 2004, Charoenchai Jiamjanya (30) studied the carcinoma of cervix screening by Pap smear among married women aged 15-60 years old and unmarried women aged 30-65 years old in Khookhot Sub-district, Lamlookka, Pathumthani

Province. Among 1,012 women, it was found that there were 0.4 % (4 cases) of class III which was 3 0.3% (3cases) of class V

In 2006, GO Udigwe,Nnamdi Azikiwe at University Teaching Hospital, Nnewi, Anambra state, Nigeria (31) studied knowledge, attitude and practice of cervical cancer screening by Pap smear among female nurses in Nnewi, South Eastern Nigeria the result showed that 144 questionnaires were correctly completed and returned. 122 (87%) were aware of the existence of screening services. Although 9.3% had lost relations to cancer of the cervix, only 5.7% had ever undergone a pap smear. While 37% had no reason for not screening, 15% were afraid of the possible out come and 25% felt that they were not likely candidates for cancer of the cervix.

Screening for carcinoma of cervix by VIA

In 1999, Gaffikin L, Blumenthal P D, McGrath J, and Chirenje Z M. at University of Zimbabwe. Department of Obstetrics and gynecology (32) studied the qualities in primary-care setting by Visual inspection with acetic acid for cervical cancer screening. Cervical cancer screening programs based on Pap smears require technical capabilities an alternate strategy, visual inspection of the cervix with acetic acid (VIA), in Chitungwiza and the greater Harare area, Zimbabwe, in 1995-97. VIA assessment was adequately completed for 10,913 women while adequate Pap- smears were obtained from10,492 women. VIA was more sensitive but less specific than cytology. In phase I, 20.2% of women tested positive by VIA and 14.6% were I Pap smear- positive. In phase II, these rates were39.8% and 12.6%, respectively. Sensitivity was76.7% for VIA and 44.3% for cervical cytology. Specificity was 64.1% for VIA and 90.6% for cytology.

In 2000, Gaffikin L, Blumenthal P D, Emerson M, Limpaphayom K.(33) studied carcinoma of cervix screening by VIA in Roi-et Province in Thailand There were 5,999 women having the screening services with in 6 months. There were abnormal was 13% of all the women who had screening services, were treated with cryotherapy by the nurses. The 756 cases who had cryotherapy treatments came back to have the reinspection in one year time. It was found that 93% of all the cases had

the negative. After they all were inspected with colposcope by the gynecologists, it was found that 27.3% of them only 3 cases having CIN 2 and 3.

In 2001, Belinson J L, et al.(34) studied cervical cancer screening by visual inspection after acetic acid (VIA) in rural China. VIA was done in women age 35-45 years old. They found that forty-three women had biopsy-proven CIN II, 31 had CIN III, and12 had invasive cancer. In two women only the endocervix was positive (one with CIN II and one with CIN III). Visual inspection yielded normal results in 1445 women (72%), low-grade intraepithelial neoplasia in 525 (26%), high-grade in 21 (1%), and cancer in six (0.3%). With abnormal visual inspection defined as low- grade intraepithelial neoplasia or worse, the sensitivity for detecting biopsy proven CIN II or worse was 71%.

In 2004, Surattaya Y, (35) studied evaluated cervical cancer with VIA technique and cryotherapy. There were 1,294 women had VIA positive at 111 women (8.6%), most found in age between 30-45 years old. Cryotherapy at 108 women, after checking by appointment for the first time at 77 women (71.3%), the second time at 53 women (49.1%), the last VIA testing were negative (100%)

In 2006, Abdel-Hady E-S, et al.(36) studied screening for cervical carcinoma using visual inspection with acetic acid in the Dakahlia, Mansoura, Egypt. They found that among the 5,000 women who were screened using VIA, 409 were referred for colposcopy. Cervical intraepithelial neoplasia (CIN) was diagnosed in151 (60%) of the 253 women with positive screening results and in 4 of 156 women with negative screening results. There were 39 women with high- grade and 116 with low-grade CIN. The sensitivity and negative predictive value of the VIA screening test was 97 %. Its positive predictive value was 60% for all grads of CIN and 90% for high- grad CIN. Conclusion: Visual inspection with acetic acid, although associated with a relatively high rate of false-positive results, is a valuable test for the screening of cervical carcinoma.

CHAPTER III
MATERIALS AND METHODS

Research Design

This research was a retrospective survey research in which data were collected from record books of screening for carcinoma of cervix during 2000–2007. Methods of Visual Inspection with Acetic Acid (VIA) and Papanicolaou smear (Pap smear) were recorded.

Populations and samples

The populations of this study were females aged 15-70 years old who lived at Natae Sub-district, Mueang District, Amnat Charoen Province. Among there 411 women had been screened for carcinoma of cervix during 2000 – 2007 either by VIA method or by Pap smear method.

Variable and Measurements

Variables

1. Independent variable of this study was the screening for carcinoma of cervix among women in Amnat Charoen Province classified by:
   1.1 VIA method.
   1.2 Pap smear method.
2. Dependent variables of this study were as follow;
   2.1 The rate of abnormal of case findings screening for carcinoma of cervix.
   2.2 Time of screening for carcinoma of cervix
   2.3 Place of screening for carcinoma of cervix

Research instruments

The instrument used in this study was a log book containing name and methods of screening for carcinoma of cervix among acceptances during 2000 – 2007 at Natae Sub-district, Mueang District, Amnat Charoen Province. The record consisted of 4 parts as follow;

Part 1 : Screening for carcinoma of cervix.

1.1 Time screening for carcinoma of cervix by methods**.**

1.2 Place of screening for carcinoma of cervix

1.3 Results of screening for carcinoma of cervix by methods.

Part 2 : Name and details of women who received the screening for carcinoma of cervix by VIA method and whether they had attended the educational class.

Data collection procedure

The steps of data collection were as follow;

1.Submitting the letter of request from Dean of Faculty of Graduate studies, Mahidol University to Directors of the Amnat Charoen Public Health officer to ask for permission for data collection and describe the purpose of the study.

2.Submitting the protocol to the Ethical committee of Ramathibodi Hospital for approved of research.

3. Contacting the chief of Natae Sub-district, Health Center to describe the purpose of the study and asked for permission.

4. Data was there collected from the records and was checked for completeness.

Data Analysis

1. Data Preparation

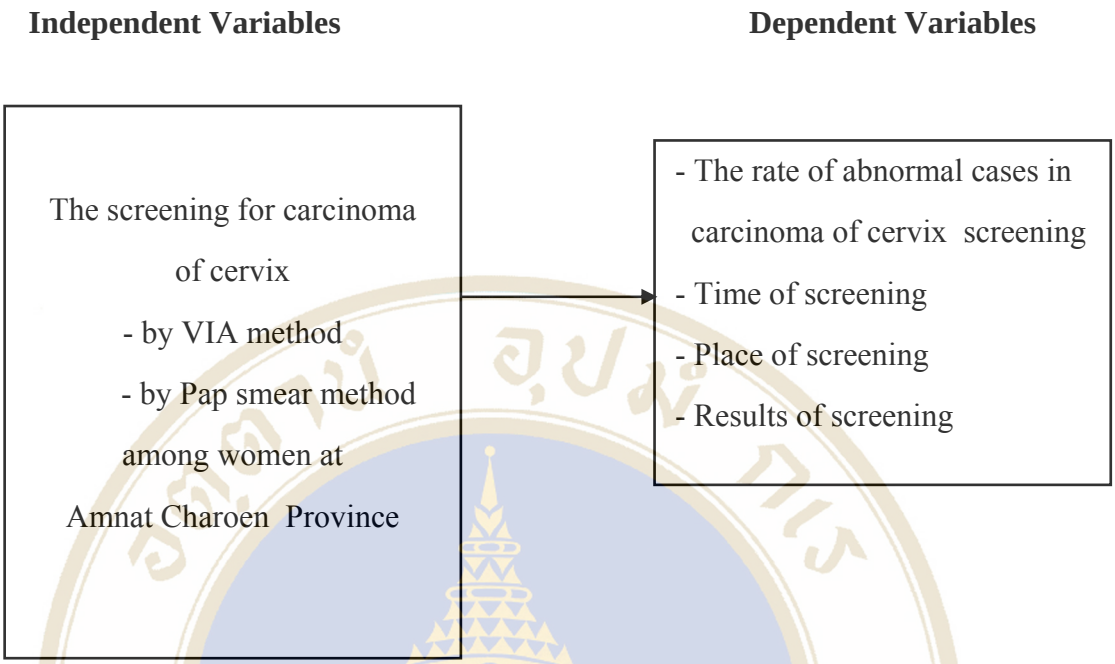
1.1 Correcting and verifying data then analyzed with Windows SPSS./PC $^{+}$ (Statistical Package for the Social Sciences./Personal Computer Plus) version 10.

2. Statistics.

The statistics used for data analysis were as follow;

2.1 Used descriptive statistics: frequency, percentages, means and standard deviation to describe the rate of screening for carcinoma of cervix .

2.2 Analysis statistics: Chi-square test for the association between attending education class and the acceptance of screening for carcinoma of cervix by VIA method.



Figures 3: Concept Frameworks in the Research

CHAPTER IV
RESULTS

The aims of this research was to study the rate of screening for carcinoma of cervix by Visual Inspection with acetic Acid (VIA) method and with Pap smear among rural Thai women in Amnat Charoen Province, and to study the association of factors with attendance of study course among acceptances of VIA. The research was a descriptive study collecting data from record books of screening for carcinoma of cervix in Natae Sub-district, Mueang District, Amnat Charoen Province during 2000-2007. The populations of this study were 375 females who had screened for carcinoma of cervix. Descriptive statistics applied to analyze the data are frequency, rate, percent, mean and Standard deviation. Chi-square test is used to test the association of factors at the significant level of $\alpha = 0.05$ by using SPSS/PC$^+$ version 10. The results were presented according to the objective.

Objective I Rate of screening for carcinoma of cervix by methods.
Objective II Results of screening for carcinoma of cervix by methods.
Objective III Association between demographic factors and the attendance of study course of method of screening for carcinoma of cervix by VIA among acceptance of VIA.

Objective I: The rate of screening for carcinoma of cervix at Natae Sub-district, Mueang District, Amnat Charoen Province (Table 3).

Before the introduced of VIA method to the screening for carcinoma of cervix in 2004, Pap smear was done in Natae Sub-district, Mueang Amnat Charoen Province only for 4-12 cases per year during 2000-2003. During the month of April – September the rate of screening for carcinoma of cervix was the highest (32 cases). (Table 3) When VIA was introduced in 2004, the rate of screening increased significantly. In 2006, the screening for carcinoma of cervix showed the highest coverage of 269 cases totally (180 cases of VIA and 89 cases of Pap smear) (Table 4).

The campaign to encourage women to have screening for carcinoma of cervix whether by Pap smear or VIA started in 2004. In 2007, there was a slow down in the campaign for screening for carcinoma of cervix, the number of cases of screening decrease in both methods. In the year 2004 total of the screening by Pap smear was done for 2 case compared to the year 2005. The comparable of number of women who had been screened for carcinoma of cervix by Pap smear during the year 2000-2003 showed that their were not stable to compared the index (11) and increased in the year 2002.(Table 3) After the year 2003 VIA was introduced the number of screening was increased compared to index (2) significantly. (Table 4)

Table 3 Numbers and percentage of women who had been screened for carcinoma of cervix by Papanicolaou smear during 2000 – 2003

Year / Months	2000	2001	2002	2003	Total
	No.(%)	No.(%)	No.(%)	No.(%)	No.(%)
Jan.- Mar.	-	2(22.2)	1(8.3)	-	3(8.3)
Apr.-Jun.	7(63.6)	5(55.5)	5(41.6)	4(100.0)	21(58.3)
Jul.-Sep.	4(36.3)	2(22.2)	5(41.6)	-	11(30.5)
Oct.-Dec.	-	-	1(8.3)	-	1(2.7)
Total	11(100.0)	9(100.0)	12(100.0)	4(100.0)	36(100.0)

Table 4 Numbers and percentage of screening for carcinoma of cervix by Visual Inspection with acetic Acid (VIA) and Papanicolaou smear (Pap smear)

Year / Months	Pap					VIA				
	2004	2005	2006	2007	Total	2004	2005	2006	2007	Total
	No.(%)	No.(%)	No.(%)	No.(%)	No.(%)	No.(%)	No.(%)	No.(%)	No.(%)	No.(%)
Jan.-Mar.	-	-	-	-	-	-	-	2(1.1)	-	2(0.7)
Apr.-Jun.	-	-	7(7.9)	-	7(7.2)	1(4.0)	-	100(55.5)	67(97.1)	168(60.4)
Jul.-Sep.	-	1(50)	81(91.0)	4.(100.0)	86(88.7)	-	1(25.0)	77(42.8)	2(2.9)	80(28.7)
Oct.-Dec.	2(100.0)	1(50)	1(1.1)	-	4(4.1)	24(96.0)	3(75.0)	1(0.6)	-	28(10.0)
Total	2(100.0)	2(100.0)	89(100.0)	4(100.0)	97(100.0)	25(100.0)	4(100.0)	180(100.0)	69(100.0)	278(100.0)

When the rate of screening for carcinoma of cervix in Natae Sub - district, Mueang District, Amnat Charoen Province was estimated, the population were the women at risk of 15-70 years old. In the year 2000-2003, rate of screening for carcinoma of cervix were not stable at 2-6 per 1,000 women at risk. But in the year 2004, and later, the rate of screening for carcinoma of cervix increased to 136 per 1,000 women at risk in the year 2006.After the year 2006, the rate of screening for carcinoma of cervix decreased significantly. (Table 5)

Table 5 Rate of screening for carcinoma of cervix by Visual Inspection with acetic Acid (VIA) and Papanicolaou smear (Pap smear) in Natae Sub-District, Amnat Charoen Province during 2000 – 2007

Year	2000	2001	2002	2003	2004	2005	2006	2007
1) Estimated number of females at 15-70 Years old never screened for carcinoma of cervix	1,967	1,984	1,982	1,913	1,981	1,948	1,983	1,778
2) Number of females at 15-70 years old screened for carcinoma of cervix	11	9	12	4	27	6	269	73
3) Rate of screening (Per 1,000 women at 15-70 years old)	5.5	4.5	6.0	2.0	13.6	3.0	136.0	41.0

Number of women at risk with screening by Papanicolaou smear (Pap smear) and Visual Inspection with acetic Acid (VIA) in 2000-2007 showed that the number of females of the both methods were not stable and the number of females at 30-45 years old more than three time of females at 35,40,45,50,55 and 60 years old. (Table 6)

Table 6 Number of women at risk with screening by Papanicolaou smear (Pap smear) and Visual Inspection with acetic Acid (VIA) in Natae Sub-district, Amnat Charoen Province during 2000-2007

Year	2000	2001	2002	2003	2004	2005	2006	2007
1) Estimated number of females at 15-70 Years old never screened for carcinoma of cervix	1,967	1,984	1,982	1,913	1,981	1,948	1,983	1,778
2) Number of females at Number of females at 35,40,45,50,55 and 60 years old	192	161	181	184	175	202	195	187
3) Number of female at 30-45 years old	576	483	543	552	515	610	575	560

During the year 2000-2003, rate of screening for carcinoma of cervix were not stable at 2-6 per 1,000 women at risk was compared to the index (5.5). But in the year 2004, and later, the rate of screening for carcinoma of cervix was decreased compared to the index (5.5) and increased to 44.8 per 1,000 in the year 2006. After the year 2006, the rate of screening for carcinoma of cervix decreased significantly. (Table 7)

Table 7 Number of screening for carcinoma of cervix by Papanicolaou smear (Pap smear) in Natae Sub-district, Amnat Charoen Province during 2000 – 2007

Year	2000	2001	2002	2003	2004	2005	2006	2007
1) Estimated number of females at 15-70 Years old never screened for carcinoma of cervix	1,967	1,984	1,982	1,913	1,981	1,948	1,983	1,778
2) Number of females at 15-70 years old screened for carcinoma of cervix	11	9	12	4	2	2	89	4
3) Rate of screening (Per 1,000 women at 15-70 years old)	5.5	4.5	6.0	2.0	1.0	1.0	44.8	2.2

After the year 2003, VIA method was introduced the rate of screening were not stable and increased was highest in the year 2006 significantly. During the year 2006-2007 the rate of screening more than the index (12.6) significantly, excepted the year 2005 was decreased compared to index the six times. (Table 8)

Table 8 Number of screening for carcinoma of cervix by Visual Inspection with acetic Acid (VIA) in Natae Sub-district, Amnat Charoen Province during 2000 – 2007

Year	2000	2001	2002	2003	2004	2005	2006	2007
1) Number of females at 15-70 years old	1,967	1,984	1,982	1,913	1,981	1,948	1,983	1,778
2) Number of females screened for carcinoma of cervix	-	-	-	-	25	4	180	69
3) Rate of screening (Per 1,000 women at 15-70 years old)	-	-	-	-	12.6	2.0	90.7	38.8

Place of screening for carcinoma of cervix by methods.

During the year 2004-2007 the screening for carcinoma of cervix by Pap smear was done in 97 women. Most of them (97.9%) had the screening at Natae Health Center. Only 2.1% had their screening by Pap smear at Amnat Charoen Hospital. The screening for carcinoma of cervix by VIA was done women during the year2004-2007. Most of them (96.0%) and the screening at Natae Health Center. Only 4.0% had their screening by VIA at Amnat Charoen general Hospital. This results showed that Natae Health Center is capable of providing screening by both methods. (Table 9)

Table 9 Place of screening for carcinoma of cervix in Natae sub-district Amnat Charoen Province

Place of screening	Pap					VIA				
	2004	2005	2006	2007	Total	2004	2005	2006	2007	Total
	No.(%)	No.(%)	No.(%)	No.(%)	No.(%)	No.(%)	No.(%)	No.(%)	No.(%)	No.(%)
Amnat Hos.	-	-	2(2.2)	-	2(2.1)	3(12.0)	-	6(3.3)	2(2.9)	11(4.0)
Natae Health-Center	2(100.0)	2(100.0)	87(97.7)	4(100.0)	95(97.9)	22(88.0)	4(100.0)	174(96.6)	67(97.1)	267(96.0)
Total	2(100.0)	2(100.0)	89(100.0)	4(100.0)	97(100.0)	25(100.0)	4(100.0)	180(100.0)	69(100.0)	278(100.0)

Objective II: Results of screening for carcinoma of cervix by methods.

During the year 2004-2007, among 97 cases of screening by Pap smear only 1.0% (1case) was found to have abnormal Pap smear. The result was HSIL (High grade squamous intraepithelial lesion) and the patient was referred to Amnat Charoen Hospital. Colposcopy and conization was done.

The same period of time, among 278 cases of screening by VIA only 0.7% (2 cases) was found to have abnormality. Cryotherapy was applied and the patients were followed at 2 months and 1 year after cryotherapy. Post operative results were normal. (Table 10)

Table 10 Result of screening for carcinoma of cervix by Visual Inspection with aceticAcid (VIA) and Papanicolaou smear (Pap smear)

Result screening	Pap					VIA				
	2004	2005	2006	2007	Total	2004	2005	2006	2007	Total
	No.(%)	No.(%)	No.(%)	No.(%)	No.(%)	No.(%)	No.(%)	No.(%)	No.(%)	No.(%)
Total screening	2(100.0)	2(100.0)	89(100.0)	4(100.0)	97(100.0)	25(100.0)	4(100.0)	180(100.0)	69(100.0)	278(100.0)
Normal	2(100.0)	1(50.0)	89(100.0)	4(100.0)	96(98.9)	25(100.0)	3(75.0)	179(99.4)	69(100)	276(99.3)
Abnormal	-	1*(50.0)	-	-	1(1.0)	-	1**(25.0)	1**(0.5)	-	2(0.7)

* Abnormal by Pap smear, ** Abnormal by VIA

Table 11 Numbers of frequency of screening for carcinoma of cervix among women who had been screened for carcinoma of cervix by VIA and Pap smear methods

Frequency	Pap					VIA				
	2004	2005	2006	2007	Total	2004	2005	2006	2007	Total
	No.(%)	No.(%)	No.(%)	No.(%)	No(%)	No.(%)	No.(%)	No.(%)	No.(%)	No.(%)
First exam.	1(50)	2.(100.0)	71(79.7)	2(5)	76(78.3)	23(92.0)	2(50.0)	155(86.1)	52(75.3)	232(83.4)
Second exam	1(50)	-	16(17.9)	2(50)	19(19.5)	1(4.0)	2(50.0)	20(11.1)	14(20.2)	37(13.3)
Third exam. or more	-	-	2(2.2)	-	2(2.0)	1(4.0)	-	5(2.7)	3(4.3)	9(3.2)
Total	2(100.0)	2(100.0)	89(100.0)	4(100.0)	97(100.0)	25(100.0)	4(100.0)	180(100.0)	69(100.0)	278(100.0)

During the year 2004-2007 among 97 women who had screening for carcinoma of cervix by Pap smear, 19.5% (19 cases) had the screening for the second time, 2.0% (2 cases) (Table11) This comparable to VIA method, while, during the same time, 278 women were screening by VIA method at 13.3% (37 cases) had been done twice and 3.2% (9 cases) had the screening for the third time. (Table 11)

Objective III : Association between demographic factors and attendance of education course among acceptance VIA

Demographic characteristic.

Among 278 women who had screened for carcinoma of cervix by VIA method, only 105 women had attended the education course of VIA method. The rest

(173 cases) had not attended at all. It is interesting whether these two groups of women differed by their characteristic.

1. Age: The mean age of women who attended class was 37.01±4.39 years old compared to the mean age of women who had not attended was 37.75±4.73 years. There was no statistically significant difference between the two groups. (Table 12)

2. Occupation: Most of the women in both groups were farmers at (87% and 88% respectively) There was no statistically significant difference between the two groups. (Table 12)

3. Education: Most of the women had been screened for carcinoma of cervix had attended the education level of primary school or less (97.1%), compared with the women who did not attend had education level at primary school or less (97.5%). There was no statistically significant between two groups. (Table 12)

4. Marital status: Most of the women in both groups were married and living with the husband at 96.4%. The women had attended the education course and the women had not attended and living with husband at 96.2% and 96.5% respectively. There was no statistically significant difference between the two groups. (Table 12)

5. Family income: Most of the women in both groups had monthly income between 2,500-3,000 baht per month. The mean of income of women had attended was 2806±716.86 was 2828±817.95 baht, compared to the mean income of the women who had not attended. There was no statistically significant difference between two groups. (Table 12)

6. Living children About 89.8% of the women at risk with attendance had two living children compared to 61.8% of the women at risk with not attendance. There was no statistically significant difference between two groups. The mean living children of women had attended was 2.03 ± 0.64**,** compared to the mean living children of women had not attended was 2.28 ± 0.79. (Table 12)

7. Age at first marriage: More than half of the women who had attended (54.3%), the aged at first marriage more than 17 years old, about the women did not attended (48%). The mean age at first of women had attended was 17.87±1.34 years old compared to the mean age at first of women had not attended was 17.66±1.41 years old. There was no statistically significant difference between two groups. (Table 12)

8. History of abortion: The women who had attended had abortion more than was 14.2% (15 cases) compared to women had not attended at 16.1% (28 cases). There was no statistically significant difference between two groups. (Table 12)

9. Contraception: Most of the women in both groups used contraception (93.2%), and nearly half of contraception used to the pill. There was no statistically significant difference between two groups. (Table 12)

Table 12 Factors associated with attendance in education course among VIA Acceptors

Demographic	Attend (n = 105) No.(%)	Not attend (n = 173) No.(%)	Total (n = 278) No.(%)	X^2	df	p-value
Age(Years)						
<30	7(6.7)	14(8.1)	21(7.5)			
31-35	28(26.7)	35(20.2)	63(22.6)			
36-40	34(32.3)	42(24.2)	76(27.3)			
41-45	21(20.0)	45(26.0)	66(23.7)			
>45	15(14.3)	37(21.4)	52(18.7)	2.29	4	0.681
Mean ± SD	37.01 ± 4.39	37.75 ± 4.73	Min = 27,Max = 47			
Occupation						
Farmer	92(87.6)	153(88.4)	245(88.1)			
Not farmer	13(2.86)	20(5.20)	33(4.3)	0.05	1	0.821
Education						
Primary school or less	102(97.1)	169(97.7)	271(97.5)			
Secondary school or more	3(2.8)	4(2.2)	7(2.5)		-	0.562*
Marital status						
Married	101(96.2)	167(96.5)	268(96.4)			
Not married	4(3.8)	6(3.4)	10(3.6)	0.02	1	0.562
Family Income (Baht/Month)						
≤ 2,000	21(20.0)	38(21.9)	59(21.2)			
2,001 – 2,500	28(26.7)	44(25.4)	72(25.9)			
2,501 – 3,000	35(33.3)	52(30.0)	87(31.2)			
3,001 – 3,500	13(12.4)	25(14.4)	38(13.7)			
≥ 3,501	8(7.6)	14(8.0)	22(7.9)	0.83	4	0.934
Mean ± SD	2806.67 ± 716.86 Min = 2,000 Max = 7,000	2828.90 ± 817.95 Min = 1,000 Max = 6,500				

Table 12 Factors associated with attendance in education course among VIA acceptors (continue)

Demographic	Attend (n = 105) No.(%)	Not attend (n = 173) No.(%)	Total (n = 278) No.(%)	X^2	df	p-value
Living children						
≤ 1	14(10.2)	15(8.7)	29(10.4)			
2	71(89.8)	107(61.8)	178(64.0)			
≥ 3	20(19.0)	51(29.5)	71(25.5)			
Mean ± SD	2.03 ± 0.64	2.28 ± 0.79	Min = 0, max = 6	4.48	2	0.106
Age at first marriage						
≤ 16	11(10.5)	28(16.2)	39(14.0)			
17	37(35.2)	62(35.8)	99(35.6)			
18	32(30.5)	52(30.1)	84(30.2)			
≥ 19	25(23.8)	31(17.9)	56(20.2)	2.65	3	0.448
Mean ± SD	17.87 ± 1.34	17.66 ± 1.41	,			
	Min = 16	Min = 15				
	Max = 26	Max = 26				
History of abortion						
0	90(85.7)	145(83.8)	235(84.5)			
≥ 1	15(14.2)	28(16.1)	43(15.5)	0.18	1	0.671
Contraception						
No	5(4.8)	14(8.1)	19(6.8)			
Yes	100(95.2)	159(91.9)	259(93.2)	1.13	1	0.286
Pill	38(38.0)	67(42.1)	105(40.5)			
Injectable	34(34.0)	39(24.5)	73(28.3)			
IUD	4(4.0)	7(4.4)	11(4.2)			
Female sterilization	24(24.0)	46(28.9)	70(27.0			

* Fisher Exact Test

CHAPTER V
DISCUSSION

In this chapter, the discussion of the research will be divided to two parts as follow;

Part I. Discussion of research methodology

Part II. Discussion of research results

Part I : Discussion of research methodology

1. Research design

This research is a retrospective study. Descriptive is a type of quantitative study that falls under the broad heading of descriptive quantitative research. This type of research involves either identifying the characteristic of an observe phenomenon or exploring possible correlations among two or more phenomenon. In every case, descriptive research examines a situation as it is. It dose not involve changing or modifying the situation under investigation, nor is it intended to detect cause-and-effect relationships. The problem of descriptive study is that one must first to observe and carefully describe the phenomena. Accurate description requires the development of specialized research skills. Selection and use of these proper samples also requires specialized skills (36).

The present research was a descriptive study. The objectives of the study is to determine the rate and result of screening for carcinoma of cervix by VIA and Pap smear among women in the rural area of northeastern part of Thailand during 2000-2007 and to study of factors associated with attendance of study course of VIA among acceptance of VIA method.

2. Population

The populations of this study were females aged 15-70 years old who lived at Natae Sub-district, Mueang District, Amnat Charoen Province. In each year

there were about 2,000 women aged 15-70 years of living in this Sub-district. Among them 411 women had been screened for carcinoma of cervix during 2000 – 2007 either by VIA method or by Pap smear method and all of female were included in this study. Their total inclusion was in accordance with the objective of study and the rate of screening for carcinoma of cervix were estimated.

3. Data collection

Data was collected from record books of the study of screening for carcinoma of cervix at Natae Health Center Sub-district, Mueang District, Amnat Charoen Province. Data collecting from was established in accordance with the research objectives.

Part II : Discussion of research results

The results will be presented according to the following objectives:

Objective I

1.1 Rate of screening for carcinoma of cervix.

1.2 Place of screening for carcinoma of cervix.

1.1 Rate of screening for carcinoma of cervix.

During 2000-2003, before the introduction of VIA method to the screening for carcinoma of cervix, Pap smear was done in Natae Sub-district, Mueang District, Amnat Charoen Province. The rate of screening was at 2 - 6 per 1,000 women per year. After VIA method was introduced in the year 2004, the rate of screening increased significantly. The highest coverage of screening at 136 per 1,000 women per year in 2006. After the year 2006, there was a slow down in the campaign for screening for carcinoma of cervix and the number of cases of screening decreased in both methods. The campaign to encourage women to have screening for carcinoma of cervix by both methods was sponsored by international research study (15,17). When the sponsored study desclimed the rate of screening also decreased.

In rural area Thai women are inevitably influenced by the campaigning program, because they were mostly poor and had less education. Thai women were

also open minded and ready to accept new technologies. The study of Kobilková J and colleagues from the Czech Republic investigated the causes of the unfavorable incidence of cervical cancer through laboratory performance (29). They found that repeatedly modified screening program measures did not significantly lower the incidence of carcinoma of cervix. Analysis of laboratory work showed that it is necessary to educate smear takers/clinicians and ensure their cooperation with cytology laboratories. The various types of screening programs did not lower the cervical carcinoma incidence. In Thailand especially in the rural areas, good and reliable cytology laboratories were not established. The combination of both methods in the rural areas of Thailand may be justified (32).

1.2 Place of screening for carcinoma of cervix.

Natae Health center is capable of providing service of screening for carcinoma of cervix by both VIA and Pap smear. In the past before VIA method was introduced. Pap smear was already done at Natae Health Center. During the year 2004-2007 they provided more service of screening by both, VIA and Pap smear methods. This is contradict to the study of Lunt R. and colleagues (11,12,13,14) with found that in some less-developed countries Pap smear-based screening is available, but usually only in urban area or in the private health sector that serves a small proportion of the female population. Screening program based on Pap smear require technical capabilities and systems for transportation, communication, follow-up, and training that are beyond the capacity of healthcare infrastructure in most less-developed countries.

Objective II

Results of screening for carcinoma of cervix by VIA and Pap smear

Frequency of screening for carcinoma of cervix by VIA and Pap smear

2.1 The screening for carcinoma of cervix by VIA method resulted in 0.7% of abnormalities. This is in contradicted with the study of Abdel-Hady ES.and colleagues (36) using VIA method in Dakahlia, Mansoura, Egypt. They found that among the 5,000 women who were screened using VIA, 409 (8.18%) were abnormal

and referred for colposcopy. Cervical intraepithelial neoplasia (CIN) was diagnosed in 151 (60%) of the 253 women with positive screening of colposcopy. There were 39 women with high-grade CIN and 116 with low-grade CIN. The sensitivity and negative predictive value of the VIA screening test was 97 %. Its positive predictive value was 60% for all grades of CIN and 90% for high- grade of CIN. They concluded that VIA method, although associated with a relatively high rate of false-positive results, is a valuable test for the screening of cervical carcinoma.

The study of Gaffikin L. and colleagues on the screening for carcinoma of cervix by VIA method in Roi-et Province in Thailand, They found rate of abnormalities 13% of all 5,999 women who had screening services and were treated with cryotherapy by nurses. 756 cases who had cryotherapy treatments came back to have the re- inspection in one year time. It was found that 93% of all the cases were negative at follow up. However, when they were inspected with colposcope by gynecologists, it was found that 3 cases having CIN 2 and 3(33).

The results of study of Belinson JL. and colleagues on cervical cancer screening by VIA method in rural China. In 1997 among women 35-45 years old, they found that VIA method yielded abnormal results in 28% of case (34).

The study of Tuisombut S. in 2004 on screening for cervical cancer with VIA method in Thailand, she found that among 1,294 women, 111(8.6%) had positive VIA results. Cryotherapy was performed in 108 women. The rate of follow up at 1 and 2 year was 71.3% and 49.1% respectively. All of the follow up (100%) were negative by repeated VIA examination.

The contradicted result of incidence of abnormality by VIA method may by due to standard of methods under supervision. Most studies were close under good supervision as it is a well designed studies. This study is only a descriptive one that try to describe what really happened. Supervision of VIA examination at Natae sub-district was not very strictly done.

In this study the rate of screening for carcinoma of cervix by Pap smear was only 1%. The result is in accordance with the study of Chiamchanya C.(30) who studied screening the carcinoma of cervix by Pap smear among married women aged 15-60 years old and unmarried women aged 30-65 years old in Khookhot Sub-district, Lamlookka, Pathumthani Province. Among 1,012 women, there were 4 cases of class

III (0.4%), 3 cases of class V (0.3%) abnormalities. One of class III cases aged 15-19 years old and 3 cases of class V aged 35-54 years old.

2.2 Frequency of screening for carcinoma of cervix.

There were 19(19.5%), 37(13.3%) patients, who were screened by Pap smear and VIA methods for the second and third time respectively with in 4 years. According to VIA method, it is recommended that it is a single-visit approach. This may showed that there was somehow are over screening which may be the waste of time and resources which were the result of over campaigning.

Objective III: Association between demographic factors and the attendance of study course of method of screening for carcinoma of cervix by VIA.

No significant factors were found to have association with attendance of study course. It was interesting that no education course is necessary for promoting screening methods. Mouth to mouth recommendation is most effective to encourage women to come for screening services.

CHAPTER VI
CONCLUSION

Carcinoma of cervix it the most common cancer among Thai women which results high mortality rate. At present there are several methods of screening for carcinoma of cervix. The objective of this research was to study the rate of screening for carcinoma of cervix by Visual Inspection with Acetic Acid (VIA) method and with Pap smear among women in Amnat Charoen Province, a rural area in Northeastern part of Thailand and to study the association of factors with attendance of study courseof VIA among acceptance VIA method. The research was a descriptive study collecting data from record books of screening for carcinoma of cervix in Natae Sub-district, Mueang Amnat Charoen Province during 2000 - 2007. The populations of this study were 411 females who had screened for carcinoma of cervix by VIA (30 – 45 years old) and Pap smear (35, 40, 45, 50, 55 and 60 years old). Descriptive statistics applied to analyze the data are frequency, rate, percent, mean and standard deviation. Chi-square test to test the significance level of $\alpha = 0.05$ by using SPSS/PC$^+$ version 10 computer program.

The result showed that the women at risk having the screening for carcinoma of cervix had low financial, social status and lower education. Most of the women at risk married and living with husbands, age of lower and highest was women at risk at 17 and 67 years old respectively and average at 40 years old. During 2000-2003 the screening for carcinoma of cervix by Pap smear was done among women at risk at average cases the rate of 4 per 1,000 women at risk (4-12 cases annually). After the year 2004 screening for carcinoma of cervix increased significantly. The highest coverage in 2006 was 269 cases (VIA180 cases and Pap smear 89 cases).Which resulted in the rate of screening for carcinoma of cervix of 136 cases per 1,000 women at risk. After the year 2006 the level of coverage decreased. Most of the screening was done at Natae Health Center 96.5 %. The abnormality of 0.7% and 1.0% by VIA and

Pap smear respectively. There was no significant factors associated with attendance of study course and screening by VIA method. In conclusion, the acceptance of screening for carcinoma of cervix among rural Thai women was influenced by campaigning program for women who are at risk to convince them to come for the screening procedure. Communication between persons and motivation would also play are important role.

Recommendation for Application

1. Regular campaign of screening for carcinoma of cervix in every Provinces**.**

2. Multiple VIA and Pap smear methods should be done in every place where applicable. Complementary method of screening for carcinoma of cervix, should be applied.

Recommendation for further Research

1. To follow the study of cancer of cervix by VIA who had screened by VIA method.

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APPENDIX

APPENDIX A

แบบบันทึกข้อมูลการตรวจคัดกรองมะเร็งปากมดลูก

ของสตรี จังหวัดอำนาจเจริญ

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1) การตรวจคัดกรอง ( ) VIA

( ) Pap smear

1. ได้รับการตรวจเมื่อ วันที่.....เดือน.....พ.ศ. .....

2.ชื่อ.....นามสกุล.....

3. ที่อยู่ หมู่ที่.....ตำบล.....อำเภอ.....จังหวัด.....

4. อายุ.....ปี (อายุเต็ม)

5.อาชีพ..... ศาสนา.....

6. รายได้ของครอบครัวต่อเดือน.....บาท

7. การศึกษาชั้นสูงสุด.....

8. สถานภาพสมรส ( ) แต่งงานจดทะเบียน ( ) แต่งงานไม่จดทะเบียน

( ) หม้าย ( ) แยก

( ) หย่า ( ) โสด

9. จำนวนบุตรมีชีวิต.....คน ชาย.....คน หญิง.....คน

10. แท้งบุตร..... ครั้ง

11. แต่งงานครั้งแรกเมื่ออายุ..... ปี

12. การคุมกำเนิดที่เคยใช้

วิธีที่ 1.....ใช้เป็นเวลา.....ปี (อายุ.....ปี ถึงอายุ.....ปี)

วิธีที่ 2.....ใช้เป็นเวลา.....ปี (อายุ.....ปี ถึงอายุ.....ปี)

วิธีที่ 3.....ใช้เป็นเวลา.....ปี (อายุ.....ปี ถึงอายุ.....ปี)

13. การตรวจคัดกรองมะเร็งปากมดลูก

( ) ทำครั้งแรก ( ) ทำครั้งที่สอง ( ) ทำครั้งที่สาม

( ) มากกว่าสามครั้ง

ทำเมื่อ วันที่.....เดือน.....ปี.....

สถานที่ที่ให้บริการ.....

ผลการตรวจ ( ) ปกติ ( ) ผิดปกติ

14. เคยทราบเกี่ยวกับการตรวจคัดกรองมาก่อน การคัดกรองครั้งนี้หรือไม่ (เลือกตอบเพียงข้อเดียว)

( ) ไม่ทราบ ( ) ทราบ จาก

( ) โทรทัศน์/วิทยุ

( ) หนังสือพิมพ์/สื่อสิ่งพิมพ์

( ) อินเตอร์เน็ท

( ) ผู้ใหญ่บ้าน/อสม.

( ) บุคลากรสาธารณสุข

( ) เพื่อนบ้าน

( ) บุคคลในครอบครัว

15. บุคคลในครอบครัวหรือญาติของท่าน มีใครเคยเป็นมะเร็งปากมดลูกหรือไม่

( ) มี ( ) ไม่มี

16. ถ้ามีคนที่เป็นมะเร็งปากมดลูกคือใคร ระบุ.....

17. เหตุผลที่ท่านตรวจมะเร็งปากมดลูก (เลือกตอบเพียงข้อเดียว)

( ) ตรวจสุขภาพประจำปี

( ) ไปตรวจหลังคลอดหรือรับบริการคุมกำเนิด

( ) มีอาการผิดปกติ เช่น ตกขาวเปลี่ยนไป

( ) ได้รับคำชักจูงจากเจ้าหน้าที่สาธารณสุข,แพทย์,พยาบาล

( ) ได้รับคำแนะนำจากสมาชิกในครอบครัว

( ) ได้รับคำแนะนำจากเพื่อน ๆ

( ) อื่น ๆ (ระบุ).....

2) การติดตามผล

การติดตามผลการตรวจครั้งที่ 1 วันที่.....เดือน.....พ.ศ.....

ตรวจด้วยวิธี ( ) VIA

( ) Pap smear

ผลการตรวจ ( ) ปกติ ( ) ไม่ปกติ ระบุ.....

การติดตามผลการตรวจครั้งที่ 2 วันที่.....เดือน.....พ.ศ.....

ตรวจด้วยวิธี ( ) VIA

( ) Pap smear

ชื่อผู้ตรวจ.....ตำแหน่ง.....

ผลการตรวจ ( ) ปกติ ( ) ไม่ปกติ ระบุ.....

การติดตามผลการตรวจครั้งที่ 3 วันที่.....เดือน.....พ.ศ.....

ตรวจด้วยวิธี ( ) VIA

( ) Pap smear

ชื่อผู้ตรวจ.....ตำแหน่ง.....

ผลการตรวจ ( ) ปกติ ( ) ไม่ปกติ ระบุ.....

3) สรุปผลการตรวจติดตาม

( ) เป็นมะเร็ง ระยะที่..... ( ) ไม่เป็นมะเร็ง ( ) ปกติ

BIOGRAPHY

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