BREAST SELF-EXAMINATION AMONG AKHA WOMEN IN CHIANG RAI PROVINCE THAILAND: POLICY RECOMMENDATIONS BASED ON THE FORMATIVE RESEARCH STUDY DESIGN

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A Dissertation Submitted in Partial Fulfillment of the Requirements
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การตรวจเต้านมด้วยตนเองของผู้หญิงอาข่าในจังหวัดเชียงราย ประเทศไทย: ข้อเสนอแนะเชิงนโยบายบนพื้นฐานของการวิจัยก่อรูป

น.ส.สิรินันท์ สุวรรณาภรณ์

วิทยานิพนธ์นี้เป็นส่วนหนึ่งของการศึกษาตามหลักสูตรปริญญาสาธารณสุขศาสตรดุษฎีบัณฑิต
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Thesis Title	BREAST SELF-EXAMINATION AMONG AKHA WOMEN IN CHIANG RAI PROVINCE THAILAND: POLICY RECOMMENDATIONS BASED ON THE FORMATIVE RESEARCH STUDY DESIGN
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Field of Study	Public Health
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Accepted by the COLLEGE OF PUBLIC HEALTH SCIENCES, Chulalongkorn University in Partial Fulfillment of the Requirement for the Doctor of Philosophy

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สิรินันท์ สุวรรณาภรณ์ : การตรวจเต้านมด้วยตนเองของผู้หญิงอาข่าในจังหวัดเชียงราย ประเทศไทย: ข้อเสนอแนะเชิงนโยบายบนพื้นฐานของการวิจัยก่อรูป. (BREAST SELF-EXAMINATION AMONG AKHA WOMEN IN CHIANG RAI PROVINCE THAILAND: POLICY RECOMMENDATIONS BASED ON THE FORMATIVE RESEARCH STUDY DESIGN) อ.ที่ปรึกษาหลัก : อ. ดร.มนทกานติ์ เชื่อมชิต

บทนำ อัตราการตายของมะเร็งเต้านมมีแนวโน้มเพิ่มสูงขึ้นในหลายประเทศของทวีปเอเชีย จากข้อมูลในประเทศไทยพบว่ามะเร็งเต้านมเป็นมะเร็งอันดับหนึ่งสำหรับผู้หญิง สิ่งสำคัญในการป้องกันมะเร็งเต้านม คือ การคัดกรองเบื้องต้น ได้แก่ การตรวจเต้านมด้วยตนเอง สำหรับการคัดกรองและตรวจเต้านมด้วยตนเองของกลุ่มสตรีอาข่าในจังหวัดเชียงรายนั้น พบว่า มีการปฏิบัติน้อยอาจเนื่องด้วยสาเหตุอุปสรรคทางภาษา การศึกษาครั้งนี้จึงต้องการศึกษาสถานการณ์และปัจจัยที่เกี่ยวข้องการตรวจมะเร็งเต้านมด้วยตนเอง รวมไปถึงพัฒนาโปรแกรมในการส่งเสริมการตรวจเต้านมด้วยตนเองในสตรีอาข่า

ระเบียบวิธีการศึกษา การศึกษาแบ่งเป็น 2 ระยะ คือ 1.การศึกษาแบบผสมผสาน และ 2.การศึกษาแบบกึ่งทดลอง โดยระยะแรก ได้สำรวจสถานการณ์การตรวจมะเร็งเต้านมด้วยตนเองในสตรีอาข่า 296 คน อายุ 30 ถึง 59 ปี ที่อาศัยในพื้นที่ตำบลแม่ฟ้าหลวง จังหวัดเชียงราย และการสัมภาษณ์เชิงลึกในสตรีอาข่า 22 คน และเจ้าหน้าที่สาธารณสุขในพื้นที่ 2 คน สำหรับระยะที่ 2 ได้พัฒนาโปรแกรมตรวจเต้านมด้วยตนเองโดยเชื่อมโยงกับผลของระยะที่ 1 และทำการวัดประสิทธิผลของโปรแกรม

เครื่องมือของการสำรวจระยะแรกนั้น ได้ใช้แบบสอบถาม และแบบสัมภาษณ์ โดยได้วิเคราะห์หาปัจจัยเชื่อมโยงด้วยการวิเคราะห์การถดถอยโลจิสติค สำหรับโปรแกรมการตรวจเต้านมด้วยตนเอง ได้ทำการเปรียบเทียบผลระหว่างกลุ่มที่ได้รับโปรแกรมในพื้นที่ตำบลแม่ฟ้าหลวงและกลุ่มมควบคุมในพื้นที่อำเภอแม่ลาว

ผลการศึกษา การศึกษาระยะแรกพบว่ากลุ่มตัวอย่างของการศึกษาส่วนใหญ่มีอายุ 45 ถึง 59 ปี ร้อยละ 24.70 มีการตรวจเต้านมด้วยตนเองระดับดี สำหรับความสัมพันธ์กับการกลุ่มตรวจเต้านมด้วยตนเองได้ดี พบว่า การเคยได้รับข้อมูลเกี่ยวกับมะเร็งเต้านมมีผลต่อการปฏิบัติ 8.02 เท่า (95% CI: 1.89-33.96) ผลของการสัมภาษณ์เชิงลึก พบความสำคัญด้านความรู้ ความตระหนัก และเจ้าหน้าที่สาธารณสุขในพื้นที่ มีความสำคัญในการปฏิบัติ

ผลของประสิทธิผลโปรแกรมการตรวจเต้านมด้วยตนเองพบว่าค่าเฉลี่ยมีการเปลี่ยนแปลงหลังการให้โปรแกรม และแตกต่างกันระหว่างกลุ่ม โดยมีความแตกต่างด้านความรู้ในการวิเคราะห์หาความแตกต่างในความแตกต่าง ที่นัยสำคัญ 0.016 ซึ่งผลลัพธ์โดยสรุปของโปรแกรมยังมีข้อจำกัด

สรุป การตรวจมะเร็งเต้านมด้วยตนเองในสตรีอาข่าพบว่าการรับรู้ และบุคคลากรทางด้านสาธารณสุขมีความสำคัญในการส่งเสริม และแนะนำการปฏิบัติซึ่งควรนำไปพัฒนาโปรแกรมการตวรวจเต้านมด้วยตนเองให้สอดคล้องกับบริบทพื้นที่ เน้นเสริมด้านการปฏิบัติให้มากขึ้น รวมไปถึงการส่งเสริมควรดำเนินไปตามรูปแบบชีวิตประจำวันและความเชื่อ

สาขาวิชา	สาธารณสุขศาสตร์	ลายมือชื่อนิสิต .....
ปีการศึกษา	2562	ลายมือชื่อ อ.ที่ปรึกษาหลัก .....

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KEYWORD: Breast Self-Examination, Akha Women, Hill Tribe, Chiang Rai, Formative Research

Sirinan Suwannaporn : BREAST SELF-EXAMINATION AMONG AKHA WOMEN IN CHIANG RAI PROVINCE THAILAND: POLICY RECOMMENDATIONS BASED ON THE FORMATIVE RESEARCH STUDY DESIGN. Advisor: MONTAKARN CHUEMCHIT, Ph.D.

Background: The mortality rate of breast cancer has increased in several countries in Asia. In Thailand, this fact is confirmed by the hospital–based cancer registry annual report which ranked breast cancer as first of all female cancer patients. One an urgent concern of prevention and education on early detection is Breast Self-Examination (BSE). 'Akha' women, the largest ethnic group in Chiang Rai, northern part of Thailand, have a significantly low percentage of BSE practice because of language barrier and other problems. This study aims to identify factors associated with BSE among this ethic group to better understand the reasoning for this and also look at means to resolve the problem.

Methods: Two phase of study included a mixed methods and Quasi-experimental study. Firstly, study was conducted 'Akha' women in Mae Fah Luang district, Chiang Rai, Thailand. Quantitative in-person survey used a structured questionnaire with 296 Akha women aged 30-59 years old and qualitative assessed 24 participants (2 local health providers and 22 Akha women). Secondly, BSE program was created from first phase results and measured the effectiveness of program between intervention and control group. The survey tool contained information related to socio-demographic factors, risk factors, and lifestyle factors relevant to breast cancer, and self-practice on BSE. A semi-structured in-depth interview was used for qualitative part. Analysis of the quantitative data was done by descriptive statistics, chi-square test, binary logistic regression, and multiple logistic regression. Content analysis was used to analyze the qualitative data. As for intervention, this study conducted 44 intervention participants at Mae Fah Luang District but control used participant at Mae Lao district. The tool to measure effectiveness used a survey tool and BSE practice checklist compare in baseline, 3 moths, and 6 months.

Results: The majority of the participants were 45-59 years old. This study found that 24.70% women had done a good practice. Logistic regression analysis showed that women who received breast information were eight times more likely to report good BSE practice compared to those non receiving (Odd ratio (OR): 8.02; 95% CI: 1.89-33.96). In additional, knowledge, awareness, and local health staffs were related to good BSE practice from in-depth information. Intervention effectiveness were significantly at 0.016 in Different in Difference (DID) but the program is limitation of results.

Conclusion: BSE practice by Akha women was found main linked with perception towards of BSE and health care provider. Based on findings, we recommend implementing a new practical program to promote BSE followed social norm, lifestyle, and cultural.

Field of Study: Public Health Student's Signature .....
Academic Year: 2019 Advisor's Signature .....

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Sirinan Suwannaporn

TABLE OF CONTENTS

Page

LIST OF TABLES

Page

LIST OF FIGURES

Page

CHAPTER I
Introduction

1.1 Background and rationale

Cancer is known as a serious health problem and a major public health cause of death worldwide (Organization, 2014). In 2012, the new cancer cases estimated 1.67 million among women in 2012 (25% of all cancers). The incidence is increasing in women both of developed and less developed regions, and nowadays, trend of cancer is presented within less developed region more than the developed one (around 883,000 cases and 794,000 cases respectively) (Cancer, 2012).

Two of the most common cancers affecting women are breast and cervical cancers (though it can happen in uncommon cases such as in men as indicated) (Giordano, 2018). In many developing countries, the most common causes of cancer death are breast cancers (Organization, 2014). Most breast cancers begin in the ducts (ductal cancers). The anatomy of breast or mammary glands consists of pads inside that link the branching system of ducts. They respond to ferry milk from lobules to the nipples. A malignant change in the cell lining of ducts or lobules is the cause of breast cancer development (Carlson, Eisenstat, & Ziporyn, 2004).

Breast cancer death becomes the top five of cancer death where most death cases appear in less developed region. It is estimated that there were 324,000 deaths or an equivalent of 14.3% of the total (Cancer, 2012). Breast cancer can also cause disability that may occur more in younger women within developing countries (Kress, Path, Eduardo Abalo, & Antonio Lorusso, 2017; Rana et al., 2017).

In Thailand, hospital-based cancer registry annual report in 2012 stated that breast cancer was ranked the first of female cancer patients and the incidence trend will be increasing. In 2010, regional differences in burden of disease in Thailand reported an increasing Disability-Adjusted Life Years (DALYs) of 10.2 million years (5.8 million years of males and 4.4 million years of females). Breast cancer affects DALYs at 0.7 DALYs in 100,000 population. In 2012, it was increasing to 34 percentage especially among female group between 30 to 59 years. The cost of diagnostic test and treatment of breast cancer is a consequence issue (Thailand, 2012). Investigated the cost of breast cancer patients treated with chemotherapy. The study investigated the patients who received cytotoxic drugs at Thailand National Cancer Institute (NCI). The result indicated the mean of 73 days of treatment, 21.09 laboratory tests, and 25.09 patient visits. Based on the investigation, it was estimated for the lowest total cost of treatment at then US$249.67 or approximately 8,738.45 baht while the cost utility in early stage patient was found approximately between 271,140 baht to 470,600 baht when compared with quality adjusted life year (QALY) (Songtish, Praditsitthikorn, & Teerawattananon, 2014; Supakul, Sooksriwong, Chiersilpa, & Hartzema, 2006), though such cost could be higher in private hospital setting (Songtish et al., 2014).

The detection or screening of early-stage tumors and breast cancer can help reduce cancer mortality or can help increase a survival gain at 5 years from the diagnosis (Cedolini et al., 2014). There are certain methods at a very early stage to detect breast cancer that includes three types of the followings: Breast self-examination (BSE), clinical breast exam, and mammogram. Breast self-examination (BSE) is a regular inspection by woman for abnormalities in her breast. Although

physicians generally agree that women should examine their breasts on a monthly basis to help detect breast lumps (and thus potential cancer detection at an early stage), it is controversial whether self-examination alone or together with screening mammography can actually reduce death from breast cancer (Carlson et al., 2004). From Kress (2017) study, more than half of female lack the knowledge on BSE technique. It also found that the ignorance to practice is reduced when the knowledge about BSE is increased (Kress et al., 2017).

In particular, Chiang Rai incidence case of breast cancer has been reported as the top in northern region. Since the population component of Chiang Rai province is a mixture of Thais and non-Thai people (e.g., hill tribe people), it can be considered as a challenge for public health service. Despite the fact that there is a large hill tribe population in Chiang Rai, they tend to have limited right to health service access. Hill tribe people is considered a vulnerable group of the society due largely to a shortage of infrastructure, limited access to Thai citizenship and delayed land settlement. Akha group is the large number (around 68,000 people) of population in Chiang Rai Province (Administration, 2015). They are being largely dependent on agriculture and employment for income, therefore, several studies increased attention to add citizenship and land settlement issues, promote quality of life and welfare in this group (Fujioka, 2002). The limited or inequity of an access to health care service affects the health information system of this group that leads to the lack of epidemiology situation (Apidechkul, Laingoen, & Suwannaporn, 2016). The breast cancer report among Akha women is no exception. Finally, there is also a thin literature for Akha women group and breast cancer (Suphanchaimat, Kantamaturapoj, Putthasri, & Prakongsai, 2015). The only relevant literature on hill tribe women,

breast cancer, and BSE, are the 2004 and 2015 reports by the Highland Development Health Center. The report is about health status among 35 to 59 years old hill tribe women in general. The breast self-examination (BSE) was found only at 11.7%, and the following year, the report specified BSE by Hmong (Meo) and Karen (Kariang) at 8.7% and 19.5% respectively.

Since 2015, the local health care providers in Chiang Rai, have conducted the national-agenda health care project related to cervical cancer and breast cancer screening. The project has advanced the screening with an instruction about basic screening techniques to Akha women aged 30 to 70 years in the area. The breast self-examination program provided by the health center has a purpose to educate Akha women on the basic fact of breast cancer and how to practice the BSE. The measured outcome emphasizes on the correct knowledge of BSE and the frequency of BSE practice. According to the 2015 database of the health center, there is a low percentage of breast cancer screening, especially for the area where the hill tribe people, and the Akha people, live. For example, Mae Fah Luang district with most Akha residents, has reported not more than 50% for breast self-examination.

In a retrospective by the reporting unit, the trend of breast self-examination should be on the rise in order to achieve better health outcomes, to lower health care expenditures, as well as to maintain a healthy health system in Chiang Rai province. Perhaps due to some cultural values among Akha people, the BSE may be obstructed. Other barriers of BSE mentioned by the health center include language difference and patient embarrassment. With strong intention to provide health service for BSE, the local health center has made some adjustment such as:

1. Aiming at gaining trust in health care providers through an understanding about the patients' needs to avoid discrimination;

2. Facilitating the service time on weekends to fit the livelihood of the patients;

3. Providing female health care provider for BSE service. The continuing care and the relationship between Akha women and the health care provider can be bettered;

4. Re-orienting the service provided with an emphasis on case-by-case basis; and

5. Adjusting the material content to be in line with the local lifestyle and culture of Akha women.

With all these efforts, the local health center still considers more attempts to make BSE works among the target group of Akha women. The researcher, who is a stakeholder in terms of public policy partner from academic sector and who is also inspired by the work of Glantz (2009) (Using formative research to explore and address elder health and care in Chiapas, Mexico. In R.A. Hahn & M.C. Inhorn. *Anthropology and public health: Bridging differences in culture and society* (2nd ed.). (pp.266-297). Oxford: Oxford University Press,), would like to employ formative research to the study of breast self-examination among Akha women in Chiang Rai province in order to come up with a bottom-up public policy recommendation as a customized research design. According to Rosal et al. (2004) Views and preferences of low-literate Hispanics regarding diabetes education: Results of formative research. *Health Education & Behavior, 31*(3), 388-405), formative research is useful to form or shape a program by developing appealing and relevant messages, content, and

format. Research techniques include group-led discussions, semi-structured interviews, and focused group discussion to encourage participants to express thoughts and ideas about specific topics and/or materials. When conducted in a group setting, formative research techniques can help participants reflect on their own views within the context of others (cited Basch, 1988; Patton, 1990). Consequently, personal beliefs, motivations, skills, and practices can be more fully examined and understood (cited Kirby et al., 1995). In terms of a customized intervention after learning of the patient needs, Anderson & Nowacek (1988) stated that a supportive environment is needed to encourage the patients to open up and explore what the disease means to them and how they feel about it. The educator's own attitudes and behavior toward patients will be a very important factor in setting the psychological climate. If patients feel valued, respected, and trusted, they will usually respond positively to the opportunity to share their feelings and meanings about their diseases. It can then be expected that the intervention has a high opportunity to be successful.

This study therefore has the objectives of:

(1) to analyze the situation of breast self-examination (BSE) among Akha women in Chiang Rai, Thailand, through the factors of socio-demographic, risk, and lifestyle (refer to the conceptual framework);

(2) to create the customized intervention design of Breast Cancer Self-Examination (BSE) among Akha women aged 30-60 years in Chiang Rai province, Thailand, through the formative research;

(3) to implement this customized intervention design of BSE in order to (4) compare the effectiveness, regarding the correct knowledge and the frequency of BSE, between the intervention group and the control group of Akha women; and

(4) to recommend the locally needed BSE public policy among Akha women in Chiang Rai province, Thailand, that shall promote breast self- examination in Akha women.

1.2 Research Questions

1. What is the breast self-examination situation among Akha women in Chiang Rai, Thailand?

2. What is the appropriate breast self-examination intervention program among Akha women in Chiang Rai, Thailand?

3. How is the effectiveness of the intervention program in terms of knowledge and perception scores on an increase of breast self-examination among Akha women in Chiang Rai, Thailand?

4. What is the appropriate BSE policy among Akha women in Chiang Rai, Thailand?

1.3 Research Objectives:

General Objectives:

1. To analyze the situation of breast self-examination (BSE) among Akha women in Chiang Rai, Thailand.

2. To create the customized intervention design of BSE among Akha women aged 30-59 years in Chiang Rai province, Thailand.

3. To implement this customized intervention design of BSE in order to compare the effectiveness regarding the correct knowledge, perception, confidence, and practice of BSE, between the intervention group and the control group of Akha women in Chiang Rai province, Thailand.

4. To recommend the locally needed BSE public policy among Akha women in Chiang Rai province, Thailand.

Specific Objectives:

1. To describe socio-demographic, risk, lifestyle, knowledge of BSE, perception of BSE, confidence of BSE, and practice of BSE (in terms of correctness and frequency of BSE) among the Akha women research participants in Chiang Rai province, Thailand.

2. To compare the knowledge of BSE mean scores before and after between and within group.

3. To compare the perception of BSE mean scores before and after between and within group.

4. To compare the confidence of BSE mean scores before and after between and within group.

5. To compare the practice of BSE mean scores before and after between and within group.

1.4 Hypothesis

The knowledge, perception, confidence, and practice of breast self-examination among Akha women in Chiang Rai province will increase after receiving the customized intervention design of Breast Self-Examination (BSE) program.

1.5 Conceptual Framework

This formative study will be divided into two phases. The first phase is the mixture of quantitative (surveys) research method and qualitative research method (in-depth interview and forum) in order to analyze BSE situation in Akha women in

Chiang Rai province, Thailand, and to create the customized intervention design of BSE for this target group. The second phase is the quasi-experimental study to determine the effectiveness of the customized intervention from the first phase to promote breast cancer screening among Akha women in Chiang Rai Province, Thailand. The conceptual framework of this study is shown in Figure 1.

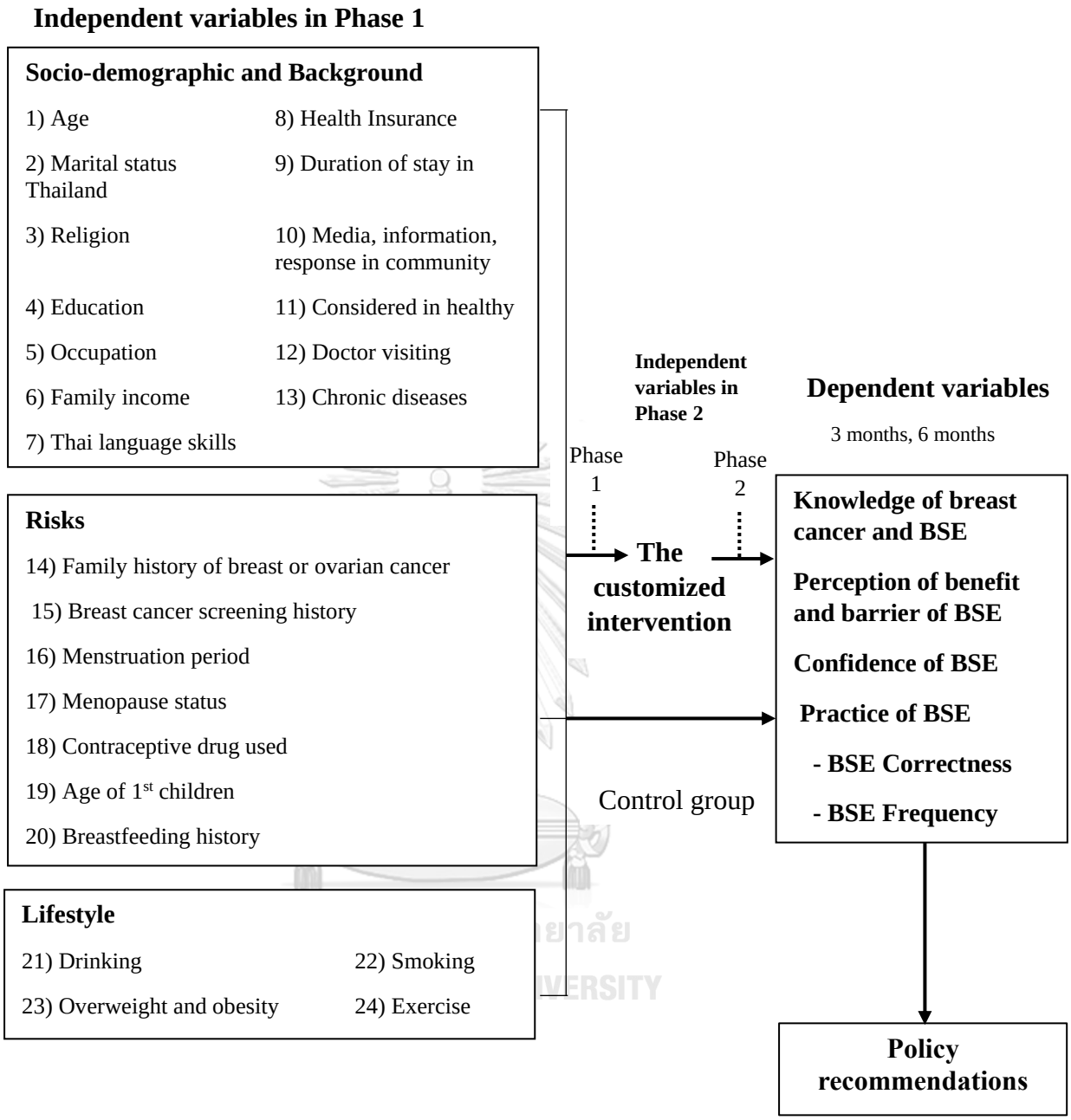

Figure 1: The conceptual framework

1.6 Operational definitions

1. Breast Self-Examination (BSE) in Phase 1: The process of early detection of breast cancer and the first basic screening. Everyone can check-up at home to look for abnormality in the breast tissue. BSE in this phase was checked by answers from 2 questions: 1. whether have been practice and 2. frequency to practice. Good BSE was calculated by sum practice and frequency scores.

2. Breast Self-Examination (BSE) in Phase 2: The right processes and the right gestures of BSE. BSE in this phase was checked by answers from 8 questions which divided to 7 items for practices and 1 item for frequency.

3. The customized intervention: This is the program of BSE that creates from BSE situation analysis and stakeholders needs and requirements.

4. Knowledge of breast cancer and BSE: It defines the remembrance and understanding of breast cancer and BSE processes. The Akha women will give response through problems, causes and effects of breast cancer and how to practice BSE.

5. Perception of benefit and barrier of BSE: This defines the knowledge and beliefs that show behaviors and outcomes. This study refers to perceived benefit and barriers of BSE, such as participant's concern about place limitation to conduct BSE.

6. Confidence of BSE: This defines the confidence in completing BSE.

7. Age: In this study, age refers to Akha women in Chiang Rai province, Thailand, between 30 to 59 years old.

8. Marital status: This refers to participant status as single, married, divorced, or widowed.

9. Religion: This refers to participant's religious belief as Buddhism, Christianity, Muslims, Animism, or other religion.

10. Education: It refers to the highest education level achieved by the participant.

11. Occupation: It refers to the job of the participant that links to the main family income of the participant.

12. Total family income: It refers to the total amount of income by participant's family per month.

13. Thai language skills: It is ability in Thai language skill among Akha women that can speak, read, and write.

14. Health Insurance: It refers to the type of health insurance as out-of-pocket payment (no health insurance), civil servant medical benefit scheme, social security insurance, or health insurance card.

15. Duration of stay in Thailand: It refers to the length of time participant stay in Thailand.

16. Media, information, response in community refers to the resources available in community for BSE and Akha women were received breast health information.

17. Considered in healthy: It is the opinion of Akha women in health status.

18. Doctor visiting: it is frequency of physician visiting.

19. Chronic disease: refers to the currently status of chronic diseases.

20. Family history of breast or ovarian cancer: This refers to the family members of the participant with breast or ovarian cancer.

21. Breast cancer screening history: This refers to the participants who have been screened for breast cancer, types, and time of screening.

22. Menstruation period: It refers to the menstruation of participants whether it started before age of 12.

23. Menopause status: It refers to going through menopause after the age of 55.

24. Contraceptive drug use: It refers to the participants who have used contraceptive drug and the methods used.

25. Age of 1st children: It refers to how old were they when their 1st baby was delivered.

26. Breastfeeding history: It is Akha women have been acted of feeding a child breast milk directly from breast to mouth.

27. Drinking: This refers to drinking behavior of participants, the quantity and the frequency of drinking.

28. Smoking: This refers to Akha women smoking behavior, the quantity and the frequency of smoking.

29. Overweight and obesity: It refers to the BMI of participant which is more than 20 calculated from weight and height.

30. Exercise: It refers to the frequency and the types of sports that participant takes in daily life.

CHAPTER II

Literature review

This literature chapter is a review and the category of ten main topics as follows:

2.1 Breast cancer

2.2 The situation analysis of breast cancer

2.3 The factors affected breast cancer

2.4 Breast cancer screening and breast self-examination

2.5 Formative Research

2.6 Action Research

2.7 Community Health Need Assessment Theory

2.8 Health Belief Model (HBM)

2.9 Akha people and Akha women's health

2.10 Intervention of Breast Self-Examination program

2.1 Breast cancer

The anatomy of breast or mammary glands consist of pads inside as the branching system of ducts. They respond to ferry milk from lobules to the nipples. A malignant change in the cell lining of ducts or lobules is a cause of breast cancer development (Carlson et al., 2004). The American Cancer Society defined breast cancer development as the cells that grow out of control and invade the surrounding tissues or spread (metastasize) to other body areas. Such episode does not take place only in women but also in men. The process starts from different parts of the breast; however, most breast cancers begin in the ducts (ductal cancers). Nevertheless, some

abnormal growths are not cancer as they cannot spread outside the breast area. This type of growth is not life threatening.

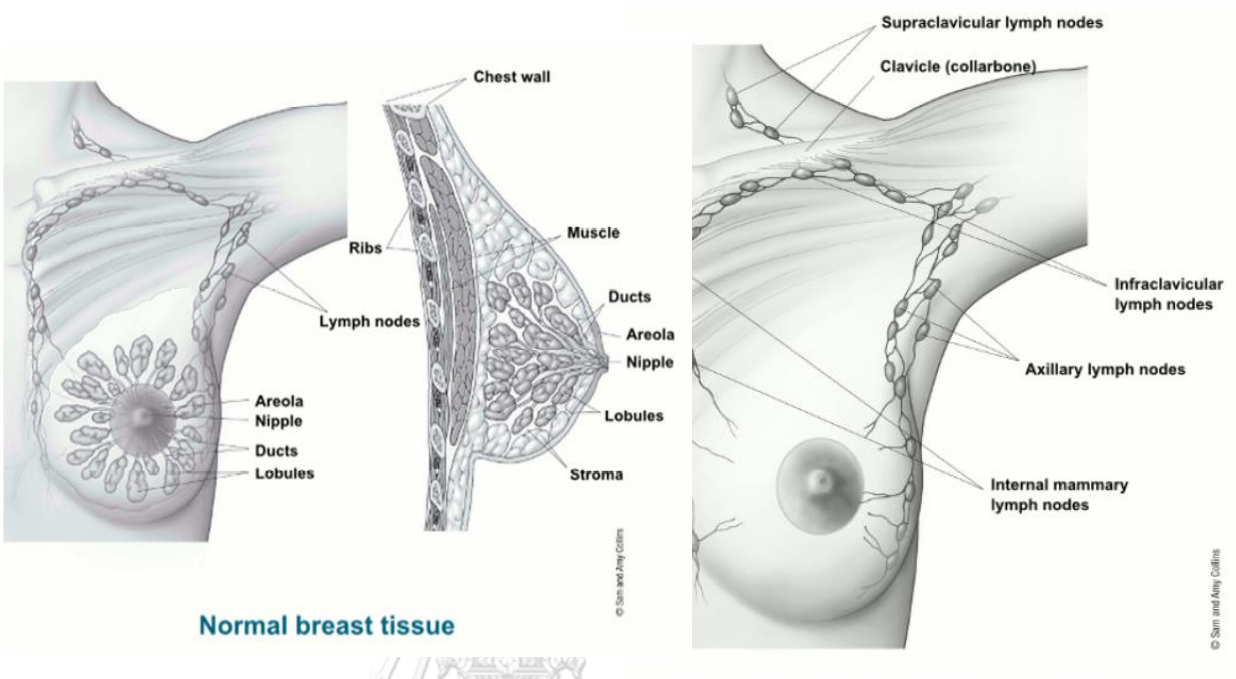

Figure 2: Breast anatomy and lymph system
(Source; www.http://www.nci.go.th/th/File_download/Nci%20Cancer%20Registry/

HOSPITAL-BASED%202014.pdf, accessed on 12 December 2016.)

Breast cancer can spread through the lymph system. The rounding breast area is linked to lymph nodes, lymph vessels and lymph fluid that are found throughout the body. Lymph nodes affect one's immune system. Bean-shaped is an appearance of lymph nodes connected by lymph (or lymphatic) vessels (Figure 2). Cancer cells begin entering into lymph vessels and grow in these lymph nodes.

The spreading of cancer cell can be separated into different common types based on laboratory checking. It can be divided as follows:

1. Ductal carcinoma in situ (DCIS; also known as *intraductal carcinoma*) means the lined ducts cells that change the form to look like cancer cells. DCIS does

not spread (metastasize) outside the breast. DCIS is considered a pre-cancer situation because some cases can be developed to become invasive cancers. Every one in five of the new breast cancer cases reported is DCIS.

2. Invasive (or infiltrating) ductal carcinoma (IDC) is the most common type of breast cancer. It takes place every eight out of ten cases (Cedolini et al., 2014). IDC starts in a milk duct which breaks through the wall of the duct and grows into the fatty tissue of the breast. This type of carcinoma is able to metastasize to other parts of the body through the lymphatic system and bloodstream. Eight out of ten invasive breast cancers are infiltrating ductal carcinomas.

3. Invasive (or infiltrating) lobular carcinoma (ILC) starts in the milk-producing glands (lobules) and metastasizes but only in rare cases or about one out of ten cases. In addition, ILC may be harder to be detected by a mammogram than that in the Invasive (or infiltrating) ductal carcinoma case.

The treatment of breast cancer cases in concordance with guidelines for surgical therapy post lumpectomy radiation, adjuvant chemotherapy, and adjuvant hormonal therapy. In Thailand, the most treatment method is combination between surgical therapy and adjuvant chemotherapy approximately 12.43%. Study of Giordano and other (2005) founded race and decreased likelihood of adjuvant radiation therapy association after breast conservation.

Grade is how different the cancer cells are from normal cells. Grade is different from stage of breast cancer. There are three cancer grades (Breastcancer.org, 2016):

Grade 1 (low grade or well differentiated). Cancer cells look a little bit different from normal cells. They are usually slow growing.

Grade 2 (intermediate/moderate grade or moderately differentiated). Cancer cells do not look like normal cells. They are growing a little faster than normal.

Grade 3 (high grade or poorly differentiated). Cancer cells look very different from normal cells. They are fast-growing.

However, the grade divided in Thailand have two more adding that are undifferentiated and not stated or not applicable (The hospital-based cancer registration annual report, 2012).

The proportion of cancer cells within the tumor that are growing and dividing to form new cancer cells. A higher percentage suggests a faster growing, more aggressive cancer, rather than a slower, less aggressive cancer. Tests that can measure the rate of cell growth include:

• Ki-67 is a protein in cells that increases as they prepare to divide into new cells. A staining process can measure the percentage of tumor cells that are positive for Ki-67. The more positive cells refer to the more quickly they are dividing and forming new cells. In breast cancer, a result of less than 10% is low, 10-20% is intermediate/borderline, and more than 20% is considered high.

• S-phase fraction. The S-phase fraction number tells you what percentage of cells in the tissue sample are in the process of copying their genetic information (DNA). This S-phase, short for “synthesis phase,” happens just before a cell divides into two new cells. In breast cancer, a result of less than 6% is considered low, 6-10% is intermediate/borderline, and more than 10% is considered high.

Diagnostic breast cancer cell measure in centimeters (cm). The size of the cancer is one of the factors that determines the stage and treatment of the breast cancer. Size doesn't tell the whole story. All of the cancer's characteristics are important. A small cancer can be very fast-growing while a larger cancer may be slow-growing, or it could be the other way around.

Moreover, the pathologist also measures the distance between the cancer cells and the margin. Margins around a cancer are described in three ways:

Negative. No cancer cells can be seen at the outer edge. Usually, no more surgery is needed.

Positive. Cancer cells come right out to the edge of the tissue. More surgery is usually needed to remove any remaining cancer cells.

Close. Cancer cells are close to the edge of the tissue, but not right at the edge. More surgery may be needed.

A for hormone receptors are like ears on and in breast cells that listen to signals from hormones. These hormone signals tell breast cells that have the receptors to grow. One of receptor is called ER-positive if it has receptors for the hormone estrogen. Another is called PR-positive if it has receptors for the hormone progesterone. Breast cancers that are ER-positive, PR-positive, or both tend to respond to hormonal therapy. Hormonal therapy is medicine that reduces the amount of estrogen in your body or that blocks estrogen from the receptors. If the cancer has no hormone receptors, there are still treatments available. Hormone receptors are proteins. Like all proteins, their production is controlled by genes.

Stage of breast cancer

Cancer stage is based on the size of the cancer. The purpose of the staging system is to help organize the different factors and some of the personality features of the cancer into categories in order to understand prognosis, guide treatment decisions, and provide a common way to describe the breast cancer. They include:

Stage 0 is used to describe non-invasive breast cancers, such as ductal carcinoma in situ (DCIS). There is no evidence of cancer cells or non-cancerous abnormal cells breaking out of the part of the breast in which they started, or getting through to or invading neighboring normal tissue.

Stage I is divided into subcategories in IA and IB.

Stage IA, cancer cells are breaking through to or invading normal surrounding breast tissue) in which:

• the tumor measures up to 2 centimeters;

• the cancer has not spread outside the breast; no lymph nodes are involved

Stage IB describes invasive breast cancer in which:

• there is no tumor in the breast; instead, small groups of cancer cells—larger than 0.2 millimeter but not larger than 2 millimeters—are found in the lymph nodes;

• there is a tumor in the breast that is no larger than 2 centimeters, and there are small groups of cancer cells (larger than 0.2 millimeter but not larger than 2 millimeters) in the lymph nodes Microscopic invasion is also possible in stage I breast cancer.

Stage II divided into IIA and IIB.

Stage IIA describes invasive breast cancer in which:

• no tumor can be found in the breast, but cancer (larger than 2 millimeters) is found in 1 to 3 axillary lymph nodes (the lymph nodes under the arm) or in the lymph nodes near the breastbone (found during a sentinel node biopsy);

• the tumor measures 2 centimeters or smaller and has spread to the axillary lymph nodes;

• the tumor is larger than 2 centimeters but not larger than 5 centimeters and has not spread to the axillary lymph nodes

Stage IIB describes invasive breast cancer in which:

• the tumor is larger than 2 centimeters but no larger than 5 centimeters; small groups of breast cancer cells (larger than 0.2 millimeter but not larger than 2 millimeters) are found in the lymph nodes;

• the tumor is larger than 2 centimeters but no larger than 5 centimeters; cancer has spread to 1 to 3 axillary lymph nodes or to lymph nodes near the breastbone that were found during a sentinel node biopsy;

• the tumor is larger than 5 centimeters but has not spread to the axillary lymph nodes.

Stage III divided into subcategories in IIIA, IIIB, and IIIC.

Stage IIIA describes invasive breast cancer in which:

• no tumor is found in the breast or the tumor may be any size; cancer is found in 4 to 9 axillary lymph nodes or in the lymph nodes near the breastbone (found during imaging tests or a physical exam);

• the tumor is larger than 5 centimeters; small groups of breast cancer cells (larger than 0.2 millimeter but not larger than 2 millimeters) are found in the lymph nodes;

• the tumor is larger than 5 centimeters; cancer has spread to 1 to 3 axillary lymph nodes or to the lymph nodes near the breastbone (found during a sentinel lymph node biopsy).

Stage IIIB describes invasive breast cancer in which:

• the tumor may be any size and has spread to the chest wall and/or skin of the breast and caused swelling or an ulcer;

• may have spread to up to 9 axillary lymph nodes;

• may have spread to lymph nodes near the breastbone

Stage III Inflammatory breast cancer is considered at least stage IIIB. Typical features of inflammatory breast cancer include the following:

• a substantial portion of the breast skin is reddened

• the breast feels warm and may be swollen

• cancer cells have spread to the lymph nodes and may be found in the skin

Stage IIIC describes invasive breast cancer in which:

• the cancer has spread to 10 or more axillary lymph nodes;

• the cancer has spread to lymph nodes above or below the collarbone;

• the cancer has spread to axillary lymph nodes or to lymph nodes near the breastbone.

Stage IV describes the cancer has spread beyond the breast and nearby lymph nodes to other organs of the body, such as the lungs, distant lymph nodes or skin, bones, liver, or brain. The words used to describe stage IV breast cancer are “advanced” and “metastatic.”

2.2 The situation analysis of breast cancer

The most common types of cancer are breast, cervical and colorectal cancer. The World Health Organization reported the five most common types of cancer in women in the order of frequency as: Breast cancer, lung cancer, stomach cancer, colorectal cancer and cervical cancer. Breast cancer is the first cause of cancer death (Organization, 2014). In 2008, approximately 1.4 million women worldwide were diagnosed with breast cancer with the death record of about 459,000 cases (Burke & Mathews, 2017; Youlden et al., 2012).

In Asia, the incidence rates of female breast cancer are increasing same as that in the western countries. This is due to the changes in the lifestyle or an import of “westernized” lifestyle which includes the negative changes toward one’s diet, physical activity and fertility. The mortality rate of breast cancer has increased in several countries in Asia. In fact, it was recorded at 7% per annum between the years 2000-2006 in Thailand. It is noted that there is a difference in the breast cancer when comparing between breast cancer in Asia and that in western countries. For example, the mean age of breast cancer in Asia is younger than that in the western world. This is to say the mean age for breast cancer in Asia is around 50 years and the prevalent

age group is between those between 40 – 49 years old. More than 60% of the women living with breast cancer are in pre-menstrual period. It is also noted that most Asian countries are the low- and middle-income countries where the access to effective care for health is quite limited. As a result, the survival rate of women with breast cancer in Asia is lower than that in western countries, resulting in the late detection and inadequate access to care.

In Thailand, the hospital-based cancer registration annual report in 2012 indicated the breast cancer as the first leading cause of cancer among Thai females with an increasing incidence trend (1,005 new cases). Age group of breast cancer case is between 30 to 70 years old. The common cancer site diagnosis is more than 20 centimeter and second-stage presenting (40.95% of 1,005 breast cases). The high number of new breast cancer patient by morphology is Infiltrating duct carcinoma NOS. It records in diagnosis code of C50 in the 10th revision of the International Statistical Classification of Diseases and Related Health Problems (ICD 10). Chiang Rai province in Thailand has an incidence case of breast cancer that is ranked as the top in northern region of Thailand (36.36% in 2014). The difference among Chiang Rai residents, those who are Thais and those who are ethnic group people, is a challenge for public health issue, particularly when it comes to female breast cancer. Trend of prevalence is increasing and it can happen in uncommon cases such as in men as well (Giordano, 2018). Moreover, breast cancer is a leading cause of death, disability, and occurring increasingly in younger women in developing countries (Kress et al., 2017; Rana et al., 2017). The most metastasis of breast cancer in Thailand distributed into bone and lung is 6.66% and 3.48% respectively.

In 2010, regional differences in burden of disease in Thailand reported increasing Disability-Adjusted Life Years (DALYs) at 10.2 million years (5.8 million years of males and 4.4 million years of females). Breast cancer effected for DALYs at 0.7 DALYs in 100,000 population. In 2012, it was increased to 34 percent especially in female group of 30 to 59 years old (Thailand, 2012).

In 2015, the National Clinical Effectiveness Committee estimated health care cost of cancer on the European Union (EU) for €51 billion or equivalent to €102 per person. In Germany, the cost is €171 per person. The health care cost includes the diagnosis and treatment with breast cancer which requires multidisciplinary care in an acute hospital setting. The majority of diagnostic tests are radiology and pathology. As for treatment, the most requirements are surgery, chemotherapy and radiation therapy. Investigated cost of Thai breast cancer patients treated with chemotherapy. The study investigated the patients who received cytotoxic drugs at Thailand National Cancer Institute (NCI). It presented the mean of 73 days of treatment, 21.09 laboratory tests, and 25.09 patient visits. The lowest total cost of treatment was $249.67 or approximately 8,738.45 baht, and the cost utility in early stage patient was between 271,140 baht to 470,600 baht when compared

with quality adjusted life year (QALY) (Songtish et al., 2014; Supakul et al., 2006). The economics of breast screening and treatment have an impact on cost-effectiveness (Arrospide et al., 2016; Mosalanezhad, Kavosi, Keshavarz, Akrami, & Sarikhani, 2016).

2.3 The factors affected breast cancer:

There are number of factors affecting breast cancer as follows:

2.3.1 Genetic factor or breast cancer history of the family is one factor affected breast cancer awareness. The result among both medical and non-medical students reported around 50% of awareness in breast cancer among those who have breast cancer history in their family member (Mohamed, Ibrahim, Lamadah, Hassan, & El-Magd, 2016).

2.3.2 The **occupation factor**: The study among physicians, nurses, and midwives reported lower perception of susceptibility, severity and barriers to screening in physicians than nurses and midwives with higher perception of barriers (Yılmaz & Durmuş, 2016).

2.3.3 Age factor: Self-breast examination increases chances of tumor detection early, longer tumor free survival duration, and a decrease in recurrence rate. The trend of increasing breast tumor is found most for those more than 40 years old. One study conducted breast fine needle aspiration cytology of 159 cases and showed malignancy detection in 41.51% cases with those in the age group of 41-50 years (Tailor, Patel, & Italiya, 2016).

2.3.4 A positive correlation between **educational level** and breast self-examination practice was found with the result which indicated that with an increase in educational level, BSE practice increases as well. In contrast, the negative correlation coefficient took place when there was an increase in parity but the practice of BSE reduced (Magaña-Valladares et al., 2018).

2.3.5 Reproductive factors: Such as age at menarche, age at menopause, and age at first pregnancy are widely accepted for the development of breast cancer. A younger age at menarche as well as an older age at menopause mean

that there is prolonged period of estrogen exposure and an increased rate of tumor development. Some studies showed 1.05 with earlier menarche and 1.029 with later menopause. Moreover, the association of fertility drugs was significantly also (Evans, Howell, & Howell, 2020).

2.3.6 Breastfeeding is the one association to reduce risk of breast cancer. The study of Connor and other (2017) show results After a median follow-up time of 11.2 years of 679 breast cancer deaths occurred. Pre-diagnostic breastfeeding was associated with a 16% reduction in mortality (HR 0.84; 95% 0.72–0.99) irrespective of ethnicity (Connor et al., 2017).

2.3.7 Others factors: In Thailand, the study of 219 Thai women (response rate of 97.4 %) participated in B-CAS defined five domains on breast cancer awareness that linked to modifiable risk factors (e.g., diet, exercise and lifestyle) and non-modifiable risk factors (e.g., genetic, aging and hormone) (Rakkapao, Promthet, Moore, & Hurst, 2016).

2.3.8 The increasing **self-awareness** in breast cancer through breast self-examination was recognized in the change scheduled for screening and the seeking for further medical advice promptly (Hulme et al., 2016).

2.3.9 Community-based organizations and the application of culturally appropriate multimodal strategies aimed at reducing health disparities in breast cancer rates were conducted through an increased awareness of early self-detection of breast cancer especially among the low-income rural participants with financial barriers (Mayfield-Johnson, Fastring, Fortune, & White-Johnson, 2016).

2.3.10 Part of **knowledge** indicated in some study that considered developing breast cancer screening interventions in ethnic minority women. IMB-model-based interventions can improve functional breast literacy and skills to obtain information and link to the cultural motivation with breast cancer screening (Talley, Yang, & Williams, 2017). After breast self-education program, there was a 100% increase of the knowledge about how to examine their breasts for lumps. The participants intended to practice routinely for breast self-examination and to share the information with friends and family. Thai female participants living in rural areas in northeastern area illustrated the high mean scores of breast self-examination knowledge and the Health Belief Model subscales which were significant with breast self-examination practice (adjusted OR = 2.42; 95% CI: 1.69-3.47). It linked to the greater self-confidence to practice with a more likelihood to do BSE monthly (adjusted OR = 4.38; 95% CI: 2.99-6.43) (Satitvipawee et al., 2009).

2.3.11 A reduction of **barriers and gains** in susceptibility, self-efficacy/confidence, and perceived control were improved by regular screening among Iranian women (Farhadifar, Molina, Taymoori, & Akhavan, 2016). Barriers to screen included fear and anxiety, perceived cost, breasts as private and sensitive issue, transportation distance and safety, limited screening information, language when receiving health services, available information, self-care support, as well as a busy life took place among those women with under or none-screened (Noar & Zimmerman, 2005).

2.3.12 The **media** can provide knowledge of breast cancer and screening. One study found the most common source of information was television and radio

(around 36% of 2,054 women). Moreover, the information linked to the provision of breast cancer early detection or screening methods could increase the knowledge and perception of breast cancer screening (Ortega–Olvera et al., 2016). Communication media such as video also reported the highest changes for breast cancer awareness, knowledge of diagnosis, attitudes toward breast self-examination, and concern to screen by breast self-examination (Occa & Suggs, 2016). A culturally targeted DVD aimed to educate at-risk minority populations could be an efficient and effective way to increase mammography screening (E. Lee et al., 2014).

2.4 Breast cancer screening and breast self-examination

Breast cancer screening and breast self-examination can be self-inspected by women in order to find out the abnormalities in the breast. The detection or screening of early-stage tumors and breast cancer can reduce cancer mortality or can increase the survival gain for five years from the start of a diagnosis (Alaa, Moon, Hsu, & van der Schaar, 2016; Cedolini et al., 2014). In 1991-2005, Johns et al. (2016) study, breast cancer screening program in United Kingdom predicted breast cancer death cases in screening attenders (46% of 988,090 women) lower than non-attenders (RR = 0.54, 95% CI) (Johns, Swerdlow, & Moss, 2018). Although physicians generally agree that women should examine their breasts on a monthly basis to help detect breast lumps (and thus potential cancer at an early stage), it is controversial whether self-examination alone or together with screening mammography can actually reduce death from breast cancer (Carlson et al., 2004). The recommendation of breast cancer screening was adapted in policy. For example, the recommendations of the American Society of Clinical Oncology suggested breast risk assessment in pathology and

genetic. Besides, the one important recommendation is breast screening (Gagnon, Lévesque, on Breast, & Screening, 2016; Siu, 2016). There are number of methods at a very early stage to detect breast cancer that include the three following types:

1. Breast self-examination: Women can have this check a week after their period ends which is the time when the breast is not tender or swollen. Breast lumps are often discovered by women or their sex partners. Most breast lumps are not cancerous, yet it is advised to report anything unusual to one's clinician as soon as possible. The position of BSE should be conducted as follows:

1.1 Standing up and placing one hand behind one's head. Hold the fingers of the other hand flat. Gently touch every part of the breast below the raised arm. Inspect if there are any lumps, bumps or thickening, and then do the other side of the breast.

1.2 Standing in front of a mirror. Place the hands on the hips. Inspect each breast for any changes in size, shape and form. Do it again with the arms raised above the head.

1.3 Lying on a pillow or having a folded towel under the right shoulder. Place the right hand behind the head. Examine every part of breast with the fingers of the left hand that is held flat. Inspect for any lumps, bumps or thickening, and then do the other side of the breast.

1.4 Resting the arm on a firm surface like the top of a bookshelf. Examine the underarm. Inspect for any lumps or thickening in the same way as above mentioned, and then do the other side of the breast.

The pattern of breast touching consists of the followings:

1.1 Lines: Start with the underarm area and move the fingers downward little by little below the breast. Then move the fingers slightly toward the middle and slowly move back up. Go up and down until the whole area is covered.

1.2 Wedges: Start at the outer edge of the breast, move the fingers toward the nipple and back to the edge. Check the whole breast by covering one small wedge-shaped section at a time. Be sure to check the underarm area and the upper chest.

1.3 Circles: Begin at the outer edge of the breast, move the fingers slowly around the whole breast in a circle. Move around the breast in smaller circles by gradually working toward the nipple. Be reminded to check the underarm and the upper chest areas with no miss on any part of the breast.

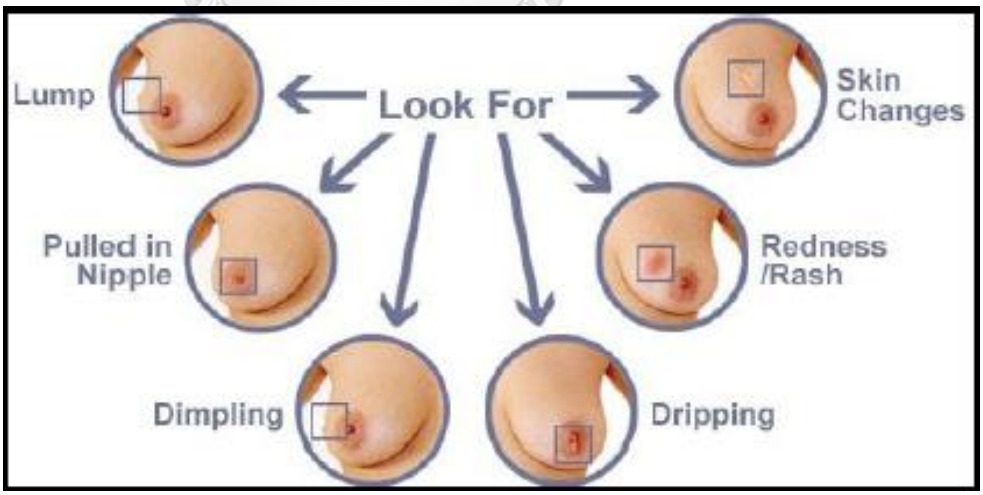

Figure 3: General breast observation
(Source: http://www.basicthinking.in/how-to-perform-breast-self-examination-in-easy-steps/, accessed on 12 December 2016.)

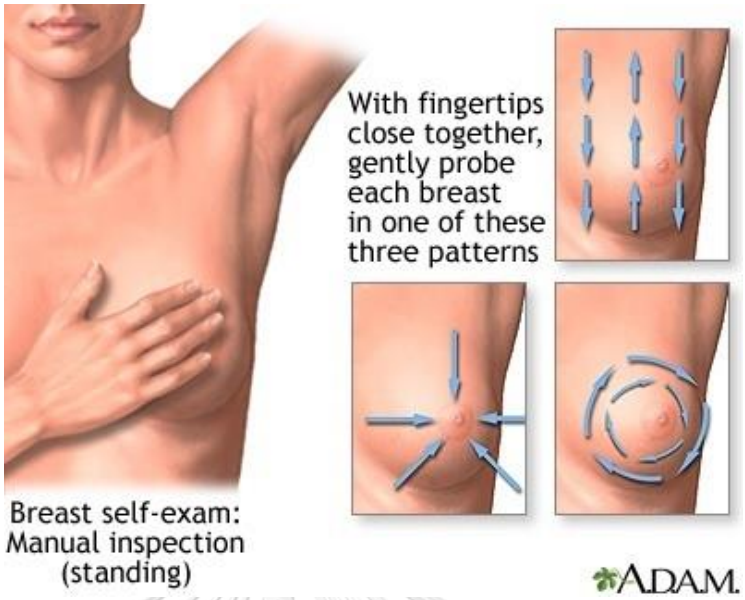

Figure 4: Breast self-examination patterns
(Source: https://medlineplus.gov/ency/article/001993.htm/, accessed on 12 December 2016.)

According to one study found the older women do regular BSE more than the healthy young women. The motivation factors to do BSE are a family history of breast cancer, having had a friend die of breast cancer and taking estrogen. They did not do because being sure of what they were doing, not having enough time and being afraid of what they might find that all factor is barrier to do regular BSE. Moreover, complained the better instruction from their health provider on how to do BSE is needed from many women. Some limited of non-attenders to screen are lower socioeconomic status so the screening program will be reducing social inequalities in delivery (Hudson, Brazil, Teh, Duffy, & Myles, 2016). For example, the immigrant women and minority population have be founded the barriers including transportation, language barrier, and arrangement for time off work and child care (Hulme et al., 2016; Licqurish et al., 2017). Part of cultural beliefs was the barrier to seek preventive or breast screening. Study by Tejeda et al. presented the delay to breast cancer care of

Latin women who held a greater cultural belief than those with fewer beliefs (Tejeda, Gallardo, Ferrans, & Rauscher, 2017).

2. Clinical breast examination (CBE): This is a check of the breast by a health care professional, such as a doctor, nurse practitioner, or doctor's assistant. During the CBE, it is the time for health care providers to teach the patient about breast self-examination.

3. Mammography: This is an x-ray of the breast with a screening to look for signs of breast cancer (with no breast symptoms or breast problems). The two main kinds of breast changes found with a mammogram are calcifications and masses (Institute, 2016). Calcifications are tiny mineral deposits within the breast tissue. It looks like small white spots. A mass or tumor includes cysts (fluid-filled sacs) and non-cancerous solid tumors. Any mass that is not clear needed to be biopsied (or a drilling out of a small piece of tissues to check for cancer cells). A mammogram machine has two plates that compress or flatten the breast to spread the tissue apart. The one common machine used a digital mammogram (also known as full-field digital mammography or FFDM). A newer type of mammogram is known as breast tomosynthesis or 3D mammography. An image of this illustrates a 3-dimensional picture in the computer screen. It allows the doctors to see the breast tissues more clearly. Some studies presented its benefit of lowering the opportunity of being called back for follow-up testing. It is noted that not all health insurance policies cover tomosynthesis (Organization, 2014).

2.5 Formative Research

The definition of formative research from Glantz refers to the way to open a critical question of the "community." Formative research posits inequitable relations and tentative collaboration among myriad stakeholders rather than equitable participation among a reified community (as in Community-based participatory research or CBPR)[1] (Glantz, 2007)." One reference of Nichter et al. explained this process as a research which is to be applied, evaluated, further developed, and applied again as a multi-stage participatory process or the iterative process. It is reformative dynamic, and stages often overlap. Formative process can be challenging to enhance participant responses that may exist at unconscious levels (Nichter, Quintero, Nichter, Mock, & Shakib, 2004). For example, the influence of socio-cultural factors on health beliefs and health behaviors can be understood and discussed within some cultures which could reinforce unconscious beliefs and contribute to apprehension. From Wiehagen et al. study, they developed health communication materials that are relevant to the priority population (Wiehagen et al., 2007). The health promoting materials assigned from collaborative manner, working together and discussing each pictures, fonts, layout, and colors through team participant brainstorming turn to be better in their designed materials. According to Pasick, Hiatt, & Paskett study, they employed community interventions of cancer screening in community settings. They defined the community in terms of structure and function that could have unique advantages for particular problems and populations. The screening should be an effort

[1] Community-based participatory research (CBPR) is "the process of producing new knowledge by systematic inquiry, with the collaboration of those affected by the issue being studied, for the purposes of education and taking action or affecting social change" (Macaulay, 1999: 775. See also Glantz, 2009).

to encourage screening which occurs almost anywhere in communities such as stores, worksites, and churches (Pasick, Hiatt, & Paskett, 2004). A formative research can represent practical setting of a training program in ecological model used on "Theory and practice: Applying the ecological model to formative research for WIC training program in New York State." The model explained the level of influence that the program had on individual behavior, interpersonal, organization, community, and policy (Newes-Adeyi, Helitzer, Caulfield, & Bronner, 2000). In addition, the effectiveness of health program included one key success factor which is community health workers. Strachan et al. used the Innovations at Scale for Community Access and Lasting Effects (inSCALE) to address Uganda and Mozambique illustration on behavioral theory and formative results. Formative process indicates feedback and feeling connected to the health system of the community health worker on their community setting. As for an intervention through formative research, it indicates the developing that can be based on a participatory, local community approach, and an information communication technology approach (Strachan et al., 2015).

The distinction of formative research process can lay out into eight stages as follows:

Stage 1: Informed the situation or problem: What people do and think about the issue in focus to narrow the goal of the problem-solving process. This stage relies on the communication with the stakeholders (such as target population, health care providers, policy makers, researchers, and other local people) with identified problem and discussion for the problem-solving process on next stage. The iterative character of stage 1 may inform both qualitative research and quantitative research.

Stage 2: Identify and define problems from the perspectives of stakeholders.

Stage 3: Create the intervention that may include several options at multiple levels (personal, household, clinical, and community) and discuss with local stakeholders. They will reflect the problem based on background data collected during previous stages and on intervention experiences in other settings.

Stage 4: Enhanced problem-solving and critical assessment of a possible or feasible (e.g., financial, temporal, organizational) intervention strategies based on needs, motivations, and positions of power.

Stage 5: Implemented intervention, process on providing information, encouraging reflection, fostering problem-solving, or changing behavior. This stage will consider on what are the interest and need. It is a way to explore supportive collaborations with attention history and background, relations of power and identity, and issues of social stigma.

Stage 6: Monitor the process, repose an intervention in providers and beneficiaries. Next process is feedback-giving that enables the intervention program.

Stage 7: Set and conduct evaluative techniques that examine intervention process and outcome from multiple perspectives of stakeholders.

Stage 8: “Initiate a process of critical assessment that considers how an intervention and its results are being presented to the public, scientific community, and policy makers; and investigates public understanding and the politics of representation” (Nichter et al. 2004).

It appears that in breast self-examination among Akha women in Chiang Rai province, Thailand, for the stage definition, it can be illustrated as the conceptual flow as follow:

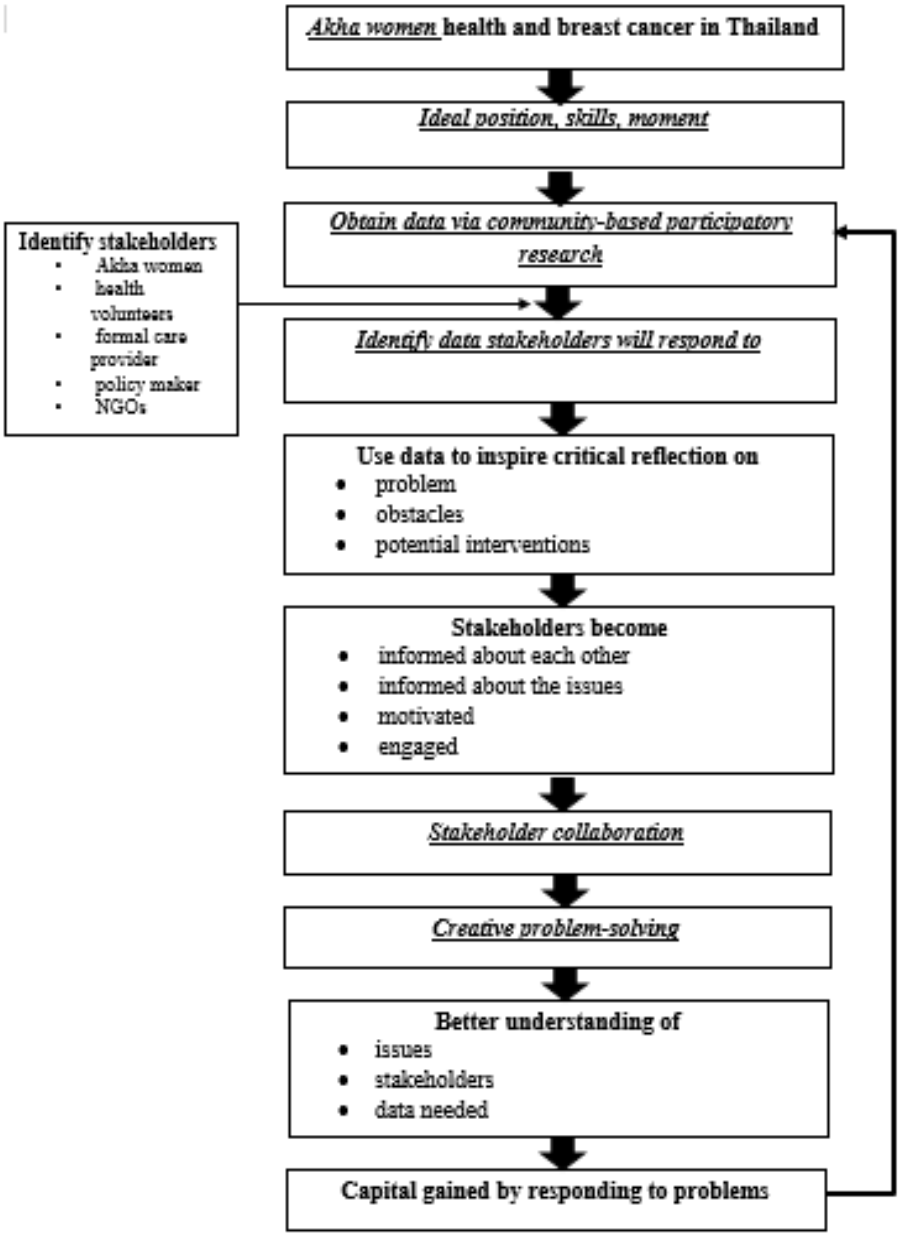

Figure 5: Akha Breast self-examination iterative steps in the formative research process.

Source: Adaptation from Glantz, Using Formative Research to Explore and Address Elder Health and Care in Chiapas, Mexico, In *Anthropology and Public Health: Bridging Differences in Culture and Society*, Chapter 10, page 294.

"Formative research must be well-grounded by qualitative methods on social scientist scope. In fact, a combination of methods is often the most effective means of eliciting the breadth and depth of information required for successful intervention" (Glantz, 2007), p 294). The important method is an enforcement to recognize and negotiate the power relations implicit in the dynamics of "community" and "participation". This process enhances the person who is aware of expressions of "community" needs or priorities and next to others process as listening, promoting dialogue, negotiating consensus, and problem-solving from a holistic approach.

2.6 Action Research

Under the structure of Community-based participatory research (CBPR) is the several participatory researches. It is a term used for a wide range of applications and labels including Rapid Epidemiological Assessment, Rapid Ethnographic Assessment, Rapid Rural Appraisal (RRA), Rapid Assessment Procedures (RAP), Participatory Rural Appraisal (PRA), Participatory Action Research (PAR), Participatory Research (PR), Development of Leadership Teams in Action (DELTA), Popular Epidemiology, and Critical Epidemiology. The same process defined in community and action-based participatory research which participation, sharing of power, and decision-making are important. According to Nyemba & Mayer study, they suggested a participatory action researcher to support people who are already in a disadvantaged position in order to bring about change together (Nyemba & Mayer, 2018). However, the

researcher should be aware of ethical issues. It includes the partnership, collaboration, and power. A solution emphasizes the development of trustful relationships in specific cultural and social context of the people under study. Community-based cancer control program affected Latina women aimed at knowledge, screening intention, and culture beliefs improvement (Castañeda et al., 2016). Lay Health Advisor program (LHA) is one example of community-based setting. It serves the community need of local population, society, and organization. The experience from the program can define the mistrust, discrimination, racial pride, and socio-demographics. In addition, they used social capacity such as social networks and social support to improve better health and enhance a good health behavior (Shelton et al., 2017).

Action research is associated with many approaches to change and make inquiry into social practices (Kemmis, McTaggart, & Nixon, 2013). It refers to research as a spiral of individual and collective self-reflective cycles of planning for a change, acting and observing the process and consequences of the change. This reflects the process & consequence, as well as planning, acting, observing, and reflecting as one cycle process in formative research. From MacDonald et al. research, they employed a combined method between action research and educational conference format to support patient information needs and addressing an important data gap of Latina patients and family members following genetic cancer risk assessment. This intervention could improve and provide a basis for cancer control. Most (more than 90%) agreed on this method and provided useful information and resources (MacDonald et al., 2012). Similarly, Aitken employed collaborative action research to address barriers to and improvement for cancer patient care. This process was conducted by policy makers, payers, academics, providers, drug and diagnostic

test manufacturers and other concerned stakeholders. Sub-process study would be discussing, debating and testing different approaches in a multi-stakeholder context. In addition, the forum can lead to the development of new insights, ideas and promising approaches, emerging from a tailored intervention to country contexts. The sharing process is from experience and knowledge of experts and practitioners to inform the development and implementation (Atkin & Freimuth, 2013).

2.7 Community Health Need Assessment Theory

Community health needs assessment (CHNA) is a process that describes the state of health of community people. CHNA enables the identification of the major risk factors and causes of ill health and enables the identification of the actions needed to address these (Organization, 2001). The first process is deciding on priorities for action and next is to plan for the public health program to address the priority issues. Third is to implement the planned activities for solving the problem. The last is to evaluate the outcomes.

According to Diaz et al., the concepts and principles of health needs assessment begin with defining “health” and “need”. It uses a holistic model of health, emphasizing the socioeconomics and cultural factors that affect health and individual behavior. It moves benefit from health care and public health program to accept the demand and takes account of people’s capacity (Diaz H. & M., 2016). Factors affecting health includes physical environment, social environment, behavior and lifestyle, and family genetics. Next step is to involve the community or to work in partnership with local people. The last involves an implementation with action plan creation (K, 2012).

2.8 Health Belief Model (HBM)

HBM defines that one's behavior will change when people think that (1) they are at risk of contracting a disease, (2) it is severe, (3) proposed cure are cost-benefit. HBM states that "cues to action" can cause health-related behavior change. It is tested by measuring perceived severity, susceptibility, and cost-benefits. Moreover, it is hypothesizing that those with higher scores on variables will be more likely to change behavior. The intervention is a cue to enhance the behavior. Communication campaigns and information reported through the mass media or via narrative can provide a cue to action. Breast cancer screening was frequently used by HBM to cue a change in behavior. According to HBM, the most important factor is perceived barriers. The model is used to explain sustaining health behaviors and planned intervention for preventive health behavior promotion. The individual's perception refers to how one knows about the risk of a disease, how one believes in the outcomes concerning the severity of the disease, and how one is aware of benefit and barriers of screenings. Education, media and a friend or a family member, can empower positive action taken for a change of health behavior (Tailor et al., 2016). Moreover, HBM is shown as a framework to guide formative research of the public's perception of breast cancer risks. According to Silk et al. study, adolescent and adult females in Michigan State of the U.S. recognized gender and heredity as relevant to breast cancer risk, detection, and early detection to decrease severity of the disease (Silk et al., 2006). Mohamed et al. research with a quasi-experimental design included 600 female student with the Champion's Health Belief Model Constructs Scale (CHBMS) to measure their BSE practice. The results indicated significant relation between knowledge and practice. Good practice was affected by high positive attitude scores.

Consultation based on HBM could also affect knowledge and practice (Mohamed et al., 2016; Parsa, Kandiah, & Parsa, 2011)

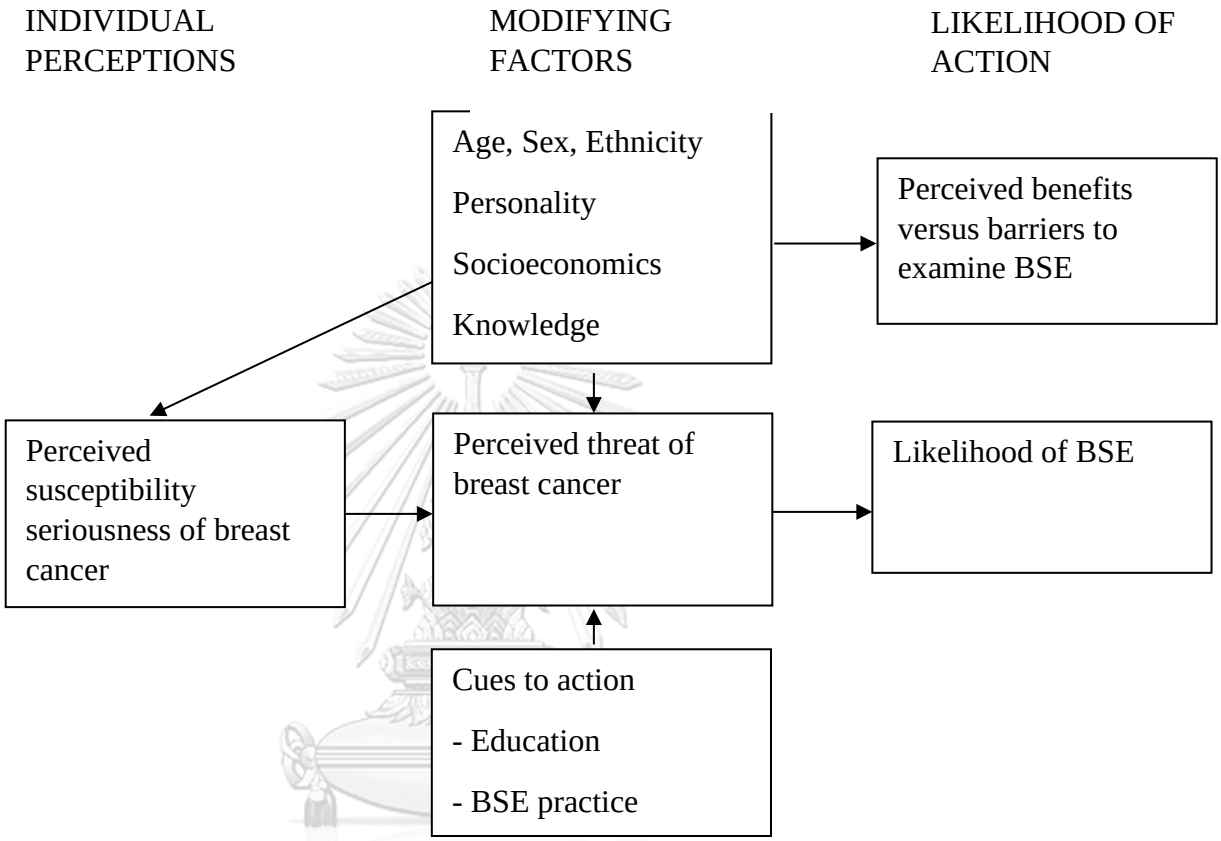

Figure 6: Health Belief Model (HBM) conceptual for breast self-examination

(Source: Adaptation from Noar & Zimmerman, 2005, Health Behavior Theory and cumulative knowledge regarding health behaviors: are we moving in the right direction?

According to this diagram, it can be explained as follows?)

1. Individual perceptions describe the knowledge and beliefs that affect behaviors and outcomes. Following describes perceived susceptibility and perceived severity.

1.1 Perceived susceptibility refers to the risk of breast cancer within people's opinions about a negative health outcome from risk behavior. For example, breast cancer is known as a public health disease. If people have a

low awareness of the problem, they have no reason to make BSE or breast screening. One of the goals is a changing perception of susceptibility in order to move towards behavioral change.

1.2 Perceived severity refers to how serious a situation or action could be. Breast cancer situation is the top of the leading causes of cancer death among women. Women may not understand how complex breast cancer detection is, how difficult it is to treat, and also do not know the painful and long times that disease can happen in life. The program requests for an increased awareness of the serious outcomes. It was evident that an individual perception was important to understand how modifying factors can affect a change in behavior.

2. Modifying factors: As seen by the arrows in the diagram, perceived susceptibility and severity do have their own impact on threat as well.

2.1 Perceived threat susceptibility refers to an idea one step further by examining how likely breast cancer could be developed. Someone who has not had BSE or breast cancer screening for a year may not feel threatened by potential disease because they have not been doing it very long.

2.2 Environmental factors can link to the threat of disease. Demographic background such as ethnicity and socioeconomic status can cause one to be more at risk. The poor person would be more threatened by a disease if they could not afford health care. However, peer pressure may be able to help.

3. Cues to action refers to the reasons to realize that one can be threatened by serious disease. Media and concerned people are the supporters for the behavioral

change. The previous two main categories have enhanced on each other and lead to likelihood of action. It is becoming aware of the potential outcome of a disease if behavior is not changed. It is important to explain the benefits and the barriers that BSE has.

3.1 Perceived benefits are the benefits to change. The achieved goal of HBM is greater quality of life for an individual both mentally and physically. Clearly, a benefit to change would increase health perception but there could be other factors that demonstrate on an individual level.

3.2 Perceived barriers shows when one cannot change behavior. Examples of barriers could be anything from losing friends, not having enough money or even self-efficacy problems (not believing in themselves). For behavior change to take place, the benefits should be stronger than the barriers.

2.9 Akha people and Akha women's health

The Thailand Hill Tribe Development and Welfare Center defines hill tribe or ethnic minority as the two large group of ethnic people divided into low hill (Karen (Kariang, Yang), Lua, Khamu and H'tin tribes) and high hill (Hmong (Meo), Yao (Mien), Lahu (Mussur), Lisu (Lisaw) and Akha (Ekaw) tribes). Most hill tribe people are considered to be indigenous to Thailand and are from the connected areas among Myanmar, Laos, and Southern China. They migrated to Thailand from neighboring countries during the past 100 years (Fujioka, 2002). The history of hill tribe people and Akha women can be defined as 'transnational migration'[2]. The connection areas

[2] Transnational migration or international migration is 'cross-border connection' or the ties and practices of migrants and non-migrants linking countries of emigration and immigration. It means to define the connection between the place of origin and destination, and of the onward and return movements (Faist, 2000).

of Myanmar, Laos, and Southern China refer to a transnational perspective[3] between areas and between Akha people and Thai people. In the past, this group of people is a vulnerable group of society due largely to a lack of infrastructure, limited access to Thai citizenship, and delayed land settlement. However, they gained in continuing assistance. Nowadays, most Akha people in Thailand have Thai citizenship. They have land settlement and are not different from Thai people. Due to the globalization, the Akha people can currently access to the public health care system and their lifestyle has become more like the metropolitan people. Nevertheless, Akha people still remain their cultural practice and group experience that accord to transnational perspective. The movement of Akha people links with three transnational components: Transnationalization, transnational social space, and transnationality. Northern Thailand is an area with ethnic minorities who preserve their traditional ways that makes them a fascinating culture, religion, and language. Akha people is the largest number (around 68,000 people) of ethnic population in Chiang Rai province (Administration, 2015). They are largely dependent on agriculture and employment for income. They also have the limited or inequity of accessing to health care service. This has affected the health information system of this group resulting in the shortage of their epidemiology situation (Apidechkul et al., 2016). The breast cancer epidemiology is no exception though the trend is increasing.

Akha people are a Tibeto-Burman linguistic group. Their language is in a form of Lolo (close to Lahu and Lisu). The origin place of Akha people was in Yunnan, South China, who migrated into Burma (back then) and Thailand approximately 50 -

[3] A transnational perspective means that the migration is not an irrevocable process but may entail repeated movements and, above all, continued transactions- bounded communication (Faist, 2000).

60 years ago. Previously, Akha people were scattered in the villages along Paholyothin Highway in Mae Chan and Mae Sai District, Chiang Rai province, and in the north of Mae Kok River in Burma connecting to the town of Chiang Rai and the Mekong River. Nowadays, Akha people move more toward the border area of Chiang Rai. Akha people were originated from Umsahyeh - the first female ancestor. Akha people have thereafter lived for sixty generations. Akha women indicate an important example as they perform the traditional ceremony with a worship of their goddess (Kacha-Ananda, 1971).

Akha people are classified into eight sub-groups: Ulo Akha, Lomue Akha, Phamee Akha, Pea Akha, Arkuae Akha, Narka Akha, Upee Akha, and Arjor Akha. The difference of each sub-group pertains to their dressing and the name-calling while the traditional practices are still the same.

Akha language is classified as Lolo/Yi branch of the Sino-Tibetan family called "Avkavdawv". Akha people have no written language but the people use several competing scripts that exist. They rely solely on their remembrance for their traditional cultures as there is a lack of the written record.

Among Akha people, they pay respect to other people in terms of sex, age and experiences. Male is considered a leader of the family – the breadwinner. The village structures may vary widely. They build their villages around the higher plateau or up in the mountains. Akha houses are traditionally constructed of logs, bamboo, and thatch. These houses are divided into "low houses" being built on the ground, and "high houses" being built on stilts. However, their houses are not permanent as they often move their villages similar to the semi-nomadic. The entrances to all Akha villages are wooden gates adorned with elaborated carvings on both sides that depict

the imagery of men and women and is called as a "spirit gate". The functions of the gate are to exorcize the evil spirits and lead to good things for the residents. Carvings can be seen on the roofs of the villager's house as a second measurement to control the flow of the spirits. As for transnational practice, it is explained in four basic spheres (familial, socio-cultural, economic, and political) of transnational life. The mechanism of Akha integration used three processes as follows:

1. Reciprocity in Akha is the process from transnational familial[4]. However, Akha family members move for the livelihood of the whole family and link with economic transnational[5]. They have the remittance and connect to each other as a part of their family and community. Nowadays, they can take the migration entrepreneurs as a global capitalism.

2. Exchange mechanism is a mixture of basic spheres of socio-cultural, economic, and political. First, Akha socio-cultural transnational[6] presents their own language and culture. Akha language has no written language but the exchange of Christianity in this group can develop their written language now. Second, economic transnational represents the remittance and migration entrepreneurs, e.g., financial and occupational, import and export of goods & services. Finally, political transnational[7] in Akha reflects in their obtaining of Thai citizenship, land settlement, and an access to public health care system. Moreover, they can cooperate with Thai politicians and manage their community.

[4] Transnational familial defined as families that live some or most of the time separated from each other (Faist, 2000).
[5] Migration itself is often driven by economic considerations. The scales of this practice are represented in remittances and entrepreneurship (Faist, 2000).
[6] Socio-cultural transnational refers to those transnational linkages that involve the recreation of a sense of community that encompasses migrants and people in the place of origin (Faist, 2000).
[7] Political transnational refers to political activities undertaken by migrants (Faist, 2000).

3. Communal solidarity can link to four basic spheres to create or develop own migrant community. Akha community has a clear setting-up in Thailand with several districts are full of Akha people. They can manage their own village and help each other. Thus, the developing of the four basic spheres is improved for better Akha life than in the past.

The traditional ceremony of Akha people is related to their life and is called "Yong Song Kho" (Zahl sahl qovq). It means the conservative traditions, ceremony and rules that apply in practice and can be divided into the following two types:

1. "Dae Young" (Dehvq Zahl) is the traditional practice for those who are alive and follow the religious belief, rules and ceremony. "Dae Young" compares life as life that is sent from the heaven - "Dae Yong Cho Thew" (Dehvq Zahk cawq toeq).
2. "Ze Yong" (Sil Zahl) is the traditional practice for those who are dead. "Ze Yong" compares the death as one is going back to heaven - "Ze Yong Cho Dae" (Sil Zahl cawq dav).

Akha's knowledge of traditional practices illustrates the uniqueness and the correlation to human beings. Akha people gather together, connect and help each other. All of these actions lead to the solution with the Akha's rules and regulations that emphasizes the peaceful living in the community. In addition, the traditional practice of Akha people links to healthy living, for example, there is a teaching of disease prevention and mental health establishment. They have the ceremony to prevent the outbreak in the community such as "Kha Da Chee" (Kal daq ciq-eu) and "Mee Song Lor" (Mil sahl lawl-eu). The well-being of the community relies on the traditional ceremonies of Akha people.

The traditional and cultural areas are one domain that shows Akha identity. Several beliefs and traditional practice present their past history and their development. They hold to one principle of real and natural life. From "Akha's knowledge of traditional practices illustrates the uniqueness and the correlation to human beings. Akha people gather together, connect and help each other", represented the character of transnationality and transnational community. The principle of this scope defines an inherent potential for relatively long life span. The personal relationship brings to new community and living together. Thus, Akha community is one transnational practice that attempts to incorporate the cultural aspects of migrant practice. Migrants do not usually make their communities alone. States and the politics fundamentally shape the options for migrant and ethnic trans-state social action (Waldinger & Fitzgerald, 2004).

Most occupation of Akha is the agriculture. Akha people grow a variety of crops including vegetables and dry crops. Nowadays, they can grow their coffee bean and tea field. Historically, some Akha villages cultivated opium, but the production diminished after the Thai government banned on such cultivation. As for livestock, Akha raise pigs, chickens, ducks, goats, cattle, and water buffaloes to supplement their diets and to use them for their secondary products. Akha women gather plants from the surrounding forests and pick up eggs and insect. People in some villages also construct bee gums to harvest the honey. Hunting is a popular male activity. According to Forsyth, mass tourism grown in Akha villages has a negative impact on their culture and values such as the dressing (Forsyth, 1995). For example, Akha people in Bann Pa Kuay Village dress more of the fashionable clothes. At times, the dress is a mixture between fashionable clothing and Akha dressing. More people put

on their Akha dress only in special ceremonies. With the popularity of mass tourism, Akha people are more interested in the convenience and income (a factor necessary for life maintenance). One can now see more modern home appliances such as televisions, refrigerators, computers, mobile phones, motorcycles, and many more in Akha villages. More shops and restaurants are increasing in their numbers. Akha people have changed from the original hill tribe group to people with a lifestyle of delicatessen consumption and semi-manufactured goods usage more than in their past. The faith in Akha's religious belief is changing due to the current way of living. Akha people nowadays work outside the village in order to earn money. In addition, traditional ceremonies are negatively affected with a loss in the new generation. Akha people are now converted more to being Buddhists and Christians (Protestant and Catholic). Akha people use Thai (northern) language to communicate with one another both for their daily living and for mass tourism services. This is especially true for the young and the middle age Akha people due to the modernization and the development of communication technology such as television and the radio. Moreover, the Internet and the educational management system get more coverage into the Akha villages.

Through modernization and mass tourism in Chiang Rai province, Akha people are negatively affected in many fronts: Traditional, economic, social, and environmental. As for the BSE health service provision to Akha women, since 2015 as a part of national agenda, the local health centers have faced a number of issues which they are attempting to respond. The development of occupational and economics can clearly tell transnational approach. It is a strategy of survival and betterment and indeed into lifestyle of its own. Advantage of widespread business

development leads to success of individual business owner. Transnational explains the motivation to do better that are present in most immigrant communities. Not only they develop lifestyle, but they can make an important contribution to the development of the places they come from. Naturalization can create confidence for foreigners. Similarly, among Akha people, most communities try to push for citizenship for every Akha people. Moreover, the socio-political context shows the opportunities for migrants to put their talent and motivation to work for economic advancement and for sustained development of the places they live (Portes & Yiu, 2013).

One study illustrated the trend of development connected between assimilation[8] and ethnic identity that showed the key behavioral assimilation (acculturation)[9] and socioeconomic assimilation components (Commons, 1922). First, **behavioral assimilation/acculturation** in Akha people may involve learning Thai language and/or becoming a Thai citizen. Within this process, Akha may choose to retain much of their traditional and culture, norms, and behaviors. The second major type of assimilation is **structural or socioeconomic** assimilation[10] i.e., when Akha people begin to participate as full members of Thailand. Thus, it can attain socioeconomic mobility and status (usually in the form of income, occupation, residential integration, etc.) equal to Thai members (Depalo, Faini, & Venturini, 2006). The changing process of behavioral or structural/socioeconomic assimilation is a linear form in which the succession of generations leads to increasing economic,

[8] Assimilation is the political interference in situations in ethnic differences. Cultural integration is a philosophy in multiculturalism. (Multiculturalism is a philosophy that seeks to maintain the differences of the various groups in society) (Commons, 1992).

[9] Behavioral assimilation/acculturation occurs when a newcomer absorbs the cultural norms, values, beliefs, and behavior patterns of the "host" society (Commons, 1992).

[10] **Structural or socioeconomic** assimilation refers to ethnic group enter and become integrated into the formal social, political, economic, and cultural institutions of the host country (Commons, 1992).

cultural, political, and residential integration into host society as Akha people in Thailand. Nevertheless, some cultural factor remains in next generation (sometimes referred to as "segmented assimilation"[11]) (Ford & Jampaklay, 2015).

As for Akha women breast cancer screening, the report from the Highland Development Health Center reported health status of 35 to 59 years old hill tribe women. The breast self-examination was found at only 11.7% and that for Hmong (Meo) and Karen (Kariang) was found at 8.7% and 19.5% respectively in the following year. There is an issue of limited access to health service of illegal migrant or vulnerable group (Suphanchaimat et al., 2015). Since 2015, the local health care providers have conducted the health care project related to cervical cancer and breast cancer screening. As one of the national health issues, the project has made the screenings with an instruction of basic screening techniques to Akha women aged 30 to 70 years. Breast self-examination program provided by the local health center has a purpose to educate about the basic fact of breast cancer and how to practice the BSE. The measured outcomes emphasize on the correct knowledge of BSE and the frequency of BSE practice. According to the database of the local health center since 2015, there is a low percentage of breast cancer screening, especially for the area where the hill tribe people, and the Akha people, live. For example, Mae Fah Luang district, where there are most Akha residents, has reported no more than 50% for breast self-examination. According to Mayfield-Johnson et al. study, the authors presented low breast cancer screening rate of African American women aged 40 years and older. The result showed the barrier to practice, the cost of breast screening such

[11] Segmented assimilation refers to combine elements of both traditional original (although they may modify old traditions and values to fit their contemporary circumstances) and mainstream new culture (Ford et al., 2015).

as mammograms, and barriers to health service access (Mayfield-Johnson et al., 2016).

Though ethnic study is complex, dynamic, and always changing, however, it can be understood with time-taking. The study will emphasize on the role of local people. Although there are differences in ethnicity, language, religion, etc., but they as stakeholders need to co-exist and share resources and/or protect their resources together. Cultural perspective is one concern as an approach to the group. The equality is important to avoid discrimination. It is conducted based on the three truths: All people are alike, human group differs, and each individual is unique. Especially, in female group study, it may be based on feminist perspective[12].

2.10 Intervention of Breast Self-Examination program

As previously presented, the detection or screening of early-stage tumors and breast cancer can reduce cancer mortality or increase survival gain at 5 years from the diagnosis (Cedolini et al., 2014). Breast self-examination is a regular inspection by a woman for abnormalities in her breast. Although physicians generally agree that women should examine their breasts on a monthly basis to help detect breast lumps (and thus potential cancer detection at an early stage), it is controversial whether self-examination alone or together with screening mammography can actually reduce death from breast cancer (Carlson et al., 2004). The interventions to promote breast cancer screening are home visit, media campaign, mailed culturally sensitive print materials, community- or work-based education, lay health worker outreach, mobile

[12] Feminist group work focuses on understanding the systemic realities and working toward changing the systems within women and men work and live or organizing principles in women's lives (Clifford, 2004).

screening services, and cultural awareness training for health care professionals (Lu et al., 2015).

The intervention program for BSE follows the health promotion intervention theory that can define as follow:

1. Trainings are designed to improve the way one communicates with participants. The program usually occurs in health-care facilities and accompanies by dissemination of print materials or other communication aids. This strategy consists of provider communication in verbal and nonverbal, and the use of aids such as flip chart, poster, brochures, and cue cards. Examples of providers are physicians, counselors, nurses, social workers, or anyone who has contact with participants.

2. Mass media advertising is used to determine commercial product such as television, radio, and printed materials. It creates brand identification and attempt to link specific images to designed product. It is important to raise awareness and establish a positive image for the behavior.

3. Multimedia or Community-wide programs are used through a variety of media, with community support and trained provider personnel. It is comprehensive to change community norms regarding scope of health and health systems. Multiple media such as mass media, outreach, and store-based promotion are coordinated to show consistent messages. Many studies believe that the multimedia approach can change people behavior.

Similarly, Kress et.al. suggested that BSE instruction and information should be focused in several ways. First, motivation messages for breast cancer screening should emphasize the importance of being around receivers. Second, family members

can encourage the women to be screened. Next, the BSE materials should be created in their languages with women of their own races and ethnicities in breast cancer materials. They prefer to receive material in their language because somebody has the same language. The stories from breast cancer survivors are important to motivate them (Kress et al., 2017). Due to limited reading skills in some people, some women want to receive health information audio-visually and suggest to use pictures illustrating signs and symptoms, radio announcements, videos and BSE instruction using breast models (Billones, Dadios, & Sybingco, 2016; Occa & Suggs, 2016; Yoon, Sohn, & Jung, 2016). In addition, churches and community meeting are the key stakeholder to provide health information. The last suggestion is that health information should be distributed in places where women live their daily lives such as beauty salons, supermarkets, and worksites. The knowledge of BSE program should be able to change the knowledge scores (Marzo & Salam, 2016) of 80 paramedical workers in Maharashtra Hospital in India (Avachat, Thipse, & Joshi, 2017). The significant of score changing was from poor to moderate level. Moreover, tailoring program of breast cancer screening can be expanded to imply policy with local organization (S. J. C. Lee et al., 2017). E. Lee et al. study enhanced couples' intervention to increase breast cancer screening among Korean Americans (E. Lee et al., 2014). The significant result was reported in intervention group at 6 months and 15 months post-intervention. Nowadays, the several promoting methods used a new concept such as edutainment, marketing, and digital technology. Finally, humor is a potential effective tool with positive health behavior. As for BSE, humor can enhance screening (Nabi, 2016).

CHAPTER III
Research Methodology

This study is based on a formative research design by referring to Glantz's (2009) formative research. With the development of *locally congruent intervention research design*, the researcher acted as a catalyst/a stakeholder/ or a facilitator in the process of the formative research study design. The study emphasized on the followings:

3.1 The relationship among family, community, and the state in terms of health care services for BSE in particular;

3.2 Stakeholders: These include Akha women, public health centers in the study area and health volunteer in community.

3.3 Formative research is employed as a customized research design for health care response of BSE. Dominant features include:

a. Multi-stage study

This study employed both quantitative and qualitative/ethnographic research methods. For the quantitative one, there were an analysis of numerical data with statistic values while for the qualitative one, there were analysis/synthesis ethnographic in descriptive manner. The mixture of these two research methods leaded us to the triangulation design. [13] This study was in two phases detailed as follows:

[13] The Triangulation Design is a research pattern and evaluation in a mixed way. It employs various different methods to find out answers for the same issue or the same research question (both qualitative and quantitative). Thereafter, the result will be compared and fulfilled one another methods for the most accuracy. The research pattern and evaluation in triangulation design may use one method as the

Phase 1: This phase employed mixed method study design with the data from qualitative study in form of in-depth interview among stakeholders of BSE in the study area. For quantitative data, it used survey questionnaire regarding socio-demographic factors, risk factors, and lifestyle factors in relevance to breast cancer, and the BSE self-practice. The combined data analysis brought about intervention development for BSE program suitable for the study area with Akha women.

Phase 2: This phase engages itself for intervention program implementation through a quasi-experimental research design. There was an evaluation of the effectiveness of BSE program among Akha women that is based on the frequency of practice and the correct practice of BSE. The evaluation on level of knowledge on breast cancer, the protection of, self-screening, and Breast Cancer Screening Beliefs Questionnaire (BCSBQ) and confidence, was also be made in order to compare the lesson learned and the key informants interest that was result in self-BSE practice of the key informants in the intervention group for pre- and post- intervention program, and the comparison between the intervention group and the control group. The final aim is to propose the public policy for BSE among Akha women in the study area.

b. Participatory/self-reflection/mutual collaboration/reciprocal respect/ co-learning

This study involves the key informant of the stakeholders. Due to the fact that there is a low percentage of BSE among Akha women, it is expected that data from the survey and from in-depth interview with Akha women started point for

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major and the other as the minor, or both may be equal in their status, with co-interpretation of the answers.

the situation analysis of breast cancer screening among Akha women. This point spearheaded us to the relevant concept or thought toward the issue. It also reflected the reality and propose the add-on to the existing procedure, or even yield the suggestion to the intervention program in the brainstorming. All data earned was reflected in the strategic meeting for the development of BSE intervention program for Akha women. This is achieved by co-learning at all stages.

c. Iterative nature

This study is divided into two phases as above mentioned. The result from the first phase feedbacked for the second phase study which is the intervention program that fits the need of Akha women under study.

d. Use of *several methods* for data collection as a triangulation

This study employed triangulation evaluation [14] where data collected was been both descriptive and numerical. Data for first evaluation leaded to strategic planning through brainstorming of Akha women and other stakeholders to arrive the desired intervention program. This program is contextual so as to study the effectiveness of the intervention which is based on the needs and requirements of the participants in the study area. If successful, the intervention program yielded valuable information for public policy making on self-BSE among Akha women. The procedures are as follows:

i. Survey

The quantitative questionnaire survey seek to learn about socio-demographic factors, risk factors, and lifestyle factors relevant to

[14] For this study, the triangulation evaluation will synthesize on a periodical basis. The major method is the ethnographic study with numerical analysis as a minor method. Both methods aim at answering the same research questions.

breast cancer, and self-practice BSE. Also include is the level of knowledge, perception, and confidence in self-practice BSE. The survey conducted among Akha women under study.

ii. In-depth interview

The qualitative in-depth interview data among stakeholders gained from open-ended question, e.g., “Please tell me everything you know about BSE.” The question structure aimed at the same issue. The role of the interviewer is to probe for the most detailed answers. Phases to be used include “Anything else?” “Can you tell me more?” “Anything else—don’t worry about if it is right, just tell me what comes to mind” “Can you explain why?” It is important that the interviewer has to hold on to the main issue and ask all planned questions. Every in-depth interview requested for tape-recording in order to conduct verbatim content analysis at the later stage. All tape-recording files deleted after the completion of data analysis.

iii. Working group establishment

Creating a co-meeting with stakeholders, the aim is to present data for discussion and co-summary by the facilitators only in order to avoid intervention and data distribution.

3.4 Study area: Mae Fah Luang district is selected as the intervention group and Mae Lao district is selected as the control group, in Chiang Rai province. Mae Fah Luang district contains the most ethnic populations in Chiang Rai province where Akha is the largest populations as well. Based on the fact that there is a low percentage of self-practice BSE (less than 50%), and from the initial screening by

local health center, there are some abnormality of breast health but there is no confirmation on breast cancer case. For and Mae Lao district, it is selected as the control group due to the similarity of livelihood and the similar history to Mae Fah Luang district. These two districts are 93.5 kilometers apart with 2-hour drive by car and they are not adjacent to each other.

3.5 Ethical review: The researcher intends to forward the research proposal to the attention of the ethics review committee of Chiang Rai Public Health Office and Mae Fah Luang University for their consideration. According to ethics protocol, the participants under study received informed consent before administrating the questionnaire and signed the name or signed with fingerprint. All participants gave information about the objectives of the study and the perceived benefits from the study. They assured about the confidentiality of their information. The data was strictly used only for the study purpose. No key informants forced to participate. The code name used to protect the key informants' privacy and the data was kept confidential. Only an overall picture presented.

3.6 Research Instrument

3.6.1 The instruments for data collection: This study is divided into two phases with the research tools as follows:

Phase 1: Self - administered questionnaire (Appendix A) ,in-depth interview structure questions, and the forum guidelines (Appendix B and C).

For the questionnaire (with local translator if required), used to collect the data from the key performants via face-to-face interview. Participants responded to a total of 29 questions (See *Appendix A* for more details about this questionnaire) that will

ask about the factors of socio-demographic, risk, and lifestyle in relation to breast cancer.

Another quantitative data in phase one includes:

Knowledge of Breast Cancer and Screening (*Appendix A* Part 2) with a total of 10 questions. It refers to knowledge items and screening based on Breast Cancer Literacy Assessment Tool - B-CLAT. The scoring for this section is 1 score for the correct answer and 0 score for the wrong answer. With the total score of 10, the range of knowledge level is from 0-10. The total score of this part classified into 2 categories.

Low level: If the score is less than 60% of the total score

High level: If the score is at least 60% and above of the total score

Breast Cancer Screening Beliefs Questionnaire (BCSBQ)

Health Belief Model in breast cancer covers the aspects of susceptibility, seriousness, health motivation, benefit of BSE, barrier of BSE, and confidence. The questions are applied from the Breast Cancer Screening Beliefs Questionnaire (BCSBQ) (Kwok, Ogunsiji, & Lee, 2015). The CBCSBS was revised from an initial tool by Champion (1985) based on the Health Belief Model which include 31 questions that combine both negative and positive perception toward BSE. The score criteria from the 5–point Likert Scale is as follows:

Positive perception	**Negative perception**
Strongly disagree (SD) is 5 points.	Strongly disagree (SD) is 1 point.
Disagree (D) is 4 points.	Disagree (D) is 2 points.
Neutral (N) is 3 points.	Neutral (N) is 3 points.
Agree (A) is 2 points.	Agree (A) is 4 points.
Strongly agree (SA) is 1 point.	Strongly agree (SA) is 5 points.

According to Champion (1993) cited in Kelley's study (2002), the content of the question contains four sub-scales. The first subscale is susceptibility (5 items) that has the range of score from 5 to 25. The score is classified into two categories by using the median value as the cut-off point.

High susceptibility: If score is ≥ median

Low susceptibility: If the score is <median

The second is benefits of BSE (5 items) that has the range of score from 5 to 25. The score is classified into two categories by using the median value as the cut-off point.

High benefit: If the score is ≥ median

Low benefit: If the score is <median

The third subscale is barriers to BSE (11 items) that has the range of score from 11 to 55. The score is classified into two categories by using the third quartile value (Q3) as the cut-off point.

Low barrier: If the score is ≥ median

High barrier: If the score is < median

The last is BSE confidence (10 items) that has the range of score from 10 to 50. The score is classified into two categories by using the third quartile value (Q3) as the cut-off point.

Low barrier: If the score is ≥ median

High barrier: If the score is < median

Breast Self-Examination (BSE) practice

BSE score was collected from questions 25.1 and 25.2 in socio-demographic and risks factors (Appendix A, part 1). The total scores were 2 scores from practice and frequency. Good BSE was calculated by sum practice and frequency scores. The total score of this part classified into 2 categories.

Poor BSE: If the score is < 2

Good BSE: If the score is 2

In-depth interview structured questions (See *Appendix B* for more details about this questionnaire): There are nine guiding questions aiming at self-practice BSE. The data informed how is self-practice BSE among participants, what factors are or are not for the practice, any motivation or barrier for the practice, what is the concept for self-practice BSE among Akha women, and planed for screening.

Phase 2: There were measured a pre- and post- results of the intervention program, between intervention group and control group. The same survey questionnaire as in phase 1 was used in this phase 2. They are:

Social demographic factors, risk factors, and screening (Appendix A)

Knowledge of Breast Cancer and Screening (Appendix A)

Breast Cancer Screening Beliefs Questionnaire (BCSBQ) (Appendix A)

For the intervention phase, there have one more variable as follow:

Breast Self-Examination (BSE) practice

Breast self-examination monitoring form (Appendix C) was used to collect breast self- practice. This measurement was combined using with a self-report from the participants. This form is developed for appropriate use in the participants with limited health literacy. The symbol or picture represent BSE process, used for the report by Akha women (the self-report checklist related to breast self-examination). The follow-up period made in the third and the sixth months by research assistant (through an observation competency checklist for BSE during pre- and post-educational program). The re-checking has been checked for date and for case by case. This performance checklist is designed to evaluate breast self-examination based on breast self-examination proficiency rating instrument (Mohamed et al., 2016). This checklist form consists of seven practical steps and one frequency. Total scores were 8 which combine between correctly practice and always practice. All steps are scored from 0-7. Frequency score was checked from BSE self-report (BSE calendar). One score of frequency gave for who checked practice every month or 1 time/2 months. The total practical scores divided into two categories. Scores from 5-8 refers to good practice while scores of < 5 refers to poor practice.

3.6.2 Intervention program

The intervention program of this study derived from the summary of phase 1 research, as the locally needed BSE by Akha women under study. BSE process fitted for the local livelihood and environment of Akha women's daily life. However, basically, an initial direction for the intervention program was in line with the theory of knowledge increase and study on belief about breast cancer. The aim is to bring

about desirable practice of BSE effectively. The structure of the activities in the intervention program is:

Activity 1: There were introduced of BSE program with a detailed explanation of the study and the informed consent from the participants, including the pre-test process for subsequent measurement.

Activity 2: "Basic learning about breast cancer and screening" with a purpose to give basic knowledge about breast cancer, contribution factors of breast cancer, and the prevention and self-screening among the at-risk groups. Include as well is the method for treatment if there is a case of breast cancer. This session involves the knowledge and the perception or the risk evaluation according to the Health Belief Model (HBM). The moderator/facilitator of this session is nurses or public health officers engaging in breast cancer and the screening. For the participants who do not understand Thai language, there were received a translation into Akha language. The translators are female village health volunteers. This session is an activity of 10-person group discussion. Each discussion was the same content and the same way of discussion. After the discussion.

Activity 3: "Virtual Self-practice BSE" which conducted with the use of virtual breast model. There were simulated of an abnormality of breast tumor/cancer in five different patterns. The expert conducted this session by each pair of the breast model. This session conducted right after the second session.

Activity 4: "Agreement making and the use of BSE record manual." This activity informed the participants about the time period for BSE with an agreement of a monthly BSE practice. There were explanted for the BSE record manual by the participants.

Activity 5: "BSE as a part of Akha women's daily life." This session is based entirely on the data from the first phase of the study. The data is summarized from the suggestions and from the strategic meeting for those with actual self-practice BSE. This way motivated the process that must be in line with the participant's everyday life.

Activity 6: "Follow-up." The follow-up period for BSE ran-domed after 12 weeks/3 months of the intervention program and after 24 weeks/6 months of the intervention program.

Table 1: Timetable activates

Week	**Session topic**	**Time (minutes)**	**Method**	**Intervention group**	**Control group**
1	- Information of the study - Informed consent	30		**Pre-test**	**Pre-test**
2-4	1. Basic learning about breast cancer and screening 2. Virtual Self-practice BSE 3. Agreement making and the use of BSE record manual 4. BSE as a part of Akha women's daily life	20 120 20 5	Lecture/ group discussion/ role-play/ self-report	Activity 2,3,4,5	-
12	followed after the intervention program	120		immediate assessment	immediate assessment
24	Follow-up	30/person		Post-test	Post-test

3.6.3 Validity and Reliability

The questionnaire got a comment from the three experts who are the specialists in breast cancer screening to check its content validity. Then the pilot test conducted to 30 Akha women in Chiang Khong district area since this area has the similar character with Akha women. The distant between Mae Fah Luang and Chiang Khong district are around 124 kilometers. Validity test calculated by using weighted KR-21 (Kuder-Richardson 21) in knowledge and practice parts at 0.86. The score criteria from the 5–point Likert Scale. The score is classified into 2 categories (high and low) by using the median value as the cut-off point. Cronbach's Alpha tested reliability of BCSBQ that were 0.84.

3.7 Sampling method: There are some inclusion & exclusion criteria for the intervention group and the control group as follows:

3.7.1 Sample size

Phase 1: The data for the sample size will be gained from the in-depth interview and quantitative survey questionnaire as follows:

Akha women under study will conduct self-practice BSE. They are Akha women between 30-59 years old with the following formula for sample size calculation:

$$n = \frac{P(1-P)}{\frac{e^2}{Z^2} + \frac{P(1-P)}{N}}$$

When : N = Number of Akha women who are between 30 to 59 years old at Mae Fah

Luang district 835

P = Estimated proportion of Akha population = 0.1

e = Estimated error = 0.05

Z = 1.96 at 95% CI

$$n = \frac{0.1(1-0.1)}{\frac{(0.05)^2}{(1.96)^2} + \frac{0.1(1-0.1)}{835}}$$

$$= \frac{0.09}{0.00065 + 0.00001}$$

$$= \frac{0.09}{0.00066}$$

n = 136.36 (+ 20% attrition = 27.27) = 163.63 = 164 persons. This study can collect more than calculated in number of 296 persons because the participants in study area were willing to participate in this study. Besides, it the cooperated with public health office in study area to collect this information.

Phase 2: Intervention

The target populations are women aged 30 to 59 years old at Mae Fah Luang district in Mae Fah Luang sub-district, as an intervention group, and in Pong Phare sub-district, Mae Lao district, as the control group, in Chiang Rai province, Thailand.

Inclusion criteria:

The selection criteria are as follows:

- Akha women
- 30 to 59 years old
- Thai nationality
- Has lived in the area for at least 1 year

Exclusion criteria:

Participants with any of the following conditions are ineligible for the study:

- get severe or complication of diseases e.g., disability or bed-ridden
- is a breast cancer case or has abnormal breast problem
- pregnancy
- breastfeeding
- being female health volunteers (who will be research assistants).

The sample size will be calculated by using the following formula.

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

When : P_A = Estimated proportion of BSE among cases whose intervention group should be increase after intervention program attention = 1

P_B = Baseline proportion of BSE among intervention group before the intervention program = 0.57

The proportion of BSE among the intervention group in this study refers to the investigation of "the effectiveness of a breast self-examination education program on knowledge, health beliefs and practice among community health volunteer" (Chatchaisucha et. al., 2011). The study presented similar age range of the participants and conducted in Thailand community area. As there is limited study about hill tribe people vulnerable group, this study assumed to thicken the literature for this particular group.

Z_α = 1.96 at $\alpha = 0.05$, $Z_\beta = 0.84$ at $\beta = 0.2$)

P = $(P_A+P_B)/2$= 0.78, 0.5

Δ = (P_A-P_B) = 0.22, 0.6

$$n = \frac{2\,(1.96+0.84)^2 \times 0.78\,(1-0.78)}{(0.22)^2}$$

= 53.8

= 54

The calculated sample size in each group will be at least 54 participants. This study can collect less than the calculated sample size (44 persons in intervention

group and 42 persons of control group) So it effected to power of test and the limitation in this study.

3.7.2 Sampling technique

The flow of sampling technique is shown in Figure 5 including the following:

Phase 1: Survey and In-depth interview

Quantitative data

Akha women who replied face-to-face interview questionnaire of 296 persons. Since there are 18 districts in Chiang Rai province. Mae Fah Luang was selected purposively as the intervention group because of its large number of hill tribe group or Akah (a total of 18,877 people). Mae Fah Luang sub-district in Mae Fah Luang district was selected with the same purposive sampling within large number of Akha women who report a low percentage of BSE (1,355 people during 2012-2017, from a total population of 1,505 people). The questionnaire ram-domed by stratified random sampling according to the age range of three groups from 30-59 years old. Followed with the randomization according to the proportion of the population in each age range.

In-depth interview

This study interviewed Akha women with the history of the abnormality at their breast who are not breast cancer case. For the sample size, the researcher used breast cancer prevalence at Chiang Rai province of 0.5 per 100 population when compared to Akha populations. There must be at least ten interviewees which selected from the survey respondents with the abnormality of breast health who attend the examination program consistently and those who has never had BSE.

Phase 2: Intervention

Then the intervention group selected from simple random sampling in Ban Si Lang Village (79 Akha women), Mae Fah Luang sub-district. There were reported the abnormality of breast health in 2016 (Report from Doi Tung Health Promoting Hospital). The sample is 44 persons. The control group used Akha population in Mae Lao district from simple random sampling of 5 districts that were as the similarly with Mae Fah Luang district area. For sub-district of control was selected by purposive in the highest rate of Akha population in that area and Ban Huai San Akha Village (121 Akha women) selected by simple random sampling.

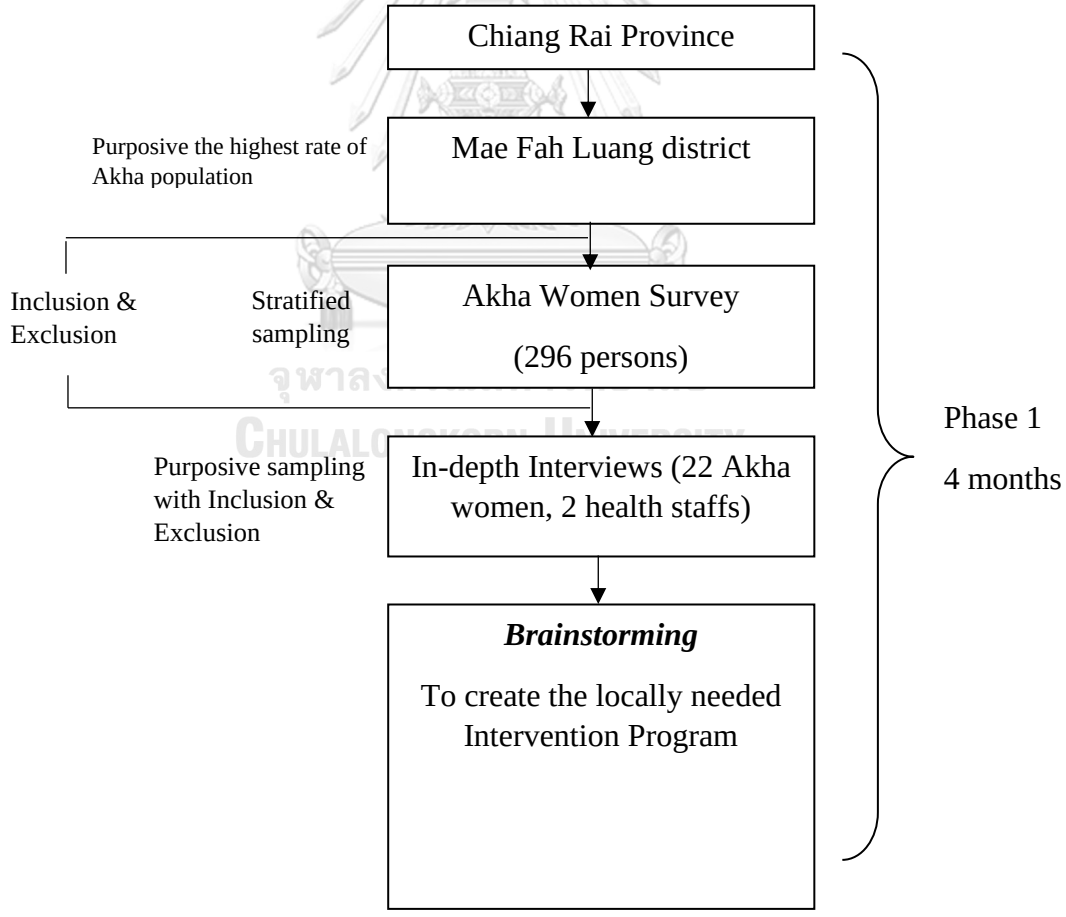

Figure 7: The flow of sampling technique in phase 1

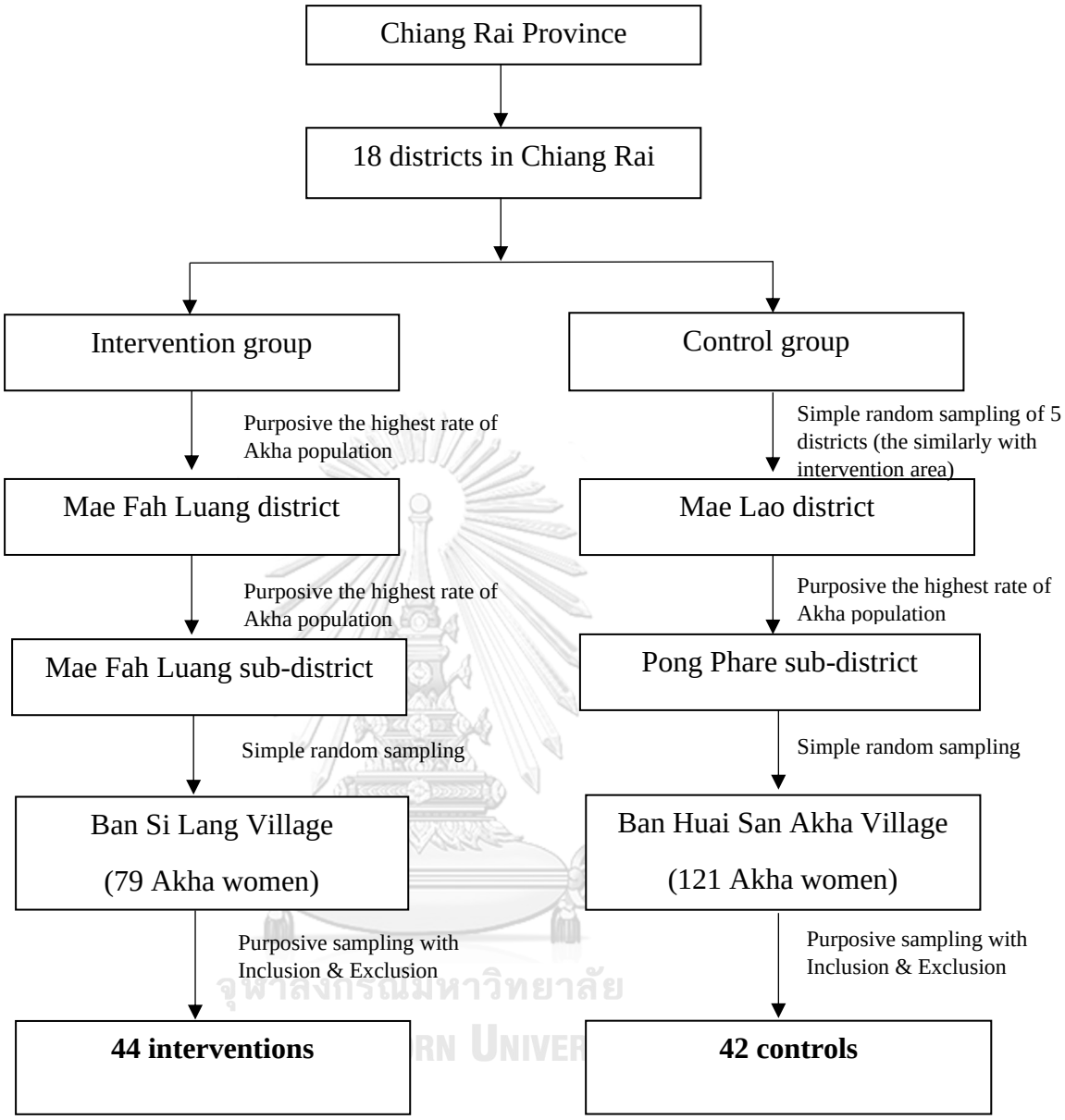

Figure 8: The flow of sampling technique in phase 2 (6 months)

3.7.3 Data collection

Field study was first started for the observation in October 2016 which continue as data collection period up to 2018. The data collection started only after Chiang Rai Public Health Office Bureau's Ethics Committee approves the research ethics request. Six research assistants were trained to interview and to attend to the

participants. One of them is the health volunteer within the study area who can speak and write both Thai and Akha languages. Each researcher assistant tested with the researcher by role-playing. They received checking whether they can answer the questions completely before the end of the conversation. Before the interview, the researcher and the team described the ethical concern and the study benefit to the participants. The participants signed their informed consent. The collecting of data is face-to-face interview, therefore, in case the participant does not want to answer the question, the researcher wrote missing code for the data analysis.

For the intervention phase, the researcher set the BSE program to promote breast self-examination in Akha women at the intervention group of Mae fah Luang area. Before the running of the intervention program, the research assistants received training by the researcher. The program evaluated at baseline, after 12 weeks of the intervention program, and 24 weeks follow-up. If the participants do not want to involve in the program, the research wrote missing code for the data analysis.

3.7.4 Data analysis

Phase 1 analysis

For qualitative data analysis, the data have a verbatim analysis with them analysis. One main coder will code all data and another re-reviewed initial coding results. Discrepancies in coding interpretation resolved through discussion. Domain analysis conducted on the coded data which allowed for the themes and the problem theory to emerge.

The numeric analysis part will use the Statistical Package for Social Science (SPSS) Software Version 22.0 licensed for Chulalongkorn University as follows:

Descriptive analysis

Preliminary analysis consists of descriptive statistics on the factors of socio-demographic characteristics, risk, lifestyle, the Breast Cancer Screening Beliefs Questionnaire (BCSBQ), knowledge of breast cancer & screening, and BSE practice in term of frequency and correctness. The descriptive statistics include the use of proportion, percentage, mean, maximum value, minimum value, and standard deviation. Chi-Square will be used for the test of homogeneity.

Inferential statistical analysis

This result analyzed factor associated between factors and characteristics with a good practice of BSE by binary logistic and multiple logistic regression.

Phase 2 analysis

Friedman's ANOVA Compared to One-Way Repeated Measures ANOVA used for the comparison of two proportions of BSE among the intervention and the control group. There will be a comparison of group mean on dependent variables (BCSBQ, knowledge, and BSE practice) across repeat measurements of time.

Moreover, Difference-in-differences was used to compare the changes in BSE over time between intervention and control groups.

The level of significance will be set at $p < 0.05$.

3.8 Benefits of the study:

1. After this study, it is able to offer a new practical program to promote breast self- examination in a vulnerable group of the society such as Akha women group.

2. Based on the study result, there should be an improvement on the understanding of breast cancer & screening to detect early-stage tumors and breast cancer or to reduce cancer mortality and increase of survival.

3. Extension to other areas can be recommended as the result of the study is useful in increasing the effectiveness of breast self-examination based on formative research study design. The result will be useful for public health officers to make policies and project implementation for the vulnerable group such as hill tribe and migrant groups.

3.9 Limitations of the study:

The part of self-report is one part that might face bias response such as non-response or over-response. As well, this study conducts only with Akha women. Therefore, the study result cannot be generalized to other hill tribe women.

CHAPTER IV
Results

This study was based on formative research which included information from several methods and used long time study. This study divided into two phases: firstly, it was mix method study design to propose and describe BSE situation among Akha women. The first results were mentioned and leaded to create intervention in second phase. Participants of this study were Akha women aged 30 to 59 years old that leaved in Mae Fah Luang Sub-district, Chiang Rai Province. Part of intervention, the design is quasi-experimental study design: customized intervention was used Akha language to communicate in media of Video, telling from old Akha breast cancer patient, and used picture guild line to practice BSE. Monitoring results were followed 3 months and 6 months. Besides, this study divided sample into two groups: intervention and control group at deferent study area in Mae Fah Luang Sub-district and Mae Lao Sub-district. Main outcome of second phase reported the BSE practice after intervention receiving. Thus, the deeply result of each phase showed as following:

4.1 Phase 1: Results of quantitative study

A Mixed Methods Study on Knowledge, Beliefs, and Confidence to BSE among AKHA Women (Hill Tribe Group) in Chiang Rai, Thailand

This phase aims to analyze the situation of BSE among ‘Akha’ women (the largest ethnic group in Thailand) through the factors of socio-demographic, risk, lifestyle, knowledge, and believe relevant to breast cancer, and confidence to self-practice BSE and used this result to create the customized intervention design of BSE.

4.1.1 Sociodemographic Characteristics

The general characteristics baseline presented in Table 2 Two hundred and ninety-six 'Akha' women responded the study of BSE. The mean age of respondents was 44.77 ± 8.57. Among the respondents, 91.20% were married: The basic nature of this group emphasizes in family and children. The most of Christian were meaning or representing god to give family and children. However, 46% were Buddhist, whereas, 44% were Christian. Mean of family income 8,296.96 ± 5,729.84 baht per month and they were working on job of employee 35.80% especially working at Doi Tung Development Project, Mae Fah Luang Foundation under Royal Pattronge. This Age range group was most adult person which less opportunity to study past. Sixty-eight percent of Akha women had no education, 43.60% can speak Thai while 13% were unable to use Thai language. The one most important was is the right to access health service which health scheme used. Most of all was long leave in Thailand so they have identification card and can access in Thailand health service. Seventy-four percent of respondents used universal health coverage.

Table 2: Selected socio-demographic characteristics and selected factors of 296 Akha women in Chiang Rai Province, Thailand.

Characteristics	n	Percent
Age groups (Age mean: 44.77 ± 8.57)		
30 – 44	143	48.30
45-59	153	51.70
Married Status		
Single	8	2.70
Married	270	91.20
Divorced	11	3.70
Widowed	7	2.40

Characteristics	n	Percent
Religion		
Buddhism	137	46.30
Christianity	131	44.30
Spiritual	28	9.50
Education		
No Education	204	68.90
Primary School	31	10.50
Secondary School	47	15.90
Higher education	14	4.70
Thai Language Skills		
All used	106	35.80
Speak and Read	8	2.70
Only speak	129	43.60
Unable all used	40	13.50
Others	13	4.40
Occupation (Family Income mean 8,296.96 ± 5,729.84 baht per month)		
Housekeeper	66	22.30
Employee	106	35.80
Agricultural	60	20.30
Vendor	59	19.90
Government Official	5	1.70
Scheme Used		
Out of the pocket	6	2.00
UC and others	290	98.00

4.1.2 Others factor related in general lifestyle and risk

This study founded that most of Akha women know in BSE at 72% but for practice reported only 45.90%. Besides, Table 3 describe general lifestyle and risk

characteristics of 296 Akha women, in table below included Body Mass Index (BMI), Non-Communicable Diseases (NCDs) history, frequency of visiting a physician, exercise, drinking, pregnancy history, Breast feeding history, contraceptive used, menstruation start before the age of 12 years old, menopause after the age of 55 years old, breast information receiving, type of information receiving, attitude of health status, breast cancer genetic history, breast problem history, type of breast problem history, BSE knowing and practice, and last CBE practice. The most of participants were overweight and obese at 76.20%. Reporting of NDCs status was 19.30%, and time to visit physician was 720% of fiscal year health checking. Behavior risk of exercise drinking, and smoking were responded 20.60%, 20.27%, and none smoking respectively. All most of Akha women have been pregnant before around 93.90%. From pregnant women, they have been given breastfeeding for their son/daughter at 92.6% (mean of breastfeeding time 18.45 ± 10.18 months). Part of hormone factors linked with menstruation and menopause status. Mean of menstruation start aged 14.88 ± 1.51 years old, only 0.07% were started menstruation before the age of 12 years old. Seventy-four menopause persons were 12.20% of occurring after the age of 55 years old. As for information receiving or breast information receiving, 81.40% have been heard about breast health. The most type of route information received from local health staffs (59.80%) and attitude toward their health reported the good attitude of healthy (72.60%) in life. Then, breast characteristics factor presented 8.10% linked with breast problem before especially lump problem around 62.50%. Only 1.40% linked with genetic history of breast cancer in family. Moreover, factors of CBE in each year with local health staffs that founded 69.60% were annual checking every year.

Table 3: BSE practice, general lifestyle and risk characteristics and selected factors of 296 Akha women in Chiang Rai Province, Thailand.

Characteristics	n	Percent
BMI		
Underweight	6	2.00
Normal	75	25.30
Overweight and obese	215	76.20
Non-communicable Diseases History		
Yes	57	19.30
No	239	80.70
Frequency of visiting a physician		
Never	4	1.40
Once a month	18	19.60
Once a year	213	72.00
1 time per 2 year	4	1.40
Others	17	5.70
Exercise		
Yes	61	20.60
No	235	79.40
Drinking		
Yes	60	20.27
No	236	79.73
Pregnancy History		
Yes	278	93.90
No	18	6.10
Breast Feeding History (Mean of breast feeding time 18.45 ± 10.18 months)		
Yes	274	92.60
No	22	7.40
Contraceptive Used		
Yes	199	67.20
No	97	32.80

Characteristics	n	Percent
Menstruation start before the age of 12 years old (Mean of menstruation start aged 14.88 ± 1.51 years)		
Yes	2	0.70
No	294	99.30
Menopause Status		
Yes	74	25.00
No	222	75.00
Menopause after the age of 55 years old (n = 74 women)		
Yes	9	12.20
No	65	87.80
Breast Information Receiving		
Yes	241	81.40
No	55	18.60
Type of Information		
Printing	27	9.10
Television and Radio	33	11.10
Internet	21	7.10
Hospital	79	26.70
Health Staffs	177	59.80
Church	1	0.30
Family and Friend	12	4.10
Others (Workplace)	2	0.70
Perceive of Health Status		
Unhealthy	47	15.90
Well sometime	23	7.80
Healthy	215	72.60
Very good health	11	3.70

Characteristics	n	Percent
Breast Cancer Genetic History		
Yes	4	1.40
No	292	98.60
Breast problem history		
Yes	24	8.10
No	272	91.90
Type of breast problem history (n = 24 women)		
Lump	15	62.50
Cyst	5	20.83
Others (Pain and fluid from nipples)	4	16.67
Have been known BSE		
Yes	213	72.00
No	83	28.00
BSE practice		
Yes	136	45.90
No	160	54.10
Frequency to Practice BSE* (n=136)		
Once a month and always	83	61.03
Occasionally	53	38.97
CBE practice		
Yes	206	69.60
No	90	30.40

4.1.3 Part of knowledge and health believed to practice BSE

The knowledge and health believed criteria presented in Table 4, the detail showed at below that linked with Knowledge on BSE, practice, and breast Cancer, Belief and confidence of BSE (included susceptibility, benefits, barriers, and

confidences). The last score linked with practice score, combined between practice and frequency of practice.

Table 4: Knowledge, belief, confidence, and practice of BSE (n=296)

Characteristics	Given Score	n (%)
Knowledge on BSE, Practice, and Breast Cancer		
Total given score	10	
Min-Max scores	0-10	
Total mean score with SD	6.55 ± 2.073	
Low level of knowledge (scores < 6)		128 (43.20)
High level of knowledge (scores ≥ 6)		168 (56.80)
Belief and confidence		
Susceptibility		
Total given score	25	
Min-Max scores	5-25	
Mean score of Susceptibility with SD	11.67 ± 5.00	
Low level of susceptibility: (scores < 12)		158 (53.40)
High level of susceptibility: (scores ≥ 12)		138 (46.60)
Benefits of BSE		
Total given score	25	
Min-Max scores	5-25	
Mean score of Benefits with SD	17.56 ± 4.05	
Low level of benefit: (scores < 17)		153 (51.70)
High level of benefit: (scores ≥ 17)		143 (48.30)
Barriers to BSE		
Total given score	55	
Min-Max scores	11-55	
Mean score of Barrier with SD	39.11 ± 8.75	
Low level of barrier: (score ≥ 40)		144 (48.60)
High level of barrier: (score < 40)		152 (51.40)

Characteristics	Given Score	n (%)
BSE confidence		
Total given score	50	
Min-Max scores	10-50	
Mean score of confidence with SD	30.90 ± 7.65	
Low level of confidence: (scores < 30)		151 (51.00)
High level of confidence: (scores ≥ 30)		145 (49.00)
BSE practice		
Total given score	2	
Min-Max scores	0-2	
Total mean score with SD	0.66 ± 0.78	
Poor practice (scores < 2)		238 (80.40)
Good practice (scores = 2)*		58 (19.60)

**Good practice score reference from the BSE program, Thailand Public Health Ministry*

Table 5 showed the percentage of right and wrong answers of ten knowledge questions. The most participants were responded the right answer more that 80% in knowledge of breast cancer come back occurring again on another side of breast, early stage breast cancer can be cured, BSE practice should not lift the finger when checking the breast.

Table 5: Knowledge scores

Knowledge questions of breast cancer and BSE	Knowledge Answers	
	Correct n (%)	Incorrect n (%)
1. What is breast cancer?	172 (58.10)	124 (41.90)
2. Itchy nipple is breast cancer symptom.	104 (35.10)	192 (64.90)
3. If the breast cancer removed on one side, it can come back occurring again on another side.	256 (86.50)	40 (13.50)

Knowledge questions of breast cancer and BSE	Knowledge Answers	
	Correct n (%)	Incorrect n (%)
4. Which age groups are at highest risk for breast cancer?	147 (49.70)	149 (57.30)
5. Drinking and smoking are group risk of breast cancer more than who are not drinking and smoking.	231 (78.00)	65 (22.00)
6. Early stage breast cancer can be cured.	254 (85.80)	42 (14.20)
7. Should you do breast exam during period?	154 (52.00)	142 (48.00)
8. BSE should be done monthly or a time per 2 months.	165 (55.70)	131 (44.30)
9. Using the 3 middle fingers pads pressure at breast site in 3 levels of light, middle, and heavy	190 (64.20)	106 (35.80)
10. Do not lift the finger when practice BSE or checking the breast	266 (89.90)	30 (10.10)

Part of Breast Cancer Screening Beliefs Questionnaire (BCSBQ), the attitude of participants reported in Table 6. Level of attitude divided in 5 Likert scales (strongly agree, agree, neutral, disagree, and strongly disagree). Sub-part of BCSBQ Questions included 5 items of susceptibility, 5 item of benefit, 11 items of barrier, and 10 items of confidence. The first, the most susceptibility were reported around 30% of neutral and strongly disagree example feeling to get breast cancer sometime during in life. Assume 30% to 40% were weigh of agree in benefit of BSE. The barrier question is the negative questions so more than 50% inclined towards neutral, disagree, and strongly disagree. Finally, the weight score of confidence to BSE practice was neutral level.

Table 6: Breast Cancer Screening Beliefs Questionnaire (BCSBQ)

BCSBQ Questions	Likert scales of Attitude				
	Strongly Disagree n (%)	**Disagree n (%)**	**Neutral n (%)**	**Agree n (%)**	**Strongly Agree n (%)**
Susceptibility (5 items)					
It is extremely likely that I will get breast cancer.	116 (39.20)	42 (14.20)	100 (33.80)	29 (9.80)	9 (3.00)
My chances of getting breast cancer in the next few years are great.	108 (36.50)	58 (19.60)	95 (32.10)	29 (9.80)	6 (2.00)
I feel I will get breast cancer sometime during my life.	93 (31.40)	63 (21.30)	100 (33.80)	36 (12.20)	4 (1.40)
Developing breast cancer is currently a possibility for me.	73 (24.70)	70 (23.60)	107 (36.10)	41 (13.90)	5 (1.70)
I am concerned about the likelihood of developing breast cancer in the near future.	82 (27.70)	66 (22.30)	88 (29.70)	46 (15.50)	14 (4.70)
Benefits of BSE (5 items)					
When I do breast self-examination, I am doing something to take care of myself.	10 (3.40)	20 (6.80)	117 (39.50)	95 (32.10)	54 (18.20)
If I complete breast self-examination monthly, I don't worry as much about breast cancer because I know that nothing is wrong.	10 (3.40)	19 (6.40)	122 (41.20)	86 (29.10)	59 (19.90)

BCSBQ Questions	Likert scales of Attitude				
	Strongly Disagree n (%)	**Disagree n (%)**	**Neutral n (%)**	**Agree n (%)**	**Strongly Agree n (%)**
Completing breast self-examination each month may help me find breast lumps early.	8 (2.70)	37 (12.50)	108 (36.50)	88 (29.70)	55 (18.60)
Completing breast self-examination each month may decrease my chances of dying from breast cancer.	9 (3.00)	17 (5.70)	116 (39.20)	95 (32.10)	59 (19.90)
If I find a lump early through breast self-examination, my treatment for breast cancer may not be as bad.	8 (2.70)	23 (7.80)	143 (48.30)	98 (33.10)	24 (8.10)
Barriers to BSE (11 items)					
I do not feel I can do a breast self-examination correctly.	26 (8.80)	65 (22.00)	141 (47.60)	55 (18.60)	9 (3.0)
Doing breast self-examination will make me worry about what is wrong with my breasts.	42 (14.20)	78 (26.40)	115 (38.90)	44 (14.90)	17 (5.70)
Breast self-examination is embarrassing to me.	81 (27.40)	83 (28.00)	100 (33.80)	17 (5.70)	15 (5.10)
Breast self-examination takes too much time.	63 (21.30)	100 (33.80)	101 (34.10)	24 (8.10)	8 (2.70)
It is hard to remember to do breast self-examination.	61 (20.60)	99 (33.40)	103 (34.80)	25 (8.40)	8 (2.70)
I don’t have enough privacy to do breast self-examination.	77 (26.00)	84 (28.40)	97 (32.80)	29 (9.80)	9 (3.00)

BCSBQ Questions	Likert scales of Attitude				
	Strongly Disagree n (%)	**Disagree n (%)**	**Neutral n (%)**	**Agree n (%)**	**Strongly Agree n (%)**
Breast self-examination is not necessary if you have a breast exam by a health care provider.	78 (26.40)	69 (23.30)	96 (32.40)	42 (14.20)	11 (3.70)
Breast self-examination is not necessary if you have a routine mammogram.	81 (27.40)	67 (22.60)	102 (34.50)	34 (11.50)	12 (4.10)
My breasts are too large for me to complete breast self-examination.	66 (22.30)	98 (33.10)	98 (33.10)	26 (8.80)	8 (2.70)
My breasts are too lumpy for me to complete breast self-examination.	62 (20.90)	110 (37.20)	91 (30.70)	25 (8.40)	8 (2.70)
I have other problems more important than doing breast self-examination.	80 (27.00)	98 (33.10)	84 (28.40)	23 (7.80)	11 (3.70)
Confidence in completing BSE (10 items)					
I know how to perform breast self-examination.	9 (3.00)	34 (11.50)	145 (49.00)	64 (21.60)	44 (14.90)
I can perform breast self-examination correctly.	10 (3.40)	35 (11.80)	153 (51.70)	60 (20.30)	38 (12.80)
I could find a breast lump by performing breast self-examination.	20 (6.80)	35 (11.80)	158 (53.40)	60 (20.30)	23 (7.80)

BCSBQ Questions	Likert scales of Attitude				
	Strongly Disagree n (%)	**Disagree n (%)**	**Neutral n (%)**	**Agree n (%)**	**Strongly Agree n (%)**
I am able to find a breast lump which is the size of a quarter.	25 (8.40)	50 (16.90)	149 (50.30)	54 (18.20)	18 (6.10)
I am able to find a breast lump which is the size of a dime.	27 (9.10)	57 (19.30)	140 (47.30)	56 (18.90)	16 (5.40)
I am able to find a breast lump which is the size of a pea.	34 (11.50)	71 (24.00)	131 (44.30)	42 (14.20)	18 (6.10)
I am sure of the steps to follow for doing breast self-examination.	20 (6.80)	45 (15.20)	155 (52.40)	51 (17.20)	25 (8.40)
I am able to tell if something is wrong with my breast when doing breast self-examination.	19 (6.40)	39 (13.20)	144 (48.60)	63 (21.30)	31 (10.50)
I am able to tell if something is wrong with my breast when I look in the mirror.	25 (8.40)	40 (13.50)	135 (45.60)	66 (22.30)	30 (10.10)
I can use the correct part of my fingers when examining my breasts.	17 (5.70)	44 (14.90)	134 (45.30)	75 (25.30)	26 (8.80)

4.1.4 Association between factors and BSE practice

Table 7 described the association between socio-demography and BSE practice, lifestyle, risks factors and BSE practice. The key main of association presented in factors of Thai language skills using, frequency of visiting a physician,

breast information receiving, attitude of health status, BSE knowing, and CBE practice. The p-value less than 0.05 of each factor were 0.032, 0.002, 0.001, <0.001, <0.001, and <0.001 respectively. The most of aged group (45 to 59 years) were poor BSE (41.60%). Group of marriage person have more percentage of poor BSE around 70%. In part of religion, key informants were Buddhism and Christianity and their have good BSE score around 9% in each religion group. Besides, the most of them were not study and showed the high percent in poor BSE (55.10%). Linked with Thai language skill of this group founded that they can only speak in 129 persons and 32.40% were poor BSE in this group. Hundred and six Akha women were employee and showed good BSE around 6%. For access health system, they used Universal Health Coverage Scheme and Social Security Scheme, but they were poor BSE in 70%.

Part of other factors of lifestyle, risk, and BSE perceiving founded the most of participants were poor BSE. BMI presented overweight and obese with poor BSE more than 50%. Akha women who were maternal and have been gave breast feeding presented poor BSE in 70%. In hormone factor founded the most used contractive and 53% poor BSE. In addition, most of them had known about breast health information but only 18% had good BSE. Sixty-three point five presented in group of healthy perception but defined in poor BSE.

Table 7: Association between BSE practice and baseline characteristics

Characteristics	BSE Practice		$\chi 2$	p-value
	Good n (%)	Poor n (%)		
Age groups				
30 – 44	28 (9.50)	115 (38.90)	<0.001	0.995
45-59	30 (10.10)	123 (41.60)		
Married Status				
Single	1.6 (0.70)	6.4 (2.00)	3.215	0.360
Married	54 (18.20)	216 (73.00)		
Divorced and widowed	2 (0.70)	16 (5.40)		
Religion				
Buddhism	29 (9.80)	108 (36.50)	3.057	0.217
Christianity	27 (9.10)	104 (35.10)		
Spiritual	2 (0.70)	26 (8.80)		
Education				
No Education	41 (13.90)	163 (55.10)	2.367	0.500
Primary School	8 (2.70)	23 (7.80)		
Secondary School	8 (2.70)	39 (13.20)		
Higher education	1 (0.30)	13 (4.40)		
Thai Language Skills				
All used	18 (6.10)	88 (29.70)	10.576	0.032*
Speak and Read	3 (1.00)	5 (1.70)		
Only speak	33 (11.10)	96 (32.40)		
Unable all used	2 (0.70)	38 (12.80)		
Others	2 (0.70)	11 (3.70)		

Characteristics	BSE Practice		$\chi 2$	p-value
	Good n (%)	Poor n (%)		
Occupation (Family Income mean 8,296.96 ± 5,729.84 baht per month)				
Housekeeper	12 (4.10)	54 (18.20)	1.494	0.828
Employee	20 (6.80)	86 (29.10)		
Agricultural	15 (5.10)	45 (15.20)		
Vendor	10 (3.40)	49 (16.60)		
Government Official	1 (0.30)	4 (1.40)		
Scheme Used				
Out of the pocket	0	6 (2.00)	3.888	0.274
UC and Others	58(19.60)	232 (78.40)		
BMI				
Underweight	0	6 (2.00)	1.492	0.474
Normal	15 (5.10)	60 (20.30)		
Overweight and obese	43 (14.50)	172 (58.10)		
Non-communicable Diseases History				
Yes	13 (4.40)	44 (14.90)	0.462	0.577
No	45 (15.20)	194 (65.50)		
Frequency of visiting a physician				
If you have problems.	30 (10.10)	160 (54.10)	12.671	0.002*
Once a month	21 (7.10)	37 (12.50)		
Other (long time)	7 (2.40)	41 (13.90)		
Exercise				
Yes	17 (5.70)	44 (14.90)	3.339	0.073
No	41 (13.90)	194 (65.50)		

Characteristics	BSE Practice		$\chi 2$	p-value
	Good n (%)	Poor n (%)		
Drinking				
Yes	11 (3.70)	49 (16.60)	0.76	0.857
No	47 (15.90)	189 (63.90)		
Pregnancy History				
Yes	56 (18.90)	222 (75.00)	0.875	0.541
No	2 (0.70)	16 (5.40)		
Breast Feeding History				
Yes	55 (18.60)	219 (74.00)	0.536	0.586
No	3 (1.00)	19 (6.40)		
Contraceptive Used				
Yes	42 (14.20)	157 (53.00)	0.880	0.436
No	16 (5.40)	81 (27.40)		
Menstruation start before the age of 12 years old				
Yes	0	2 (0.70)	0.491	1.000
No	58 (19.60)	236 (79.70)		
Menopause Status				
Yes	15 (5.10)	59 (19.90)	0.029	0.867
No	43 (14.50)	179 (60.50)		
Menopause after the age of 55 years old (n = 74 women)				
Yes	3 (4.10)	6 (8.10)	1.082	0.375
No	12 (16.20)	53 (71.60)		
Breast Information Receiving				
Yes	56 (18.90)	185 (62.50)	10.919	0.001*
No	2 (0.70)	53 (17.90)		

Characteristics	BSE Practice		$\chi 2$	p-value
	Good n (%)	Poor n (%)		
Type of Information (352 answers)				
Printing	4 (1.14)	23 (6.53)	0.431	0.619
Television and Radio	4 (1.14)	29 (8.24)	1.317	0.352
Internet	4 (1.14)	17 (4.83)	0.004	1.000
Hospital	18 (5.11)	61 (17.33)	0.696	0.411
Health Staffs	41 (11.65)	136 (38.64)	3.560	0.073
Church	0	1 (0.28)	0.245	1.000
Family and Friend	1 (0.28)	11 (3.12)	1.007	0.472
Others (Workplace)	0	2 (0.57)	0.491	1.000
Perceive of Health Status				
Unhealthy and Well sometime	20 (6.80)	50 (16.90)	22.876	<0.001*
Healthy	38 (12.80)	188 (63.50)		
Breast Cancer Genetic History				
Yes	2 (0.70)	2 (0.70)	2.379	0.174
No	56 (18.90)	236 (79.70)		
Breast problem history				
Yes	5 (1.70)	19 (6.40)	0.025	0.794
No	53 (17.90)	219 (74.00)		
Type of breast problem history (n = 24 women)				
Lump	3 (12.50)	12 (50.00)	2.572	0.632
Cyst	2 (8.33)	3 (12.50)		
Others (Pain and fluid from nipples)	0	4 (16.66)		

Characteristics	BSE Practice		$\chi 2$	p-value
	Good n (%)	Poor n (%)		
Have been known BSE				
Yes	58 (19.60)	155 (52.40)	28.109	<0.001*
No	0	83 (28.00)		
CBE practice				
Yes	58 (19.60)	148 (50.00)	31.515	<0.001*
No	0	90 (30.40)		

Noted: * P-value < 0.005

Table 8 reflects shows the binary logistic regression analysis of each independent variables associated with good BSE practice. The results show religion maintained significant with good BSE practice. The respondents who were Christian were less likely to have good BSE practice by 0.43 times than those who were Buddhist. Frequency of visiting a physician also associated with a good BSE practice (P-value <0.001). Respondents who visited a physician once a month were more likely to have a good BSE practice by 3.45 times than those who visited a physician in long time example ones a year. The respondents who had low confidence were less likely to have a good BSE practice by 0.23 times than those who had high confidence. The respondents who perceived susceptibility in low level were more likely to have a good BSE practice by 2.9 times than those who perceived susceptibility in high level and the respondents who reported low barriers were more likely to have a good BSE practice by 0.43 times than those who reported high barriers.

Table 8: Multiple logistic regression

Characteristics	n of Good Practice (%)	Crude OR (95% CI)	Adjusted OR (95% CI)
Religion			
Buddhism	29 (9.797)	3.491 (0.782-15.574)	4.202 (0.934-18.906)
Christianity	27 (9.122)	3.375 (0.754-15.114)	3.970 (0.883-17.857)
Spiritual	2 (0.676)	Ref	Ref
Ability to use Thai language			
Yes	54 (18.243)	3.500 (1.209-10.134)*	3.818 (1.305-11.167)*
No	4 (1.351)	Ref	Ref
BMI			
Normal	15 (5.068)	1.000 (0.518-1.929)	1.075 (0.545-2.118)
Overweight and Obese	43 (14.527)	Ref	Ref
Pregnancy history			
Yes	56 (18.919)	2.018 (0.451-9.034)	2.355 (0.510-10.877)
No	2 (0.676)	Ref	Ref
Frequency of visiting a physician			
If health problems/complications	30 (10.135)	1.098 (0.450-2.678)	1.110 (0.455-2.710)
Once a month	21 (7.095)	3.324 (1.268-8.717)*	3.451 (1.311-9.086)*
Other (no/once a year/once in two years)	7 (2.365)	Ref	Ref
Breast Information Receiving			
Yes	56 (18.919)	0.125 (0.029-0.528)*	5.718 (1.316-24.845)*
No	2 (0.676)	Ref	Ref
Plan to practice BSE in the future			
Yes	48 (16.216)	5.943 (0.756-46.740)	4.213 (0.517-34.327)
Not sure	9 (3.040)	0.975 (0.114-8.318)	0.787 (0.089-6.938)
No	1 (0.338)	Ref	Ref

Characteristics	n of Good Practice (%)	Crude OR (95% CI)	Adjusted OR (95% CI)
Perceived susceptibility			
Low susceptibility	36 (12.162)	1.970 (1.093-3.548)*	2.861 (1.485-5.515)*
High susceptibility	22 (7.432)	Ref	Ref
Reported benefits			
Low	16 (5.405)	Ref	Ref
High	42 (14.189)	0.459 (0.244-0.861)*	0.602 (0.300-1.209)
Reported barriers			
Low	38 (12.838)	0.423 (0.232-0.769)*	0.433 (0.232-0.811)*
High	20 (6.757)	Ref	Ref
Confidence			
Low	19 (6.419)	Ref	Ref
High	39 (13.176)	0.391 (0.214-0.716)*	0.318 (0.156-0.645)*

4.2 Phase 1: Results of Qualitative

In-depth interview Information

This part used time to conduct information in 5 months since August to December 2018. Twenty-two Akha women and two local health staffs were interviewed in this part. From data, In-depth interviewed interpreting was divided to three major themes included: (1) knowledge and awareness of breast cancer and BSE practice, (2) Believed and confidence factors, (3) Health provide and social environment.

Theme 1: Breast cancer knowledge, how to BSE practice, and frequency to BSE.

Theme 2: Akha believe and reason to design BSE practice

Theme 3: Health staff's recommendation and BSE campaigns

Knowledge and awareness of breast cancer and BSE practice were conducted from samples telling a breast cancer and how-to BSE practice. The most sample known the disease but it just basic of knowledge. However, they can't explain deep details of breast cancer example risk factors. Communication in Thai language showed the difference knowing in younger women (<45 years old) and older (4 samples in aged group 45-59 can't speak Thai).

Table 9 showed socio-demographic of the 22 participants from interview. The most of them were aged group of 30 to 44 years old or 63.60%. All of them have been marriage but 4.50% were widowed status. There are 90.90% Christianity. As the same result of part quantitative data, they were not study experience before around 54.5%. Half of them can communicate Thai language skill or use all skill at 59.10%. Personal income of participant was received from employee working, mean of family income was 8,296.96 ± 5,729.84 baht per month. Universal Health Coverage was the most scheme used in this group around 68.20%.

Table 9: Socio-demographic of Akha women interviewee.

Characteristics	n	Percent
Age groups (Age mean: 41.82 ± 7.66)		
30 – 44	14	63.60
45-59	8	36.40
Married Status		
Married	21	95.50
Widowed	1	4.50
Religion		
Buddhism	2	9.10
Christianity	20	90.90

Characteristics	n	Percent
Education		
No Education	12	54.50
Primary School	5	22.70
Secondary School	4	18.20
Higher education	1	4.50
Thai Language Skills		
All used	13	59.10
Only speak	9	40.90
Occupation (Family Income mean 8,296.96 ± 5,729.84 baht per month)		
Housekeeper	7	31.80
Employee	10	45.50
Agricultural	1	4.50
Vendor	4	18.20
Scheme Used		
Civil Servant Medical Benefit Scheme	1	4.50
Social Security Scheme	6	27.30
Universal Health Coverage	15	68.20

In additional, general lifestyle and risk characteristics of interviewee presented in Table 10. The results of this part were according with characteristics from quantitative data. The most of them were 54% of overweight and obese, 68.20% not presented NCDs problem. However, frequency to visit physician founded 81.80% of seeing the doctor or physician when they get sick or occur health problem. Risk behaviors showed less risk of exercise, drinking, and smoking. Only one woman has been not pregnant and 90% of pregnancy have experience in breastfeeding (mean of breastfeeding time 12.35 ± 4.33 months). Then, breast information receiving was

responded around 68.20%. They believed in healthy life and their life were most healthy too. Part of breast health factors, breast cancer genetic in family showed only 1 woman. Another of breast problem situation at past presented 71.44% of lump in 7 women. The last one of BSE factor, they have been known BSE before around 68.20% but 72.70% were not interested to practice BSE. However, one of good sound in screening were around 68.20% of CBE checking in every year.

Table 10: General lifestyle and risk characteristics and selected factors of 22 Akha women interviewee.

Characteristics	n	Percent
BMI		
Underweight	1	4.50
Normal	9	40.90
Overweight and obese	12	54.50
Non-communicable Diseases History		
Yes	7	31.80
No	15	68.20
Frequency of visiting a physician		
If you have problems.	18	81.80
Once a month	2	9.10
Other (long time)	2	9.10
Exercise		
Yes	14	63.60
No	8	36.40
Drinking		
Yes	5	22.70
No	17	77.30
Pregnancy History		
Yes	21	95.50
No	1	4.50

Characteristics	n	Percent
Breast Feeding History (Mean of breast feeding time 12.35 ± 4.33 months)		
Yes	20	90.90
No	2	9.10
Breast Information Receiving		
Yes	15	68.20
No	7	31.80
Perceive Attitude of Health Status		
Unhealthy and Well sometime	8	36.30
Healthy	14	63.60
Breast Cancer Genetic History		
Yes	1	4.50
No	21	95.50
Breast problem history		
Yes	7	31.80
No	15	68.20
Type of breast problem history (n = 7 women)		
Lump	5	71.44
Cyst	1	14.28
Others (Pain and fluid from nipples)	1	14.28
Have been known BSE		
Yes	15	68.20
No	7	31.80
BSE practice		
Yes	6	27.30
No	16	72.70
CBE practice		
Yes	15	68.20
No	7	31.80

Theme 1: Breast cancer knowledge, how to BSE practice, and frequency to BSE.

Breast cancer prevention and screening

All participants can tell characteristic of breast cancer. They explain this disease linked with abnormal of breast site. Almost them tell more detail in knowledge of breast cancer which in health staffs from health promoting hospital. Every year, they will receive the knowledge and basic screening of breast cancer. From participants, Akha women were sitting in front of me.

All most participant have been known BSE practice and CBE. They can explain general information of this practice and mention for receiving knowledge and how to practice from health promoting hospital. From BSE data of interviewee, they were known BSE in 15(68.2%) people and practice around 6(27.3%) people. In addition, they received CBE service 15(68.2%) people in every year.

Breast cancer, prevention and screening	Akha women	*"...breast cancer is the disease that having a lump in breast. The abnormal is occurring in breast that can set in both of breast. Cancer is one disease which severe or scary situation." (All Key Informant)*
		"...Our village have been not included breast cancer case from the previous time, but I have been seen the case from nearly Akha village. She had cancer for 5 year ago and then cured. This case is adult Akha women aged 45

		years old. I have been seen the lump in her before treatment. My feeling had been awareness in the disease situation. However, this case is complete curing because health staff in community always following and screening case every year." (Key Informant No. 4, 17)
		"...Local health staffs educated BSE practice. They provided how to practice (example practice in shower time). Everyone referenced local health staffs to receive breast cancer knowledge and BSE practice." (All Key Informant)
BSE practice	Akha women	*"...I have been heard from local health staffs. BSE is the one practice to check breast by myself. I used my hand to finger around my breast. Everyone will check the lump at breast side. Local health staffs told to practice BSE in the shower time or bedtime. Our village will receive BSE education from local health staffs, and they can help checking our breast in every year. If who have breast problem, we can go to confirm checking at health*

promoting hospital every time." (Key Informant No. 8, 11, 14, 16, 17, 20, 21, & 22)

Theme 2: Akha believe and reason to design BSE practice

Awareness and concern of breast cancer and benefit of BSE practice

The most Akha women concerned in heath and lifelong living. They respected in local health staffs. In term of breast screening, they can follow the guide of breast screening practice. Although, the prevalence of breast cancer in Akha women were some cases reported but the general basic screening is important for this group. In the future, lifestyle changing is becoming so the one effected from changing is health effecting.

However, some participants were not confidence to practice because they were forgot to practice and not reminded the process of practice.

BSE awareness	Akha women	*..."BSE and CBE helped to check our breast. We would like to check and know in our breast health every year." (Key Informant No. 2, 3, 5)*
		..."BSE is the good processing but also safe and protect my healthy life." (Key Informant No. 5, 9)
		..."Sometimes I forgot the method to practice because it is long time to practice with health staffs. I think, BSE or checking the breast should be

		doing when breast pain or problem occurring." (Key Informant No. 14, 18)
Belief and Cultural effected to BSE	Akha women	*..."If health staff teach and order to practice, I believed in health staffs." (Key Informant No. 2, 7, 16)* *..."BSE is general practice to prevent breast cancer. We can practice as a following health staffs training. Cultural and belief were not prohibited in this action or practice." (All Key Informant)* *"...Jaew' Doctor (local health staff) comes in community every year. She teaches how to practice BSE by myself and check my breast too." (Key Informant No. 8, 18, 20)*
Obstacle to practice BSE	Local health staff	*"... 'Akha' women who are older had a limitation to communicate in Thai language. When we teach health education in this group, we will communicate by interpreter (young lady or health volunteer)."*

Interviewer *"I interviewed; some participant cannot talk with me in Thai language. We were communicated by health volunteer (male health volunteer interprets in 1 participant). Some question sensitive should be asking by women and women.*

This is one limitation in some area because women have not qualifying in education level to applicate in health volunteer."

Theme 3: Health staff's recommendation and BSE campaigns

Part of health staffs interviewed, breast cancer situation and breast cancer screening were asked by one question which BSE situation. I interviewed head of health promoting hospital. She is the well-known in community especially in this study site.

Besides, another answer from local health provider highlighted process of BSE developing in hill tribe group especially *'Akha'* group. Story telling became with past until now. For 20 years ago, *'Akha'* women did not have no power to design anything in family. Their community are under the leadership of their elders and men. Nowadays, the situation of belief in this group is not the same. Equality increases between men and women, so women have more chance to educate, design ideas, and receive more information. The changing of religion is one factor to effect in believing.

Breast cancer situation	Local health staff	*"...One of breast cancer case is nearly community of health promoting hospital, Moo. 6 of Akha Pa Kluay, she is Akha Women aged 51 years old. Diagnosis and confirmed case were appeared when her aged 45 years old. Nowadays, she is cures already. Her treatment is surgery to remove the whole right breast. This case can early detection because she received breast screening from health promoting hospital. Although, we were not met more cases in our responsibility area, but some community have abnormal breast cases and we referred to follow the abnormal in every case." (Head of health promoting hospital)*
BSE concerned	Local health staff	*"...BSE program is the one policy followed the campaign in breast health awareness (Thanyarak Breast Center). BSE is regular breast screening to check any changes in breast. The method is easy to do and use only our hand or figures. The best practice advised to do once a month. Health promoting hospital will provide BSE principle and empower to women at risk group in responsibility area. Some village will set the health promotion activity in every year and BSE is the one activity*

		that included. Health staffs was invited to provide and empower health knowledge in every village. We help and cooperate between population and health promoting hospital."
		..."The most of 'Akha' people in this area are Christianity. Past, they believed in spirit and ancestor. The one-man leadership in family links with leader in worship or ceremony in the community. It the same Chinese cultural. The men are descendant of family. When the 'Akha' women have more power more than past, they braved to communicate with social and opened heart to learn anything more than past. Association with BSE knowledge, they are not embarrassed to learn and practice."
Increase BSE	Local health staff	*..."this is the good question, health promoting hospital set the plan to follow the policy every year. In addition, we try to promote and empower BSE practice in every community. Some villages are good effectiveness but depended on characteristic and context of village. Example in one Akha village, they used the strengthen of good cooperation to write campaign for promoting healthy in*

community. For this village, health volunteers are almost women, they will help our health staff following cases in village especially women help problem in breast and cervical checking. This is the example of good concerned of their health in each area so health promoting hospital should be using this the prototype model to develop in every community and try to empower participation of population in community. They should concern in their health. This is the principle of sustainability."

However, percentage of BSE in hill tribe groups are still low but the local health staffs try to empower them for BSE practice. It is not only policy but will help to detect and promote good breast health in community area.

4.3 Phase 2: Intervention results

4.3.1 Results of Intervention

The one main result is creating the customized intervention of BSE in Akha women. This intervention followed the results from phase 1. The key of result presented association in ability to use Thai language, breast information receiving, once a month of visiting a physician, low threat in perceived susceptibility in BSE practice, low reported barriers, and high confidence of BSE practice. Moreover, another key of interview founded knowledge and awareness effect to BSE practice, believed and confidence factors, and health provide and social environment especially local health staffs. Thus, the customized intervention of BSE in this time

followed in 6 activities and added the suitable activities for intervention area from brainstorming (Table 11).

Table 11: Intervention program

Week	Main activity	Contents	Method	Tools and Measurements	Results from phase 1
0	Introduction of BSE program	• 30 minutes explained the detail of study and sign consent form	• Ice-breaking activity • Explain program	• Informed consent • Pre-test	
1	Basic learning about breast cancer and screening	• 20 minutes of Breast cancer disease, treatment, and protection • 5 minutes of Video • 30 minutes of experience listening from Akha breast cancer case	• Lecture • Group discussion	Electronic file media (power point and BSE Video in Akha language)	Breast information presented 8 times more likely to report good BSE practice compared to those non receiving (Odd ratio (OR): 8.02; 95% CI: 1.89-33.96). Communication in Thai language showed the difference knowing in younger women (<45 years old) and older.
1	Virtual Self-practice BSE	120 minutes try to practice BSE in sub-group or small group	Role-play by local health staffs and outsource health professionals	• Breast model • Pre-test of practice scores	

1	Agreement making and the use of BSE record manual.	20 minutes explained agreement and self-report	Agreement announcement Self-report	BSE record manual by the participants (BSE calendar)	It is limitation of Thai language used in this group.
1-12	BSE as a part of Akha women's daily life.	5 minutes of Video	BSE practice and boost intervention	Video in Akha language open in Church day	
12, 24	Follow-up	20 minutes answer questions and test practice	Answer the questions	Post-test of KAP	

4.3.2 Socio-demographic, lifestyle and risk characteristics of intervention and control group

From 60 samples calculation of intervention and control, Akha women of each group participated in 44 persons of intervention group and 42 persons of control group. Age group of both participants presented most of 45 to 59 years old in the aged mean of 47.69 ± 8.34 years. More than 80% of both groups were marriage status and most of them were Christianity. The difference of education showed none education status of all control person, so the skill of Thai language used in limitation, was 26.20% and high more than intervention participants (15.90%). The job of intervention and control group accorded with agricultural in more than half of them or 59.10% and 78.60% respectively. Mean of household income was 5,222.73 ± 1,846.79 per month of intervention and 5,069.05 ± 2,968.40 per month of control. Term of health care accessing, they used Universal Health Coverage Scheme 88.60% of intervention and all of control participant.

In additional, lifestyle characteristics of participant described health behaviors example included BMI, NCDs history, exercise, drinking, and smoking. The most of intervention participant presented BMI in group of overweight and obese (61.40%) but control participants were normal BMI (59.50%). More than 70% of each group has not health problem and NCDs and they would be to visit physician when occurring health problem. The attitude of their health trended to healthy and very good health so both groups showed the less risk of drinking and none smoking. However, one difference of health behavior was exercise, intervention group presented haft of to do exercise and none exercise but control has none exercise more than 90%.

Factors linked hormone in women defined pregnant history, contraceptive using, menstruation period, and menopause status. Ninety-five percent was reported pregnancy history of intervention group and 92.90% was control group. All of them had been breastfed for son/daughter. Around 61% of intervention and 57% of control have been used contraceptive drugs. Moreover, mean of menstruation period started in age 15.07 ± 1.62 years of intervention and 14.67 ± 1.78 years of control. Besides, percentage of menstruation started before the age of 12 years old presented 6.80% of intervention and 2.40% of control. Eighteen persons of 44 intervention participants have menopause period and 23 persons presented on control group. Factor of menopause after the age of 55 years old was reported 1 person of control group.

BSE and breast cancer factors relating were compared between intervention and control group. Firstly, breast information receiving showed the high percentage of information knowing in each group. Family genetic of breast cancer has only 3

persons of intervention group. The breast health problems were presented less than 10% of both groups. As for BSE and CBE, the most of participants have been experienced in each group. Detail presented in Table 12.

4.3.3 Association between baseline characteristic and good BSE practice

In additional, Table 12 explained the one test of homogeneity between intervention and control group. The results founded three factor association or no different of both groups that included religion, education, BMI, exercise, perceive of health, BSE knowing, and CBE practice. All participants of control group were Christianity and they have been not study. BMI showed the different in both group that most of participants in control were normal weight whereas, overweight and obese in intervention group. Half of participants in intervention group identified that they were healthy and unhealthy but in control group showed that 90% perceived they were healthy. Part of perceive BSE and CBE founded the most intervention have experience more than 90%.

Table 12: Baseline characteristic of good practice BSE between intervention and control group (test of homogeneity)

Characteristics	Intervention Group (44)		Control Group (42)		F	P-value
	n	Percent	n	Percent		
Age groups						
30 – 44	16	36.4	11	26.20	1.70	0.20
45-59	28	63.60	31	73.80		
Married Status						
Married	38	86.40	39	92.90	1.47	0.23
Divorced	2	4.50	2	4.80		
Widowed	4	9.10	1	2.40		

Characteristics	Intervention Group (44)		Control Group (42)		F	P-value
	n	Percent	n	Percent		
Religion						
Buddhism	12	27.30	0	0	15.38	<0.001*
Christianity	32	72.70	42	100.00		
Education						
No Education	32	72.70	42	100.00	13.34	<0.001*
Primary and Secondary School	12	27.20	0	0		
Thai Language Skills						
All used	13	29.50	5	11.90	1.08	0.30
Speak and Read	2	4.50	7	16.70		
Only speak	20	45.50	19	45.20		
Unable all used	7	15.90	11	26.20		
Others	2	4.50	0	0		
Occupation						
Housekeeper	3	6.80	2	4.80	3.70	0.06
Employee	13	29.50	4	9.50		
Agricultural	26	59.10	33	78.60		
Vendor	2	4.50	3	7.10		
Household Income per month (Baht)						
< 3,000	9	20.50	15	35.70	0.08	0.77
3,001-6,000	25	56.80	15	35.70		
6,001-9,000	9	20.50	6	14.30		
9,001-12,000	1	2.30	5	11.90		
>12,000	0	0	1	2.40		

Characteristics	Intervention Group (44)		Control Group (42)		F	P-value
	n	Percent	n	Percent		
Scheme Used						
Out of the pocket	1	2.30	0	0	3.22	0.08
UC and others	43	97.70	42	100.00		
BMI						
Underweight	1	2.30	2	4.80	6.01	0.02*
Normal	16	36.40	25	59.50		
Overweight and obese	27	61.40	15	35.70		
Non-communicable Diseases History						
Yes	13	29.50	9	21.40	0.73	0.39
No	31	70.50	33	78.60		
Frequency of visiting a physician						
If you have problems.	32	72.70	37	88.10	0.94	0.34
Once a month	9	20.50	1	2.40		
Other (long time)	3	6.80	4	9.50		
Exercise						
Yes	25	56.80	2	4.80	38.51	<0.001*
No	19	43.20	40	95.20		
Drinking						
Yes	9	20.50	5	11.90	1.14	0.29
No	35	79.50	37	88.10		
Pregnancy History						
Yes	42	95.50	39	92.90	0.26	0.61
No	2	4.50	3	7.10		

Characteristics	Intervention Group (44)		Control Group (42)		F	P-value
	n	Percent	n	Percent		
Contraceptive Used						
Yes	27	61.40	24	57.10	0.16	0.70
No	17	38.60	18	42.90		
Menstruation start before the age of 12 years old						
Yes	3	6.80	1	2.40	1.20	0.28
No	41	93.20	41	97.60		
Menopause Status						
Yes	18	40.90	23	54.80	3.28	0.78
No	26	59.10	19	45.20		
Menopause after the age of 55 years old						
Yes	0	0	1	4.30	1.39	0.24
No	18	100.00	22	95.70		
Breast Information Receiving						
Yes	41	93.20	36	85.70	1.27	0.27
No	3	6.80	6	14.30		
Perceive of Health Status						
Unhealthy and well sometime	22	50.00	4	9.50	10.21	0.002*
Healthy	22	50.00	38	90.40		
Breast Cancer Genetic History						
Yes	3	6.80	0	0	3.00	0.09
No	41	93.20	42	100.00		

Characteristics	Intervention Group (44)		Control Group (42)		F	P-value
	n	Percent	n	Percent		
Breast problem history						
Yes	3	6.80	5	11.90	0.65	0.42
No	41	93.20	37	88.10		
Have been known BSE						
Yes	44	100.00	34	81.00	10.11	0.02*
No	0	0	8	19.00		
CBE practice						
Yes	41	93.20	21	50.00	25.32	<0.001*
No	3	6.80	21	50.00		

Notes: P-value < 0.05

4.3.4 Mean score of knowledge, perception, confidence, and practice of BSE compare within group and between group in times of baseline, 3 months, and 6 months

To sum of briefly from Table 13, compared knowledge, perception, confidence, and practice scores of BSE within group in times of baseline, 3 months, and 6 months. The results compared mean in 3 times period by repeated analyzed. For intervention group, all most of factor in knowledge, perception (susceptibility and benefit), confidence, and practice of BSE were significantly at p-value less than 0.05. Median of knowledge score decrease in 3 months but improve in after used intervention. Score of susceptibility and BSE practice were increasingly median of

score from 8 to 18 and 5 to 7 respectively. Part of benefit, barrier, and confidence founded the score decrease after baseline in 3 months but improving as the same baseline at 6 months. However, the results presented differently in control group, it was significant in only one factor that included susceptibility.

Table 13: Knowledge, perception, confidence, and practice scores of BSE compare within group between before and after intervention.

Characteristics	Intervention Group (44)			P-value	Control Group (42)			P-value
	Baseline	3 Months	6 Months		Baseline	3 Months	6 Months	
Knowledge								
Mean (SD)	7.50 (1.68)	5.89 (1.78)	6.84 (1.68)	<0.001*	4.98 (2.18)	5.14 (2.29)	4.93 (2.19)	0.37
Min-Max	4.00-9.00	1.00-9.00	2.00-10.00		1.00-9.00	1.00-10.00	1.00-10.00	
Median	8.00	6.00	7.00		5.00	5.00	5.00	
I.Q.R.	3.00	2.00	2.00		4.00	3.00	3.00	
Susceptibility								
Mean (SD)	10.16 (5.62)	14.61 (5.04)	17.52 (4.92)	<0.001*	14.00 (1.27)	14.55 (1.82)	14.45 (1.70)	0.001*
Min-Max	5.00-22.00	5.00-25.00	5.00-25.00		10.00-17.00	10.00-20.00	10.00-20.00	
Median	8.00	15.00	18.00		14.00	15.00	15.00	
I.Q.R.	10.00	7.00	6.00		2.00	1.00	1.00	
Benefit								
Mean (SD)	20.80 (2.70)	15.80 (3.23)	20.80 (2.67)	<0.001*	13.81 (1.49)	14.26 (2.19)	14.17 (2.00)	0.193
Min-Max	16.00-25.00	10.00-20.00	16.00-25.00		9.00-15.00	9.00-20.00	9.00-20.00	
Median	21.00	15.00	21.00		14.50	15.00	15.00	
I.Q.R.	4.00	5.00	4.00		2.00	2.00	2.00	

Characteristics	Intervention Group (44)			P-value	Control Group (42)			P-value
	Baseline	3 Months	6 Months		Baseline	3 Months	6 Months	
Barrier								
Mean (SD)	41.16 (9.04)	40.61 (5.31)	41.16 (9.04)	0.695	41.95 (1.34)	41.98 (1.35)	41.38 (2.70)	0.174
Min-Max	25.00-55.00	33.00-49.00	25.00-55.00		38.00-44.00	38.00-44.00	33.00-44.00	
Median	40.00	44.00	40.00		42.00	42.00	42.00	
I.Q.R.	9.00	11.00	9.00		0.00	1.00	1.00	
Confidence								
Mean (SD)	38.30 (7.05)	30.95 (3.94)	38.30 (1.06)	<0.001*	27.00 (2.70)	27.38 (3.38)	26.54 (2.48)	0.060
Min-Max	22.00-50.00	27.00-41.00	22.00-50		21.00-33.00	21.00-40.00	22.00-33.00	
Median	39.00	30.00	39.00		27.00	27.00	27.00	
I.Q.R.	7.00	4.00	7.00		2.00	2.00	3.00	
BSE practice								
Mean (SD)	5.20 (2.15)	5.82 (1.78)	6.61 (1.81)	<0.001*	2.60 (2.86)	2.76 (2.87)	2.62 (2.67)	0.565
Min-Max	0.00-8.00	0.00-8.00	1.00-8.00		0.00-8.00	0.00-8.00	0.00-8.00	
Median	5.00	6.00	7.00		2.00	2.00	2.00	
I.Q.R.	1.00	2.00	2.00		5.00	5.00	5.00	

Noted: Friedman's ANOVA Compared to One-Way Repeated Measures ANOVA,

* P-value < 0.005

In additional, Table 14 compared between 2 timelines (baseline and 3 months, 3 months and 6 months) within group. The results presented factor in knowledge, perception (susceptibility and benefit), confidence, and practice of BSE were significantly at p-value less than 0.05 in intervention group more than control group. The changing of knowledge score in intervention group effected in between baseline

and 3 months, 3 months and 6 months. As the same of benefit, confidence, and barrier that founded significantly in between two times. In additional, knowledge score of control group changing only in between 3 months and 6 months. One more changing in this group was susceptibility score that showed difference changing 2 times in between baseline and 3 months, baseline and 6 months. The same one scores between intervention group and control group was barrier score that not changing in both groups.

Table 14: Times comparing between baseline and 3 months, 3 months and 6 months, and baseline and 6 months within group

Characteristics	Intervention Group (44)			Control Group (42)		
	Mean Rank (Negative, Positive)	Z	P-value	Mean Rank (Negative, Positive)	Z	P-value
Knowledge						
Baseline and 3 Months	23.52, 14.14	-3.59	<0.001*	4.00, 5.29	-1.81	0.070
3 Months and 6 Months	0, 16.00	-5.07	<0.001*	4.50, 0	-2.71	0.007*
Baseline and 6 Months	17.79, 19.92	-1.49	0.136	6.50, 6.50	-0.58	0.564
Susceptibility						
Baseline and 3 Months	13.94, 21.22	-3.56	<0.001*	0, 5.00	-2.69	0.007*
3 Months and 6 Months	13.20,15.96	-3.43	0.001*	2.50, 1.00	-1.07	0.285
Baseline and 6 Months	4.50, 18.90	-5.17	<0.001*	7.50, 5.85	-2.31	0.021*
Benefit						
Baseline and 3 Months	27.26, 14.94	-4.76	<0.001*	3.50, 4.08	-1.78	0.074

Characteristics	Intervention Group (44)			Control Group (42)		
	Mean Rank (Negative, Positive)	Z	P-value	Mean Rank (Negative, Positive)	Z	P-value
3 Months and 6 Months	12.25, 23.53	-5.21	<0.001*	2.00, 1.00	-0.45	0.655
Baseline and 6 Months	4.50, 3.92	1.62	0.11	4.50, 3.92	-1.62	0.105
Barrier						
Baseline and 3 Months	24.98, 20.44	-0.05	0.958	0. 1.00	-1.00	0.317
3 Months and 6 Months	20.44, 24.98	-0.05	0.958	2.00, 0	-1.63	0.102
Baseline and 6 Months	0	0	1.000	3.00, 1.00	-1.47	0.141
Confidence						
Baseline and 3 Months	26.32, 11.05	-4.36	<0.001*	0, 2.00	-1.60	0.109
3 Months and 6 Months	11.05, 26.32	-4.36	<0.001*	4.75, 3.70	-0.78	0.438
Baseline and 6 Months	0	0	1.000	3.00, 5.25	-2.36	0.018
BSE practice						
Baseline and 3 Months	0, 8.00	-3.50	<0.001*	3.50, 3.50	-0.74	0.461
3 Months and 6 Months	16.00, 9.89	-2.76	0.006	1.50, 0	-1.41	0.157
Baseline and 6 Months	18.50, 14.19	-3.85	<0.001*	3.83, 3.17	-0.21	0.833

Noted: Wilcoxon Signed Ranks Test, *P-value < 0.05

Table 15: Mean score of knowledge, perception, confidence, and practice of BSE compare between group.

Characteristics	Times	Intervention Group (44)	Control Group (42)	Mean difference (95% CI)	P-value
		Mean (SD)	Mean (SD)		
Knowledge	Baseline	7.50 (1.68)	4.98 (2.18)	2.52 (1.82, 3.22)	<0.001*
	3 months	5.89 (1.78)	5.14 (2.29)	0.71 (-0.21, 1.64)	0.127
	6 months	6.84 (1.68)	4.93 (2.19)	1.88 (1.01, 2.75)	<0.001*
Susceptibility	Baseline	10.16 (5.62)	14.00 (1.27)	-3.64 (-5.52, -1.77)	<0.001*
	3 months	14.61 (5.04)	14.55 (1.82)	-0.14 (-1.79, 1.50)	0.862
	6 months	17.52 (4.92)	14.45 (1.70)	3.00 (1.41, 4.58)	<0.001*
Benefit	Baseline	20.80 (2.70)	13.81 (1.49)	6.98 (6.01, 7.94)	<0.001*
	3 months	15.80 (3.23)	14.26 (2.19)	1.45 (0.21, 2.69)	0.023
	6 months	20.80 (2.67)	14.17 (2.00)	6.62 (5.57, 7.67)	<0.001*
Barrier	Baseline	41.16 (9.04)	41.95 (1.34)	-0.59 (-3.51, 2.32)	0.682
	3 months	40.61 (5.31)	41.98 (1.35)	-1.52 (-3.29, 0.24)	0.089
	6 months	41.16 (9.04)	41.38 (2.70)	-0.02 (-2.99, 2.94)	0.987
	Baseline	38.30 (7.05)	27.00 (2.70)	11.67 (9.29, 14.04)	<0.001*

Characteristics	Times	Intervention Group (44) Mean (SD)	Control Group (42) Mean (SD)	Mean difference (95% CI)	P-value
Confidence					
	3 months	30.95 (3.94)	27.38 (3.38)	3.33 (1.81, 4.85)	<0.001*
	6 months	38.30 (1.06)	26.54 (2.48)	11.36 (8.98, 13.73)	<0.001*
BSE practice	Baseline	5.20 (2.15)	2.60 (2.86)	2.67 (1.49, 3.84)	<0.001*
	3 months	5.82 (1.78)	2.76 (2.87)	3.02 (1.99, 4.05)	<0.001*
	6 months	6.61 (1.81)	2.62 (2.67)	3.95 (2.86, 5.04)	<0.001*

Noted: Wilcoxon Signed Ranks Test, *P-value < 0.05

The effectiveness of program was presented in Table 15. The comparing mean between group of intervention and control founded almost significantly. Knowledge and perception (susceptibility, benefit) were significantly in baseline and 6 months period, 2.52 mean difference of knowledge in baseline at 95% CI: 1.82, 3.22 and 1.88 mean difference of knowledge in 6 months at 95% CI: 1.01-2.75. Part of susceptibility was significant at p-value less than 0.001, presented 95% CI: -5.52, -1.77 at baseline and 1.41, 4.58 at 6 months. The same of benefit reported 95% CI of baseline and 6 months at 6.01, 7.94 and 5.57, 7.67 respectively. However, one factor of barrier was not significant. The both groups showed none barrier to practice BSE. Finally, confidence and practice BSE responded differently in 3 times period between groups at p-value less than 0.001.

Table 16: Difference in Differences (DID) between group

Characteristics	Mean of Z scores (Before and After)		Mean of DID
	Intervention	Control	
Knowledge	-0.2014	0.0217	-0.2274
Susceptibility	0.0240	-0.2662	-0.0825
Benefit	<0.0001	-0.1251	0.1251
Barrier	<0.0001	0.1942	-0.1942
Confidence	<0.0001	-0.1246	0.1246
BSE practice	-0.1558	-0.0480	-0.1889

**Difference in differences (DID) = (After intervention - Baseline intervention) - (After control - Baseline control)

Difference-in-differences (DID) is one method analysis for Quasi-experimental study as also known as the ‘double difference’ method, compares the changes in outcome over time between intervention and control groups to estimate impact (White & Sabarwal, 2014). From Table 16 represented mean score of DID in each factor of knowledge, perception, and practice BSE. Mean of DID score of knowledge, susceptibly, benefit, barrier, confidence, and BSE practice were -0.23, -0.08, 0.12, -0.19, 0.12, and -0.19 respectively.

Table 17: Difference in Differences (DID) of knowledge and perception compared BSE.

Characteristics	Mean of DID (Before and After)		Z	P-value
	DID	BSE DID		
Knowledge	-0.2274	-0.1889	-0.056	0.955
Susceptibility	-0.0825		-0.219	0.827
Benefit	0.1251		-0.556	0.578
Barrier	-0.1942		-0.006	0.995
Confidence	0.1246		-0.494	0.621

Moreover, the association between DID scores of knowledge and perception compared with BSE practice, were not all significantly (Table 17). DID of BSE score presented -0.19 and showed p-value cross with knowledge at 0.96, susceptibility at 0.83, benefit at 0.58, barrier at 0.99, and confidence at 0.62.

Table 18: Difference in Differences (DID) compared of knowledge, perception, confidence, and practice of BSE in 3 times.

Characteristics	Times	Mean of DID (SD)	Mean Rank	P-value
Knowledge	Baseline and 3 Months	0.7143 (2.97375)	2.00	0.016*
	3 months and 6 Months	1.1667 (0.85302)	2.31	
	Baseline and 6 months	-0.0186 (1.49773)	1.69	
Susceptibility	Baseline and 3 Months	-0.0767 (1.54802)	2.24	0.168
	3 months and 6 Months	0.0379 (1.47785)	1.88	
	Baseline and 6 months	-0.0496 (1.41603)	1.88	

Characteristics	Times	Mean of DID (SD)	Mean Rank	P-value
Benefit	Baseline and 3 Months	-0.0216 (1.53962)	2.00	0.909
	3 months and 6 Months	0.0216 (1.35416)	1.95	
	Baseline and 6 months	<0.0001 (0.75191)	2.05	
Barrier	Baseline and 3 Months	-0.0523 (1.58616)	2.02	0.607
	3 months and 6 Months	0.0523 (1.73259)	1.88	
	Baseline and 6 months	<0.0001 (0.91134)	2.10	
Confidence	Baseline and 3 Months	-0.1136 (1.50953)	1.86	0.359
	3 months and 6 Months	0.1136 (1.49237)	2.17	
	Baseline and 6 months	<0.0001 (0.30255)	1.98	
BSE practice	Baseline and 3 Months	-0.0449 (0.56048)	2.14	0.076
	3 months and 6 Months	-0.0051 (0.56048)	2.14	
	Baseline and 6 months	-0.0500 (1.07793)	1.71	

Finally, Table 18 presented only one factor of knowledge changed scores in this study. DID of compare wise in between time founded significantly at p-value 0.016 in knowledge score. Others part of susceptibility, benefit, barrier, confidence,

and BSE practice were changes of DID comparing between time at p-value 0.168, 0.909, 0.607, 0.359, and 0.076 respectively.

4.4 Policy Recommendation

This recommendation was processed from the result of mixed-method study as there are many confounders factors in the part of quasi experimental study so the recommendation based on results of phase I (survey and in-depth interview).

4.4.1 Main Point

From results of first phase study founded, the majority of the participants were 45-59 years old (51.7%), married (91.2%), illiterate (68.6%). This study found that 24.70% women had done a good practice. Logistic regression analysis showed that women who received breast information were eight times more likely to report good BSE practice compared to those non receiving (Odd ratio (OR): 8.02; 95% CI: 1.89-33.96). In additional, the results from in-depth interview showed the key main factors liked with local health staff, health policy and cooperation, health volunteer to cooperate in community, and barrier of language.

The BSE intervention developed from first phase information. This study used media in local language, include BSE video in Akha language and used symbolic or picture to explain BSE practice. Second phase results founded the effectiveness of BSE program in intervention group when comparing in control group.

4.4.2 Background

The mortality rate of breast cancer has increased in several countries in Asia. In Thailand, this fact is confirmed by the hospital–based cancer registry annual report

which ranked breast cancer as first of all female cancer patients. One an urgent concern of prevention and education on early detection is Breast Self-Examination (BSE). ‘Akha’ women, the largest ethnic group in Chiang Rai, northern part of Thailand, have a significantly low percentage of BSE practice because of language barrier and other problems. This study aims to identify factors associated with BSE among this ethic group to better understand the reasoning for this and also look at means to resolve the problem.

4.4.3 Recommendations and Evidences

As for this study results, the recommendation for local health policy was including three main ideas, detailed as a following:

Networking for Health Promotion

One samples of this BSE program founded the cooperating of network organization in local responsibility area. Intervention village of this study created and wrote a project to develop healthy for population in community. The key main factor of effectiveness is participation and cooperation in several group. As for BSE program, health volunteer presents the strength of community to contact between local Health Promoting Hospital and Subdistrict Administration Organization (SAO) for supporting in this program. SAO is the organization that provide the budget to develop community every year and local Health Promoting Hospital was invited to provide BSE activities.

Suitable for media and method to provide health literacy

Based on findings, we recommend implementing a new practical program to promote BSE in this ethnic group, particularly provide information using picture and symbolic to guide BSE. However, local language is important to develop health literacy because learning of this group can be understanding when they used their own language.

Health volunteer responsible group in community

Briefly from in-depth interview, some of limitation is health volunteer to translate Akha language. This result is a women health, so the sympathy and understanding should be receiving in the same gender. However, all of health volunteer in Akha village is male, so some scope of women health may present in a limitation, example; the translation of male health volunteer effected to answer of females Akha participant. This recommendation guides to support and promote suitable key health person in community especially used female health volunteer contacts and cooperates female group in scope of women health.

4.4.4 Conclusion

BSE is the one policy screening program that provides in population. This method is the important to detection breast cancer early, reduce mortality of cases and improves responsibility of each person. However, the effectiveness of BSE program should be developing in each area and accessing in all group person.

CHAPTER V
Discussion and Conclusion

The purpose of this study separated into two phases that the first aimed to analyze the situation of BSE among tribal women (Akha) through the factors of socio-demographic, risk, lifestyle, knowledge, and believe relevant to breast cancer, and confidence to self-practice BSE. Second, results from the first phase were created the intervention of BSE to implement and compare the effectiveness. In this study area breast cancer reporting is the top one common cancer of women that following the number statistic of the world (Organization, 2014). However, breast cancer case in Akha women were less reported but trending was increasing. Report from primary health care unit show the number of breast abnormal following cases that increasing. Nowadays, most Akha people in Thailand are not different from Thai people. Due to the globalization, they developed residence and their lifestyle has become more like the metropolitan people. Currently most Akha people can access to the public health care system (Apidechkul et al., 2016). BSE is the one basic screening in breast cancer situation because mammography has not reached all women in Thailand. The study of regular BSE in Thailand conducted 1,906,697 Thai women for practicing. Times to followed breast cancer patients collected since 2013 to 2017. The new cases were founded 0.2% from BSE following. The study compared between regular and non-regular BSE with effected to size, stage, and mortality. A significantly showed higher proportion of smaller tumor size, earlier stage, and better survival rate in regular BSE practiced women rather than nonregular (Thaineua et al., 2019). Thus, this study chapter showed outline to discuss among Akha BSE practice as a following;

5.1 Socio-demographic characteristics

The finding of this study showed 45.90% of BSE practice. In this amount showed only 24.70% had a good BSE practice. However, the comparing result study of BSE among Akha was a limitation because a few study collect in this group or hill tribe group. Previous study of highland health development center showed BSE only 11.7% in hill tribe women and classified only 8.7% of Hmong (Meo) and 19.5% of Karen (Kariang) (Center, 2004, 2005). On the basis of previous studies, health screening in hill tribe group less frequent attendance when the comparing with urban women. Furthermore, several factor for less screening included low income, low literacy or education, lack of knowledge but this study is differently (Dehdari, Rahimi, Aryaeian, & Gohari, 2014).

The one association factor of breast cancer was family history of breast cancer, this study reported differently because of low percentage of breast cancer in this group from the past so BSE was not depended on family history of breast cancer. Besides the same result of this study showed the older women do regular BSE more than the healthy young women (Kress et al., 2017). Some limited of non-attenders to screen are lower socioeconomic status, so it contrasted of this result. However, the screening program is important to reduce social inequalities in delivery (Hudson et al., 2016).

In case of the immigrant women and minority population have been founded the barriers including transportation, language barrier, and arrangement for time off work and childcare, so is linked consistency of language barrier of this study (Hulme et al., 2016; Licqurish et al., 2017).

Part of cultural beliefs was not mentioning the barrier to seek preventive or breast screening. Contracting with Study by Tejeda et al., the delay of breast cancer care of Latin women who held a greater cultural belief than those with fewer beliefs (Tejeda et al., 2017). Nowadays, Akha group followed cultural beliefs as the same of general Christianity. However, the increasingly trend of disease will become in the future especially from globalization or transnational such as socio-cultural, economic, and political (Faist, 2000).

5.2 Knowledge and Health Belief Model

Part of knowledge and Health Belief Model, this study showed the high mean scores of breast self-examination knowledge but is not considered important. The Health Belief Model subscales which were significant in perceived susceptibility (AOR = 2.86; 95% CI: 1.48-5.51), reported barriers (AOR = 0.43; 95% CI: 0.23-0.81), and confident (AOR = 0.32; 95% CI: 0.16-0.64) with breast self-examination practice. The finding of this study is consistency with study in Thai female participants living in rural areas in northeastern area (Satitvipawee et al., 2009).

A reduction of barriers and gains in susceptibility, self-efficacy/confidence, and perceived control improved a regular screening among Iranian women (Farhadifar et al., 2016). Barriers to screen included fear and anxiety, perceived cost, breasts as private and sensitive issue, transportation distance and safety, limited screening information, language when receiving health services, available information, self-care support, as well as a busy life took place among those women with under or none-screened. According to this study, one key finding is ability to use Thai language of this group, who can communicate in Thai are likely to report good BSE practice

(AOR = 3.82; 95% CI: 1.31-11.17). Moreover, a strong association in this study highlights breast information receiving. Data analysis showed that women who received breast information were eight times more likely to report good BSE practice compared to those non receiving (AOR: 5.72; 95% CI: 1.316-24.845). The study is consistency with the information linked to the provision of breast cancer early detection or screening methods could increase the knowledge and perception of breast cancer screening (Ortega–Olvera et al., 2016). Although, the belief of Akha women is not obstruct BSE practice, more than half of participant had a poor knowledge of how to perform BSE correctly. From observational, 'The Akha women who participated in the survey stated that they did practice BSE but were unsure if it was the correct technique or not."

The results founded the low percentage of BSE in rural area according to BSE among rural Vietnamese women. It showed more than half were not interested in BSE practice. This result was difference from this study that showed education level and cultural background effecting. However, one thing is the same was media exposure that linked with this study in term of BSE information receiving in the previous time (Kim et al., 2019).

5.3 Intervention; the customized intervention design of BSE to implement this customized intervention and compare the effectiveness

Key finding results in second phase of this study used the media (BSE Video audio in Akha language) to provide knowledge and BSE practice process. According to one study founded the most common source of information was television and radio (around 36% of 2,054 women). The information in media linked to the

provision of breast cancer early detection or screening methods could increase the knowledge and perception of breast cancer screening. Video is the one effectiveness media for breast cancer awareness, knowledge of diagnosis, attitudes toward breast self-examination, and concern to screen by breast self-examination (Occa & Suggs, 2016). This study conducted media campaign and community-based education to encourage knowledge and awareness for women in community (Lu et al., 2015).

Similarly, Kim et al. suggested that BSE instruction and information should be focused in several ways. First, motivation messages for breast cancer screening, this result selected the messages and created in their languages in breast cancer materials. This study was not encouraged women by family member, but this study empowered by Akha breast cancer case in community. She told the story of breast cancer, treatment, and protection herself (Kim et al., 2019). According to limit of reading skills in some women, they want to receive health information audio-visually and suggest to use pictures illustrating signs and symptoms, radio announcements, videos and BSE instruction using breast models (Billones et al., 2016; Occa & Suggs, 2016; Yoon et al., 2016).

In the other hand, the scores of knowledge, perception, and confidence of BSE had changed and significant after conducted intervention program, scores increasing of knowledge, susceptibility, benefit, confidence, and practice but not mentioned in barrier. Moreover, tailoring program can be expanded to imply policy with local organization (S. J. C. Lee et al., 2017). The effectiveness of program developed in the several promoting methods used a new concept such as edutainment, and digital technology. A systematic review of breast screening awareness in the United

Kingdom founded improving breast screening by clinical engagement and training. It is as the same of this study, used potential of health promoting hospital to provide and train breast screening in community (Anastasi & Lusher, 2019).

The specific of minority group referenced on their background and old cultural. This study was not showed significant between cultural or believe and BSE effecting. One previous study used the religion process to develop breast screening awareness program. They conducted women from faith-based communities in Israel, used Ultra-Orthodox Jewish and Arabs to compare the difference of screening. The main result was significantly and explained culturally tailored intervention. It presented the one program achievement depended on specific characteristic (Freund, Cohen, & Azaiza, 2019).

However, this study presented a limitation in intervention program that effected from confounder factors. The all most factor not significantly. This intervention model may appropriate in Akha women. In example, it should add more detail of program to promote in dairy life examples in churches and community meeting. It the key situation to provide health information. The intervention booted up in churches day and may should add in their daily lives example at worksites (Marzo & Salam, 2016).

5.4 Strength and Limitation

This study was conducted based on question in past situation, which may affect recall bias in practice, However, this study used a developed questionnaire that identified specific from professional and proceeded pre-testing, used well trained interviewers, and also collected data following guidelines, all of which should have

reduced bias. However, the result of this study will implement the customized intervention design of BSE among Akha women. The results of knowledge were not related with BSE but the important focused confidence and awareness for enhancing the practice. The confidence to BSE practice leaded to right and consistency practice. Besides, the one barrier to practice or limitation of this group were communication (Thai Language). The most people in this group could only speak very little or communicate Thai Language especially who's aged more than forty years old. The customized intervention will design friendly to assess in Akha language media and real practice in sub- group activities. Responsibility of health staffs will teach and share the right practice and try to practice empowering. The trust in health staff is the one factor to accept BSE practice. Moreover, the improving breast cancer and BSE awareness will receive from direct experience in Akha women whose old case of breast cancer. The experience sharing was Akha Language transferring.

5.5 Conclusion

This study used formative research to create a customized research design for health care response of BSE. As for process of study was used multi-stage study. This study employed both quantitative and qualitative/ethnographic research methods to explain BSE situation in Akha women and another one of intervention program used quasi experimental study. Thus, the main outcome of this study separated into 2 phases. The study finding of phase 1 emphasize the low percentage of BSE situation in "Akha Women". The key factors associated that mention in Thai language uses or ability to communicate in Thai language. Moreover, breast health information accessing is the important to screen or prevent breast cancer. Insignificantly knowledge part of this study showed the high level of knowledge score. However, the

result of knowledge part motivated to others part as a Health Belief Model, which were perceived susceptibility in breast cancer situation, reported barriers to practice and confident to practice. As for phase 2, the BSE promoting program on knowledge and Health Belief Model developed from phase 1 results that used Akha language in media, empowered to practice and awareness by storytelling from Akha breast cancer case and using symbolic and picture represented message and words. The result considerate and improve increase breast self- examination practice in "Akha Women" or hill tribal group. However, the changing of knowledge and health believe, and practice of BSE were not changing or improving after study, it may conclude limitation of confounders. Then, the changing result of study may recommend in future study as recommendation from this study.

5.6 Recommendations

From the results of this study founded limitation in confounder of quasi experimental study, so the futures study should be changing study design to reduce confounders example used Randomize Control Trial and statistics to reduce bias selection and compare another factor. The program should change or add the detail for Akha women appropriation. One example may use dairy and community schedule to add more time for promoting.

Part of policy recommendation, this study used the most result from phase 1 that guided the achievement of BSE followed coordination or networking to empower BSE policy program, appropriation media, and specific of women health volunteer for women health responsibility. However, the policy recommendation should commit with key informants to discuss and lead to local agenda policy in the future.

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Appendix

Appendix A

Date of interview……

Code of interviewee ☐☐☐

Questionnaire for Research

BREAST SELF-EXAMINATION AMONG AKHA WOMEN IN CHIANG RAI PROVINCE THAILAND:

POLICY RECOMMENDATIONS BASED ON THE FORMATIVE RESEARCH STUDY DESIGN

In order to participate in this study, you are required to complete the questionnaire which is separated into 3 parts. Please follow the instructions of each part.

Part 1: Socio-demographic data and risk of breast cancer

Instructions: *Please fill in the blank or check ✓ in the box* □

1. Date of Birth	.....
2. What is your marital status?	□ Single □ Married □ Divorced/Widowed
3. What is your religion?	□ Buddhism □ Christianity □ Muslim □ Animism □ Other.....
4. What is the highest education level you have completed?	□ None □ Kindergarten level □ Primary level Year 1-4 □ Primary level Year 5-6 □ Secondary level Year 1-3 □ Secondary level Year 4-6 □ Certificate/ Diploma level □ Bachelor ‘s degree and above

5. What is your ability in Thai language skill?	□ Can speak, read, and write □ Can speak only □ Cannot at all □ Other (please specify) .....
6. What is your job?	.....
7. How much is your total family income per month?	.....baht
8. What is your right /access to medical treatment?	□ Out-of-pocket payment □ Civil servant medical benefit □ Social Security benefit □ Health insurance Card □ Other.....
9. How long have you stayed in Thailand?	.....years
10. What is your weight?	.....
11. How tall are you?	.....
12. Are you currently being treated for a chronic disease?	□ Yes □ No
13. During past 1 year, how often did you usually have any kind of drink that contains alcohol?	□ Every day □ 3 to 4 times a week □ Once a week □ 2 to 3 times a month □ Once a month □ 1 or 2 times last year □ Never
14. Did you smoke? If YES, how many smoked per day?	□ Yes, ……../day □ No
15. How many days per week do you exercise? If the answer is never, skip to No. 16.	□ Every day □ 3 to 4 times a week □ Once a week □ Never
15.1 What types of your exercise?	.....
16. How often do you visit your physician?	□ Never □ Once a month □ Once a year □ Once every two years □ Only when I have a problem □ Other (please specify) .....

17. Have you ever delivered any baby? If the reply is No, skip to No.18	□ Yes □ No
17.1 How old were you when your first baby was born?	……years
17.2 Have you ever been breastfeeding?	□ Yes □ No
18. Did your menstruation start before the age of 12?	□ Yes □ No
19. Do you have any menopause after the age of 55?	□ Yes □ No
20. Have you been using any contraceptive drug?	□ Yes is... □ Oral drug □ Injection □ Others (please specify) ..... □ No
21. Have your family members had a breast cancer?	□ Yes □ No
22. Have your family members had an ovarian cancer?	□ Yes □ No
23. Have you ever received breast health information? If the reply is No, skip to No.24.	□ Yes □ No
23.1 Where have you received breast health information? (Check all that apply)	□ Printing materials □ Television/Radio □ Internet □ Hospital □ Physician/Health staff □ Church □ Friend/Family □ Other (please specify) ……
24 Have you ever had any type of breast condition or disease? If the reply is No, skip to No.25.	□ Yes □ No
24.1 What type of breast condition or disease do you have?	□ Fibrocystic “Lumpy Breasts” □ Cysts □ Cancer in one breast □ Cancer in both breasts □ Other (please specify) ……

25. Have you ever heard of breast self-examination? If the reply is No, skip to No.26.	□ Yes □ No
25.1 Have you ever practiced breast self-examination? If the reply is No, skip to No.26.	□ Yes □ No
25.2. How often do you examine your own breasts?	□ Never □ Once a month □ Once a year □ Once every two years □ Only when I have a problem □ Other (please specify) ……
26. Have you ever had your breasts examined by a doctor or a nurse (clinical breast exam)? If the reply is No, skip to No.27.	□ Yes □ No
26.1 How often do you have a breast exam by a doctor or a nurse (clinical breast exam)?	□ Every year □ Every two years □ Only when I have a problem □ Other (please specify) ……
27. If you do not currently practice breast self-examination, or have your breasts examined by a physician, nurse, or other health provider, or have received a mammogram, do you think that you might do so?	□ Yes, within next 30 days □ Yes, within next 6 months but not as early as the next 30 days □ Do not know
28. What are the resources available in your community for BSE?	……
29. Overall, how healthy are you?	□ Not healthy □ Somewhat healthy □ Healthy □ Very healthy

Part 2: Breast Cancer Knowledge

Instruction: For each statement, please read the question carefully and select the correct answer or select all answers that apply as indicated on the question.

Knowledge and Screening

1. What is breast cancer?

a) It is the breast lumps when your breastfed son/daughter.
b) It is the pain symptom of breast.
c) It is the abnormal cells of occurring around the breasts.

2. If you are itchy nipple, it is breast cancer symptom.

a) Yes
b) No
c) Not sure, you should confirm and detect symptom with physician.

3. If the breast cancer removed on one side, it can come back occurring again on another side.

a) Yes
b) No
c) Not sure

4. Which age groups are at highest risk for breast cancer?

a) 20-30 years old
b) 40-50 years old
c) More than 60 years old

5. Did group risk of breast cancer presented on drinking and smoking?

a) Yes
b) No
c) Not sure

6. Did the early stage of breast cancer can be cured.

a) Yes
b) No
c) Not sure

7. Should you do breast exam during period?

a) Yes
b) No
c) Not sure

8. BSE should be done monthly or a time per 2 months.

a) Yes
b) No
c) Not sure

9. Using the 3 middle fingers pads pressure at breast site in 3 levels of light, middle, and heavy

a) Yes
b) No
c) Not sure

10. Do not lift the finger when practice BSE or checking the breast

a) Yes
b) No
c) Not sure

Part 3: Breast Cancer Screening Beliefs Questionnaire (BCSBQ)

Instruction: For each statement, please check (√) response following each statement. There are no right answers. Everyone has different experiences that will influence their answers. Please answer as honestly as possible. We need the answer which best explains how you feel. Please tell me if you STRONGLY DISAGREE (SD), DISAGREE (D), NEUTRAL (N), AGREE (A), and STRONGLY AGREE (SA) for your best opinion.

"STRONGLY DISAGREE (SD)" means you do not accept the statement 100%.

"DISAGREE (D)" means you do not accept the statement 80%.

"NEUTRAL (N)" means you both agree and disagree or 50/50.

"AGREE (A)" means you accept the statement 80%.

"STRONGLY AGREE (SA)" means you accept the statement 100%.

No.	Items	SD	D	N	A	SA
Susceptibility (5 items)						
1	It is extremely likely that I will get breast cancer.					
2	My chances of getting breast cancer in the next few years are great.					
3	I feel I will get breast cancer sometime during my life.					
4	Developing breast cancer is currently a possibility for me.					
5	I am concerned about the likelihood of developing breast cancer in the near future.					

The next group of questions concerns what you believe the benefits are of breast self-examination and breast examination by a health care provider.

No.	Items	SD	D	N	A	SA
Benefits of BSE (5 items)						
6	When I do breast self-examination, I am doing something to take care of myself.					
7	If I complete breast self-examination monthly, I don't worry as much about breast cancer because I know that nothing is wrong.					
8	Completing breast self-examination each month may help me find breast lumps early.					
9	Completing breast self-examination each month may decrease my chances of dying from breast cancer.					
10	If I find a lump early through breast self-examination, my treatment for breast cancer may not be as bad.					
Barriers to BSE (11 items)						
11	I do not feel I can do a breast self-examination correctly.					
12	Doing breast self-examination will make me worry about what is wrong with my breasts.					
13	Breast self-examination is embarrassing to me.					
14	Breast self-examination takes too much time.					

No.	Items	SD	D	N	A	SA
15	It is hard to remember to do breast self-examination.					
16	I don't have enough privacy to do breast self-examination.					
17	Breast self-examination is not necessary if you have a breast exam by a health care provider.					
18	Breast self-examination is not necessary if you have a routine mammogram.					
19	My breasts are too large for me to complete breast self-examination.					
20	My breasts are too lumpy for me to complete breast self-examination.					
21	I have other problems more important than doing breast self-examination.					

The following group of questions concerns your confidence in completing breast self-examination.

No.	Items	SD	D	N	A	SA
22	I know how to perform breast self-examination.					
23	I can perform breast self-examination correctly.					
24	I could find a breast lump by performing breast self-examination.					
25	I am able to find a breast lump which is the size of a quarter.					
26	I am able to find a breast lump which is the size of a dime.					
27	I am able to find a breast lump which is the size of a pea.					
28	I am sure of the steps to follow for doing breast self-examination.					
29	I am able to tell if something is wrong with my breast when doing breast self- examination.					
30	I am able to tell if something is wrong with my breast when I look in the mirror.					
31	I can use the correct part of my fingers when examining my breasts.					

หมู่ที่.....

วัน/เดือน/ปี สัมภาษณ์.....

รหัสผู้ตอบแบบสอบถาม ☐☐☐

แบบสอบถามงานวิจัย

การตรวจเต้านมด้วยตนเองของผู้หญิงอาข่าในจังหวัดเชียงราย ประเทศไทย: ข้อเสนอแนะเชิงนโยบายบนพื้นฐานของการวิจัยก่อรูป

ในการเข้าร่วมการศึกษานี้คุณจะต้องกรอกแบบสอบถามซึ่งแบ่งออกเป็น 3 ส่วน โปรดทำตามคำแนะนำของแต่ละส่วน ดังต่อไปนี้

ส่วนที่ 1: ข้อมูลทั่วไปเกี่ยวกับเศรษฐสังคม และความเสี่ยงของมะเร็งเต้านม

คำแนะนำ: โปรดกรอกข้อมูลในช่องว่างหรือทำเครื่องหมาย ✔ ในช่อง ☐

1. วัน/เดือน/ปี เกิด	.....อายุ.....
2. สถานภาพสมรสของท่านคือ	☐ 1. โสด ☐ 2. แต่งงาน ☐ 3. หย่าร้าง/แยกกันอยู่ ☐ 4. หม้าย (คู่ชีวิตเสียชีวิต)
3. ท่านนับถือศาสนาอะไร	☐ 1. ศาสนาพุธ ☐ 2. ศาสนาคริสต์ ☐ 3. ศาสนาอิสลาม ☐ 4. นับถือบรรพบุรุษ ☐ 5. อื่นๆ.....
4. การศึกษาขั้นสูงสุดที่ท่านเรียนคือระดับชั้นไหน	☐ 1. ไม่ได้ศึกษา ☐ 2. ชั้นอนุบาล ☐ 3. ประถมศึกษา 1-4 ☐ 4. ประถมศึกษา 5-6 ☐ 5. มัธยมศึกษา 1-3 ☐ 6. มัธยมศึกษา 4-6 ☐ 7. ประกาศณียบัตร/อนุปริญญา ☐ 8. ปริญญาตรี หรือสูงกว่าปริญญาตรี
5. ความสามารถในการใช้ภาษาไทยของท่านคือ	☐ 1. สามารถพูด อ่าน เขียน ได้

	☐ 2. สามารถพูด อ่าน ได้ ☐ 3. สามารถพูดได้อย่างเดียว ☐ 4. ไม่สามารถใช้ภาษาไทยได้เลย ☐ 5. อื่นๆ (โปรดระบุ) .....
6. ท่านประกอบอาชีพอะไร	.....
7. รายได้ต่อเดือนทั้งครอบครัวของคุณเท่าไหร่	.....บาท
8. ท่านใช้สิทธิ์ในการรักษาสิทธิ์ใด	☐ 1. ไม่มีสิทธิ์ใดๆ ☐ 2. จ่ายเอง ☐ 3. สิทธิ์ข้าราชการ ☐ 4. สิทธิ์ประกันสังคม ☐ 5. สิทธิ์บัตรทอง ☐ 6. ซื้อบัตรประกันสุขภาพเอกชน (ประกันชีวิต) ☐ 7. อื่นๆ.....
9. ท่านอยู่ไทยมานานเท่าไหร่	.....ปี
10. ท่านหนักเท่าไหร่	.....กิโลกรัม
11. ท่านสูงเท่าไหร่	.....เซนติเมตร
12. ปัจจุบันท่านมีการรักษาโรคเรื้อรังหรือไม่ (เช่น เบาหวาน ความดัน หัวใจ หลอดเลือดสมอง ฯ)	☐ 1. มี ☐ 2. ไม่
13. ท่านไปพบแพทย์บ่อยเพียงใด	☐ 1. ไม่เคยเลย ☐ 2. เดือนละครั้ง ☐ 3. ปีละครั้ง ☐ 4. สองปีครั้ง ☐ 5. ไปเมื่อมีปัญหาเท่านั้น ☐ 6. อื่นๆ (โปรดระบุ) .....
14. ในหนึ่งปีที่ผ่านมา ท่านดื่มเครื่องดื่มที่มี	☐ 1. ทุกวัน

แอลกอฮอล์บ่อยเท่าไหร่	☐ 2. สามถึงสี่ครั้งต่อสัปดาห์ ☐ 3. สัปดาห์ละครั้ง ☐ 4. สามถึงสี่ครั้งต่อเดือน ☐ 5. เดือนละครั้ง ☐ 6. หนึ่งถึงสองครั้งต่อปี (เทศกาล) ☐ 7. ไม่ดื่มเลย
15. ท่านออกกำลังกายกี่ครั้งต่อสัปดาห์ (ถ้าตอบ *"ไม่ออกกำลังกายเลย"* ข้ามไปข้อ 16)	☐ 1. ทุกวัน ☐ 2. สามถึงสี่ครั้งต่อสัปดาห์ ☐ 3. สัปดาห์ละครั้ง ☐ 4. ไม่ออกกำลังกายเลย
15.1 ท่านออกกำลังกายประเภทใด	☐ 1. วิ่ง ☐ 2. ปั่นจักรยาน ☐ 3. กายบริหาร ☐ 4. โยคะ ☐ 5. แอโรบิก ☐ 6. อื่นๆ.....
16. ท่านเคยคลอดบุตรหรือไม่ (ถ้าตอบ *"ไม่เคย"* ให้ข้ามไปข้อที่ 17)	☐ 1. เคย ☐ 2. ไม่เคย
16.1 ลูกคนแรกของท่านอายุกี่ปี	.....ปี
16.2 ท่านเคยให้นมบุตรด้วยตัวของท่านเองหรือไม่	☐ 1. ไม่เคย ☐ 2. เคย และให้นมบุตร.....เดือน
17. ท่านมีประจำเดือนครั้งแรกอายุเท่าไหร่	.....ปี
18. ท่านหมดประจำเดือนอายุเท่าไหร่ (สำหรับคนที่หมดประจำเดือนแล้ว หากยังมีประจำเดือนอยู่ให้ข้ามไปตอบข้อที่ 19)	.....ปี
19. ท่านเคยใช้ยาคุมกำเนิดหรือไม่	☐ 1. ใช่ คือ..... ☐ 1.1 ยากิน

	☐ 1.2 ยาฉีด ☐ 1.3 ยาคุมฉุกเฉิน ☐ 1.4 ยาฝัง ☐ 1.5 อื่นๆ (โปรดระบุ) ..... ☐ 2. ไม่
20. สมาชิกในครอบครัวของท่านมีคนเคยเป็นมะเร็งเต้านม	☐ 1. มี ☐ 2. ไม่มี
21. สมาชิกในครอบครัวของท่านมีคนเคยเป็นมะเร็งรังไข่	☐ 1. มี ☐ 2. ไม่มี
22. ท่านใช้ผลิตภัณฑ์ระงับกลิ่นกายทาใต้วงแขนหรือไม่	☐ 1. ใช้ โดยใช้เป็น ☐ 1.1 สารส้ม ☐ 1.2 ลูกกลิ้งทารักแร้ ☐ 1.3อื่นๆ..... ☐ 2. ไม่ใช้
23. ท่านเคยได้รับข้อมูลสุขภาพเต้านมหรือไม่ (ถ้าตอบ *“ไม่เคย”* ให้ข้ามไปตอบข้อ 24)	☐ 1. ไม่เคย ☐ 2. เคย
23.1 ท่านเคยได้รับข้อมูลสุขภาพเต้านมจากแหล่งใดบ้าง (*เลือกแหล่งที่เคยได้รับทั้งหมด หรือตอบได้มากกว่า 1 ข้อ*)	☐ 1. สื่อสิ่งพิมพ์ ☐ 2. โทรทัศน์/วิทยุ ☐ 3. อินเตอร์เน็ต ☐ 4. โรงพยาบาล ☐ 5. แพทย์/บุคลากรทางการแพทย์ ☐ 6. โบสถ์ ☐ 7. เพื่อน/ครอบครัว ☐ 8. อื่นๆ (โปรดระบุ) .....
23.2 ภาษาของสื่อต่างๆ (คู่มือ แผ่นพับ) เป็นปัญหาในการเข้าถึง และความเข้าใจข้อมูลสุขภาพที่ได้รับหรือไม่	☐ 1. เป็น ☐ 2. ไม่เป็น
24. ท่านเคยมีความผิดปกติที่เกี่ยวข้องกับเต้านม	☐ 1. เคย

หรือไม่ (ถ้าตอบ *"ไม่เคย"* ให้ข้ามไปตอบข้อ 25)	☐ 2. ไม่เคย
24.1 ท่านเคยมีความผิดปกติอย่างไรตรงบริเวณเต้านม	☐ 1. ก้อนเนื้อ ☐ 2. ก้อนซีส (ถุงน้ำ) ☐ 3. มะเร็งเต้านม 1 ข้าง ☐ 4. มะเร็งเต้านมทั้ง 2 ข้าง ☐ 5. อื่นๆ (โปรดระบุ) .....
25. ท่านเคยได้ยินการตรวจมะเร็งเต้านมด้วยตนเองหรือไม่ (ถ้าตอบ *"ไม่เคย"* ให้ข้ามไปตอบข้อ 26)	☐ 1. เคย ☐ 2. ไม่เคย
25.1 ท่านเคยตรวจมะเร็งเต้านมด้วยตนเองหรือไม่ (ถ้าตอบ *"ไม่เคย"* ให้ข้ามไปตอบข้อ 26)	☐ 1. เคย ☐ 2. ไม่เคย
25.2. ท่านตรวจมะเร็งเต้านมด้วยตนเองบ่อยแค่ไหน	☐ 1. สัปดาห์ละครั้ง ☐ 2. เดือนละครั้ง ☐ 3. ปีละครั้ง ☐ 4. ตรวจเมื่อรู้สึกผิดปกติ ☐ 5. อื่นๆ (โปรดระบุ) .....
26. ท่านเคยไปรับการตรวจมะเร็งเต้านมจากแพทย์หรือพยาบาลหรือไม่ (ถ้าตอบ *"ไม่เคย"* ให้ข้ามไปตอบข้อ 27)	☐ 1. เคย ☐ 2. ไม่เคย
26.1 ท่านไปตรวจมะเร็งเต้านมโดยรับการตรวจจากแพทย์ หรือพยาบาลบ่อยแค่ไหน	☐ 1. 6 เดือนครั้ง ☐ 2. ทุกปี ☐ 3. ทุก 2 ปี ☐ 4. ตรวจเมื่อรู้สึกผิดปกติ ☐ 5. อื่นๆ (โปรดระบุ) .....
27. ถ้าปัจจุบันหากท่านไม่ตรวจมะเร็งเต้านมด้วยตนเอง หรือไม่ได้รับการตรวจจากแพทย์ พยาบาล หรือบุคลากรการแพทย์ ท่านคิดว่าในอนาคตท่านจะทำหรือไม่ (ถ้าตอบ *"ไม่ทำ"* หรือ *"ไม่ทราบ/*	☐ 1. ทำ ☐ 2. ไม่ทำ ☐ 3. ไม่ทราบ/ไม่แน่ใจ

ไม่แน่ใจ" ให้ข้ามไปตอบข้อ 28)	
27.1 จะทำภายการตรวจเต้านมด้วยตนเองในตอนไหนต่อจากนี้	☐ 1. ภายใน 1 เดือน ☐ 2. ภายใน 6 เดือน แต่ยังไม่ใช่ภายในเดือนหน้าที่จะถึงนี้
28. ในกลุ่มสตรีอาข่า มีความเชื่อที่ทำให้ไม่สามารถตรวจเต้านมด้วยตนเอง	☐ 1. ไม่มี ☐ 2. มี (โปรดระบุ) .....
29. ในชุมชนของท่านมีข้อมูล หรือเครื่องมืออะไรบ้างในการช่วยส่งเสริมการตรวจมะเร็งเต้านมด้วยตนเอง	..... เช่น คู่มือการตรวจเต้านม แผ่นพับ หนังสือ เป็นต้น
30. ในภาพรวมสุขภาพของท่านเป็นอย่างไร	☐ 1. สุขภาพไม่ค่อยดี ☐ 2. สุขภาพดีเป็นครั้งคราว ☐ 3. สุขภาพดี ☐ 4. สุขภาพดีมากที่สุด

ส่วนที่ 2: ความรู้มะเร็งเต้านม

คำแนะนำ: *สำหรับแต่ละข้อคำถาม โปรดอ่านอย่างละเอียดและเลือกคำตอบที่ถูกต้องหรือเลือกคำตอบทั้งหมดตามที่ระบุไว้ในคำถาม โดยทำ****เครื่องหมายวงกลม O*** *ไว้ในข้อที่ถูกที่สุด*

คำถาม	คำถาม
1. มะเร็งเต้านม คือ..... ก. โรคที่เกิดการกินอาหารที่มีไขมันสูง ข. โรคที่เกิดจากการติดเชื้อบริเวณเต้านม ค. โรคที่เกิดจากการเจริญเติบโตอย่างผิดปกติของเนื้อเยื่อบริเวณเต้านม	2. อาการคันหัวนมเกิดจากการเป็นมะเร็งเต้านม ก. ใช่ ข. ไม่ใช่ ค. ไม่แน่ใจ แต่ถ้าหัวนมเปลี่ยนสีและมีแผลร่วมด้วยให้รีบปรึกษาแพทย์
3. ถ้าผ่าตัดเต้านมจากการเป็นมะเร็งเต้านมไปแล้วข้างหนึ่งจะมีโอกาสเป็นมะเร็งเต้านมอีกข้างหนึ่งหรือไม่ ก. มี ข. ไม่มี ค. ไม่แน่ใจ	4. มะเร็งเต้านมพบได้มากในช่วงอายุเท่าไร ก. 40-50 ปี ข. 20-30 ปี ค. 70 ปีขึ้นไป

คำถาม	คำถาม
5. สตรีที่ชอบดื่มเหล้า เบียร์ สูบบุหรี่ เป็นกลุ่มเสี่ยงต่อมะเร็งเต้านมมากกว่าคนไม่ดื่ม ไม่สูบ ก. ใช่ ข. ไม่ใช่ ค. ไม่แน่ใจ	6. มะเร็งเต้านมสามารถรักษาให้หายขาดได้ เมื่อตรวจพบในระยะแรก ก. ใช่ ข. ไม่ใช่ ค. ไม่แน่ใจ
7. การตรวจเต้านมควรตรวจเมื่อมีประจำเดือน ก. ใช่ ข. ไม่ใช่ ค. ไม่แน่ใจ	8. การตรวจเต้านมควรตรวจทุกเดือน หรืออย่างน้อย 2 เดือนต่อครั้ง ก. ใช่ ข. ไม่ใช่ ค. ไม่แน่ใจ
9. การใช้นิ้วคลำ ใช้ 3 นิ้วคลำไปทิศทาง 3 ทิศทาง คือ วนก้นหอย ขึ้นลง และเข้าหาหัวนม และใช้แรงกดสามระดับ (เบา, ปานกลาง, ลึก) ก. ใช่ ข. ไม่ใช่ ค. ไม่แน่ใจ	10. การตรวจจะใช้การเลื่อนนิ้วมือโดยไม่ยกขึ้น ก. ใช่ ข. ไม่ใช่ ค. ไม่แน่ใจ

ส่วนที่ 3: แบบสอบถามความเชื่อด้านการคัดกรองมะเร็งเต้านม **(BCSBQ)**

คำแนะนำ: *แต่ละข้อคำถาม โปรดทำเครื่องหมาย (√) ต่อความเห็นแต่ละข้อคำถาม ซึ่ง ไม่มีคำตอบที่ถูกต้อง ประสบการณ์ที่แตกต่างกันของแต่ละคนจะส่งผลต่อคำตอบ กรุณาตอบอย่างตรงไปตรงมาที่สุด เราต้องการคำตอบที่อธิบายถึงความรู้สึกโดยแท้จริง โปรดเลือกหากคุณ ไม่เห็นด้วยอย่างยิ่ง ไม่เห็นด้วย กลางๆ เห็นด้วย และ เห็นด้วยอย่างยิ่ง เพื่อความเห็นที่ดีที่สุดของคุณ*

"ไม่เห็นด้วยอย่างยิ่ง (SD)" หมายถึง คุณไม่เห็นด้วย หรือไม่ยอมรับกับข้อความนั้น 100%.

"ไม่เห็นด้วย (D)" หมายถึง คุณไม่เห็นด้วย หรือไม่ยอมรับกับข้อความนั้น 80%.

"กลางๆ (N)" หมายถึง คุณเห็นด้วย และไม่เห็นด้วย อย่างละ 50/50.

"เห็นด้วย (A)" หมายถึง คุณเห็นด้วยกับข้อความนั้น 80%.

"เห็นด้วยอย่างยิ่ง (SA)" คุณเห็นด้วยกับข้อความนั้น 100%.

ข้อ	ข้อคำถาม	SD	D	N	A	SA
การรับรู้ต่อโอกาสเสี่ยงในการเป็นโรค (5 ข้อ)						
1	ฉันมีโอกาสจะเป็นมะเร็งเต้านมสูง					
2	ฉันมีโอกาสที่จะเป็นมะเร็งเต้านมในอีกไม่กี่ปีข้างหน้า					

ข้อ	ข้อคำถาม	SD	D	N	A	SA
3	ในชีวิตนี้ของฉัน ฉันรู้สึกว่ามีโอกาสจะเป็น มะเร็งเต้านม					
4	การพัฒนาของโรคมะเร็งเต้านมสามารถเกิดขึ้นได้กับฉัน					
5	ฉันกังวลเกี่ยวกับความเป็นไปได้ที่จะเกิดมะเร็งเต้านมในอนาคตอันใกล้นี้					

กลุ่มคำถามต่อไปเกี่ยวกับสิ่งที่คุณเชื่อถึงข้อดีของการตรวจเต้านมด้วยตนเองและการตรวจเต้านมโดยผู้ให้บริการด้านสุขภาพ

ข้อ	ข้อคำถาม	SD	D	N	A	SA
ประโยชน์ของการตรวจเต้านมด้วยตนเอง (5 ข้อ)						
6	ฉันรู้สึกว่าได้ดูแลตนเองเมื่อฉันตรวจเต้านมด้วยตนเอง					
7	ถ้าฉันตรวจเต้านมด้วยตนเองเป็นประจำทุกเดือน ฉันก็ไม่กังวลถึงความผิดปกติเรื่องมะเร็งเต้านม					
8	การตรวจเต้านมด้วยตนเองทุกเดือนอาจช่วยให้ฉันพบก้อนเต้านมได้เร็วขึ้น					
9	การตรวจเต้านมด้วยตนเองทุกเดือนจะลดการเจ็บป่วยรุนแรง หรือการเสียชีวิตจากมะเร็งเต้านมได้					
10	ถ้าฉันพบก้อนเนื้อในเต้านมก้อนแรกผ่านการตรวจเต้านมด้วยตัวเอง การรักษาโรคมะเร็งเต้านมของฉันอาจไม่ยากเท่าไหร่					
อุปสรรคต่อการตรวจเต้านมด้วยตนเอง (11 ข้อ)						
11	ฉันคิดว่า ฉันไม่สามารถตรวจเต้านมด้วยตนเองได้อย่างถูกต้อง					
12	การตรวจเต้านมด้วยตนเองจะทำให้ฉันรู้สึกวิตกกังวล					

ข้อ	ข้อคำถาม	SD	D	N	A	SA
	เกี่ยวกับสิ่งที่ผิดปกติที่จะเกิดกับหน้าอกของฉัน					
13	ตรวจเต้านมด้วยตนเองเป็นสิ่งที่น่าอับอายสำหรับฉัน					
14	การตรวจเต้านมด้วยตนเองใช้เวลามากเกินไป					
15	ขั้นตอนการตรวจเต้านมด้วยตนเองมีขั้นตอนที่ยุ่งยากที่จะจดจำ					
16	ฉันไม่มีความเป็นส่วนตัวพอที่จะทำการตรวจเต้านมด้วยตนเอง					
17	ไม่จำเป็นต้องตรวจเต้านมด้วยตนเอง ถ้าหากได้รับการตรวจเต้านมโดยเจ้าหน้าที่สาธารณสุข พยาบาล					
18	ไม่จำเป็นต้องตรวจเต้านมด้วยตนเอง ถ้าหากมีการตรวจเอ็กซเรย์เต้านมเป็นประจำ					
19	หน้าอกของฉันมีขนาดใหญ่เกินไปสำหรับฉันที่จะตรวจเต้านมด้วยตนเอง					
20	หน้าอกของฉันมีลักษณะเป็นก้อน ยากสำหรับที่จะตรวจเต้านมด้วยตนเอง (อาจทำให้มีอาการเจ็บขณะตรวจ)					
21	ฉันมีปัญหาอื่น ๆ ที่สำคัญกว่าการตรวจเต้านมด้วยตนเอง (ปัญหาสุขภาพอื่น หรือปัญหาความเป็นอยู่)					

กลุ่มคำถามต่อไปนี้ เป็นคำถามความมั่นใจในการตรวจเต้านมด้วยตนเอง

ข้อ	ข้อคำถาม	SD	D	N	A	SA

ข้อ	ข้อคำถาม	SD	D	N	A	SA
22	ฉันรู้วิธีการตรวจเต้านมด้วยตนเอง					
23	ฉันสามารถตรวจเต้านมด้วยตนเองได้อย่างถูกต้อง					
24	ฉันสามารถคลำก้อนบริเวณเต้านมได้ด้วยการตรวจเต้านมด้วยตัวเอง					
25	ฉันสามารถคลำก้อนบริเวณเต้านมที่มีขนาดประมาณหนึ่งในสี่ของพื้นที่เต้านมได้ 					
26	ฉันสามารถคลำก้อนในบริเวณเต้านมที่มีขนาดเล็กได้					
27	ฉันสามารถพบก้อนในบริเวณเต้านมที่มีขนาดเท่าเมล็ดถั่วได้ (ถั่วเขียว)					
28	ฉันมั่นใจว่าฉันทำตามขั้นตอนในการตรวจเต้านมด้วยตนเองได้					
29	ฉันสามารถบอกได้ว่ามีอะไรผิดปกติกับเต้านมของฉันหรือไม่ เมื่อทำการตรวจเต้านมด้วยตนเอง					
30	ฉันสามารถบอกได้ว่ามีอะไรผิดปกติกับหน้าอกของฉันเมื่อฉันมองเต้านมในกระจก					
31	ฉันสามารถใช้นิ้วมือตรวจเต้านมด้วยตนเองได้อย่างถูกต้อง					

Appendix B

Interview Protocol for Akha Women

Code of interviewee: ☐☐

Protocol Date: _____

Interview location: _____

Name of
Interviewer_____

1. What do you understand by breast cancer prevention and screening?

2. Have you ever had BSE? Please explain your experience.

3. What concerns do you have about locating and participating in BSE?

4. How does your awareness about breast cancer screening especially BSE influence your utilization of the available screening resources?

5. What are your personal barriers that have influenced your BSE behavior?

6. Do you see culture and stereotype as barriers to BSE? (If so, in what ways)

7. What factors in your opinion would better enhance your experience and/or utilization of BSE?

8. What is your advice receiving about BSE?

9. What advice do you have for healthcare providers to improve breast cancer screening services for Akha women?

Interview Protocol for Local Health Provider

Code of interviewee: ☐☐

Protocol Date: _____

Interview location: _____

Name of
Interviewer_____

1. What concerns do your organization have about participating for BSE?

2. How does Akha women awareness about breast cancer screening especially BSE?

3. What are Akha women barriers that have influenced for BSE behavior?

4. Do Akha women culture and stereotype as barriers for BSE? (If so, in what ways)

5. What are the resources available in Akha community for BSE?

6. What was the most challenging aspect of BSE to provide Akha women?

7. What factors in your opinion would better enhance Akha women experience and/or utilization of BSE?

8. What is your advice breast cancer screening services for Akha women to improve about BSE?

บทสัมภาษณ์สตรีอาข่า

รหัสของผู้ถูกสัมภาษณ์: ☐☐☐

วันที่สัมภาษณ์: _____

สถานที่ที่สัมภาษณ์: _____

ชื่อผู้สัมภาษณ์_____

1. คุณเข้าใจอะไรบ้าง เกี่ยวกับการป้องกันมะเร็งเต้านมและการตรวจคัดกรอง

2. คุณเคยตรวจมะเร็งเต้านมด้วยตนเอง หรือไม่? โปรดอธิบายประสบการณ์การตรวจของคุณ

3. สิ่งใดที่คุณกังวลเกี่ยวกับการตรวจมะเร็งเต้านมด้วยตนเอง

4. ความรู้ของคุณที่เกี่ยวกับการตรวจคัดกรองมะเร็งเต้านมโดยเฉพาะอย่างยิ่งการตรวจเต้านมด้วยตนเอง มีผลมาจากแหล่งข้อมูลการตรวจคัดกรองแหล่งใด และอย่างไร

5. อะไรคืออุปสรรคส่วนตัวของคุณที่มีผลต่อการตรวจเต้านมด้วยเอง

6. คุณเห็นวัฒนธรรมเป็นอุปสรรคต่อการตรวจเต้านมด้วยตนเองหรือไม่ (ถ้าใช่เป็นอย่างไร)

7. ปัจจัยใดในความคิดของคุณจะช่วยเป็นรงกระตุ้นให้มีการตรวจเต้านมด้วยตนเองได้ดีขึ้น

8. อะไรคือข้อเสนอแนะของคุณในการตรวจเต้านมด้วยตนเอง

9. คุณมีข้อเสนอแนะอะไรบ้างสำหรับผู้ให้บริการด้านสุขภาพ เพื่อที่จะนำไปทำการปรับปรุงการบริการตรวจคัดกรองมะเร็งเต้านมสำหรับสตรีอาข่า

บทสัมภาษณ์บุคลากรสาธารณสุขในพื้นที่

รหัสของผู้ถูกสัมภาษณ์: ☐☐

วันที่สัมภาษณ์: _____

สถานที่ที่สัมภาษณ์: _____

ชื่อผู้สัมภาษณ์_____

1. องค์กรของคุณมีส่วนเกี่ยวข้อง หรือมีบทบาทอะไรบ้างในการจัดการตรวจมะเร็งเต้านมด้วยตนเอง

2. สตรีอาข่ามีความตระหนักถึงการตรวจคัดกรองมะเร็งเต้านมโดยเฉพาะการตรวจเต้านมด้วยตนเอง เป็นอย่างไร

3. สิ่งใดเป็นสิ่งกีดขวาง หรืออุปสรรคที่มีอิทธิพลต่อพฤติกรรมของการตรวจเต้านมด้วยตนเองของผู้หญิงอาข่า

4. วัฒนธรรมเรื่องเพศ และบทบาทสตรีมีเป็นอุปสรรคต่อการตรวจเต้านมด้วยตนเองของสตรีอาข่าหรือไม่ (ถ้าใช่ โปรดระบุว่ามีสิ่งใดบ้าง)

5. อะไรคือทรัพยากรที่มีอยู่ในชุมชนชาวอาข่า ที่เหมาะสำหรับจะทำการตรวจเต้านมด้วยตนเอง

6. อะไรคือสิ่งที่ท้าทายที่สุดสำหรับการจัดการตรวจเต้านมด้วยเองในสตรีอาข่า

7. จากความคิดเห็นของคุณปัจจัยใดที่จะช่วยให้สตรีอาข่า เพิ่มประสบการณ์ การปฏิบัติ และประโยชน์ในการตรวจเต้านมด้วยตนเอง

8. คุณมีข้อเสนอแนะ หรือคำแนะนำใดบ้างในการตรวจคัดกรองมะเร็งเต้านมของสตรีอาข่า

Appendix C

An observation competency checklist for BSE (pre- and post- of BSE educational program).

Practical Steps	Correct score (1)	Complete score (1)/frequency of BSE	Total
1. Visual inspection in mirror			
2. Position (lying down or standing up)			
3. Use of finger pads of the three middle fingers			
4. Use of one of the three search patterns for BSE: Circle ,Wedge, and Vertical strip			
5. Use of three levels of pressure (light, medium, deep)			
6. Check for axillary nodes			
7. Keep hands on breast tissue during exam by using the open fingers slide fingers technique			
Total			

แบบสังเกตการณ์การตรวจสอบความสามารถในการตรวจเต้านมด้วยตนเอง (ก่อนและหลังการศึกษาการตรวจเต้านมด้วยตนเอง)

ขั้นตอนการปฏิบัติ	คะแนนที่ทำถูกต้อง (1)	คะแนนที่สมบูรณ์ (1) / ความถี่ของการตรวจเต้านมด้วยตนเอง	คะแนนรวม
1. การตรวจหน้ากระจก			
2. ตำแหน่ง (นอนหรือยืนขึ้น)			
3. การใช้นิ้วมือสามนิ้วกลางของมือในการตรวจ			
4. ใช้การคลำหนึ่งในสามรูปแบบคือ: วงกลม ขึ้นลง และวนเข้าหัวนม			
5. ใช้แรงกดสามระดับ (เบา, ปานกลาง, ลึก)			
6. ตรวจหาต่อมที่รักแร้			
7. มือระหว่างการตรวจโดยใช้เทคนิคการเลื่อนนิ้วมือโดยไม่ยกขึ้น			
รวมคะแนน			

Appendix D

สำนักงานสาธารณสุขจังหวัดเชียงราย
Chiang Rai Provincial Health Office

ใบรับรองจริยธรรมการวิจัย

หมายเลขรับรอง CRPPHO ๒๒ /๒๕๖๑

การวิจัยนี้และเอกสารประกอบของการวิจัยตามรายการแสดงด้านล่าง ได้รับการพิจารณาจากคณะกรรมการจริยธรรมการวิจัยในมนุษย์ สำนักงานสาธารณสุขจังหวัดเชียงรายแล้ว คณะกรรมการมีความเห็นว่าการวิจัยที่จะดำเนินการมีความสอดคล้องกับหลักจริยธรรมสากล ตลอดจนกฎหมายข้อบังคับและข้อกำหนดภายในประเทศ จึงเห็นสมควรให้ดำเนินการวิจัยตามข้อเสนอการวิจัยนี้ได้

ชื่อการวิจัย : การตรวจเต้านมด้วยตนเองของผู้หญิงอาข่าในจังหวัดเชียงราย ประเทศไทย : ข้อเสนอแนะเชิงนโยบายบนพื้นฐานของฟอร์เมทีฟรีเสิร์ช

สถาบันที่สังกัด : สำนักวิชาวิทยาศาสตร์สุขภาพ มหาวิทยาลัยแม่ฟ้าหลวง

ผู้วิจัยหลัก : อาจารย์สิรินันท์ สุวรรณาภรณ์

เอกสารที่ได้รับการรับรอง

๑. โครงร่างการวิจัย (ฉบับแก้ไขวันที่ ๑๐ พฤษภาคม ๒๕๖๑)

๒. แบบสอบถามโครงการวิจัย

๓. หนังสือชี้แจงข้อมูลการเข้าร่วมโครงการวิจัย

๔. ใบยินยอมให้ทำการวิจัย (ฉบับแก้ไขวันที่ ๑๐ พฤษภาคม ๒๕๖๑)

จึงเห็นควรอนุมัติให้ดำเนินการวิจัยในขอบเขตของโครงการที่เสนอต่อคณะกรรมการจริยธรรมการวิจัยในมนุษย์ สำนักงานสาธารณสุขจังหวัดเชียงรายได้ ตั้งแต่วันที่ ๓๑ พฤษภาคม ๒๕๖๑ จนถึงวันที่ ๓๑ พฤษภาคม ๒๕๖๒

.....

(นายธวัชชัย ใจคำวัง)

รักษาการในตำแหน่งประธานคณะกรรมการจริยธรรมการวิจัยในมนุษย์

.....

เอกสารเลขที่ ๐๐๑/๒๕๖๑

มหาวิทยาลัยแม่ฟ้าหลวง
คณะกรรมการจริยธรรมการวิจัยในมนุษย์
ขอรับรองว่า

ชื่อโครงการ : การตรวจเต้านมด้วยตนเองของผู้หญิงอาข่าในจังหวัดเชียงราย ประเทศไทย: ข้อเสนอเชิงนโยบายบนพื้นฐานของฟอร์เมทีฟรีเสิร์ช
(Breast Self-Examination among Akha Women in Chiang Rai Province Thailand: Policy Recommendations Based on The Formative Research Study Design)

โครงการเลขที่ : REH-๖๑๐๐๑

ชื่อผู้วิจัย : อาจารย์ สิรินันท์ สุวรรณาภรณ์

สังกัด : สำนักวิชาวิทยาศาสตร์สุขภาพ

เป็นโครงการวิจัยที่ไม่ขัดต่อหลักจริยธรรมสากลตามคำปฏิญญาเฮลซิงกิ (The Declaration of Helsinki) และแนวทางจริยธรรมการวิจัยในคนแห่งชาติ พ.ศ. ๒๕๔๕

จึงเห็นสมควรให้ดำเนินการวิจัยในขอบข่ายของโครงการที่เสนอต่อคณะกรรมการจริยธรรมการวิจัยในมนุษย์ มหาวิทยาลัยแม่ฟ้าหลวงได้ ณ วันที่ ๘ เดือน มกราคม พ.ศ. ๒๕๖๑

ลงชื่อ.....
(รองศาสตราจารย์ ดร.ปรีชา อุปโยคิน)
รองประธานคณะกรรมการจริยธรรมการวิจัยในมนุษย์
ปฏิบัติการแทน ประธานคณะกรรมการจริยธรรมการวิจัยในมนุษย์
มหาวิทยาลัยแม่ฟ้าหลวง
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PUBLICATION	Suwannaporn, S., Hongsranagon, P., & Havanond, P. (2013). Knowledge, Attitude, And Practice Towards Helmet Use Among Motorcycle Riders And Passengers In Ratchaburi Province, Thailand. Journal of Health Research, 27(1), 27-32. Apidechkul, T., Laingoen, O., & Suwannaporn, S. (2016). Inequity in accessing health care service in Thailand in 2015: a case study of the hill tribe people in Mae Fah Luang district, Chiang Rai, Thailand. Journal of Health Research, 30(1), 67-71. Apidechkul, T., Laingoen, O., Suwannaporn, S., Tamornpark, R. (2017). Factors Influencing Motorcycle Accidents among Hill Tribe Youths in Chiang Rai, Thailand. Journal of Health Research, 31(6): 473-480. Suwannaporn, S., Hongsranagon, P., & Yeewa, M. HUMANE-ORIENTED PATIENT SAFETY CONCEPT. Suwannaporn, S. (2018). Prevalence of HBsAg and Anti-HCV among HIV-infected Injecting Drug Users in the Northern Region of Thailand. The Public Health Journal of Burapha University, 11-20.