

**University of Alberta**

Dissemination of Culturally- and Linguistically-appropriate Educational  
Intervention for Cervical Cancer Screening for Chinese Albertan  
Women

by

Fei Xu

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©Fei Xu

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## ABSTRACT

Chinese immigrants to Canada have a low utilization rate of Pap smear test. The objective of this study was to evaluate whether efficacy-proven educational materials can be effectively disseminated and increase the test utilization for under-screened Chinese Albertan women. Of 120 participants we reached through 10 Chinese churches, 78% reported having ever had a Pap test and 38% reported having a test in the preceding year. Within three months post-intervention, 41% of never screened, 27% of not recently screened women at baseline received the test, and 14% made an appointment with physicians for the test. For Pap testing utilization, recommendation from physicians appeared being a strong facilitator, while language and cultural perception, “Often forget” and “time availability” were identified as barriers. Culturally- and linguistically-appropriate educational materials for cervical cancer screening can be disseminated effectively through Chinese churches and may lead to increased Pap test participation rate of under-screened Chinese immigrants.

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# Chapter 1

## Introduction

### 1.1 Rationale

Chinese women in Canada have a high incidence rate of cervical cancer and low participation rate of Pap smear test <sup>[1]</sup>. The incidence rate is 12.5 per 100,000 person years, compared to 7.0 in the general population <sup>[1][2]</sup>. Previous study reported that, even after living in Canada for 15 years, participation in the routine Pap smear test among foreign-born Chinese was only 43%, a remarkably lower rate compared to over 70% for Canada-born Caucasian women with comparable socioeconomic and demographic characteristics<sup>[3]</sup>. Similar findings were also observed in a population-based study in Toronto <sup>[4]</sup> and a community-based study in Vancouver <sup>[5]</sup>.

The barriers to participation for Chinese North American women were identified by previous studies <sup>[6][7][8][9][10]</sup>. Differences in traditional beliefs, cultural conceptions and linguistic difficulties were partly responsible for the lower participation. Accordingly, the culturally- and linguistically-appropriate educational intervention materials have been developed and shown to be effective in improving Pap test participation among Chinese women in a randomized controlled trial in Vancouver <sup>[11]</sup>.

## **1.2 Objectives**

The primary objective of the current study is to disseminate the culturally- and linguistically-appropriated educational intervention materials, which has been proven to be effective in a randomized trial in Vancouver, and evaluate if the dissemination can improve Pap test participation among Chinese women in Alberta, including women who have never taken Pap smear test. The secondary objective is to identify the facilitators and barriers of participation among Chinese women in Alberta. The ultimate goal of the study is to contribute to decreasing the incidence of cervical cancer through improving Pap smear screening participation among Chinese women in Alberta.

This thesis is organized as follows. Chapter 2 will present the study background, including general description of cervical cancer, the disease burden to the public health system, cervical cancer prevention programs in Canada, and common barriers for participation in cervical cancer screening program, as well as Chinese immigrants to Canada and their participation in cervical cancer screening. Chapter 3 is to describe the study procedure and materials (i.e., questionnaire and intervention materials package), as well as our data analysis plan. Chapter 4 will present study results, including demographic features of the study population, facilitators and barriers for participation in this specific population, and changes in participation behaviours post intervention. Discussion, study limitations, policy implications and conclusions of the study will be given in Chapter 5.

## **Chapter 2**

### **Background**

#### **2.1 Overview**

Cervical cancer is the second most common cancer and one of the leading causes of cancer mortality in women worldwide. The global disease burden of cervical cancer is estimated at 470,000 new cases and 230,000 deaths annually<sup>[12]</sup>. Fortunately, cervical cancer is highly preventable: it is estimated that up to 90% of invasive cervical cancer case can be prevented through routine Pap smear test and ensuing treatment.

The uptake of Pap smear test remains unfavourable, however. The proportion of women who did not take the Pap smear test following the guideline is high, approximately 27% in the general population of Canada and 23% in Alberta in 2005<sup>[13]</sup>, respectively, with Chinese immigrants at an even higher percentage, 43%<sup>[3]</sup>. With the growth of immigrant populations in Canada, especially Chinese who are at high-risk for cervical cancer, enhancing their participation in cervical cancer screening is an urgent public health issue.

## 2.2 Cervical Cancer

### 2.2.1 Pathogenesis

The cervix is located at the opening of the uterus. The major biological cause of cervical cancer is the infection with human papilloma virus (HPV), which accounts for 93% of cancer cases <sup>[14]</sup>. Before cancer cells start to grow, the cells of the cervix go through progressive changes from normal to stages of dysplasia/cervical intraepithelial neoplasia. Most often these changes have no symptoms. In Canada, about 70% of all types of cervical cancer are accounted for squamous cell carcinomas which are detectable by Pap smear test, and adenocarcinomas and adenosquamous carcinomas for about 25% with an additional 5% having a non-specific histology <sup>[18]</sup>. They usually develop slowly over a number of years (typically about 10 years) <sup>[15]</sup>. This disease affects women of all ages who have been sexually active <sup>[16]</sup>.

### 2.2.2 Risk factors

There is no single cause of cervical cancer, but some factors appear to increase the risk of developing it. The most convincing and consistent risk factors are: not having regular Pap tests; had multiple sexual partners; became sexually active at an early age; had sexual activities with a man who has had multiple sexual partners; and cigarette smoking; having a weakened immune system (for example, from taking drugs after an organ transplant or having a disease

such as AIDS); using birth control pills for a long time; giving birth to many children <sup>[17]</sup>. Given the fact that the overwhelming majority of women today with a diagnosis of cervical cancer either have not had regular Pap smear test or have not been followed up after detection of an abnormal smear, not undergoing regular Pap smear test is the single greatest, modifiable risk factor for developing cervical cancer <sup>[18]</sup>.

### 2.2.3 Disease burden

Cervical cancer is the third most common cancer among women aged 20 to 49 in Canada with a five-year combined survival probability of 74%. Five-year survival rates decreased steadily by cancer stages: ranging from stage I through stage IV. Approximate 96% to 99% survival rates if detected at the first stage which is microinvasive, 80-90% if cancer is visible without microscope, 65-69% when cancer detected at stage II, 40-43% at stage III and down to 15 to 20 % if at last stage<sup>[19]</sup>. Therefore, it is vital to detect cancer cells at early stage to increase the probability of survival. In Canada, it was estimated that 1,300 women would receive a diagnosis of cervical cancer, and 370 women would die from this disease nationwide in 2010 <sup>[20]</sup>. In Alberta, 160 women would be expected to develop cervical cancer, and 40 would lose their lives in 2010 <sup>[20]</sup>.

### 2.2.4 Prevention of cervical cancer and Pap smear test

Early detection of treatable cervical cancer precursors using the Pap smear and removal of the abnormal cells before they become cancerous remain the best methods of reducing the incidence and mortality of cervical cancer. Pap smear testing is a simple test which can detect abnormal cells in cervix that precede cervical cancer. National programs of Pap smear test started in the late 1980s. Numerous recommendations have been made over the past four decades to develop comprehensive cervical cancer screening programs. Due to the nationwide extension of Pap smear test, cervical cancer remains one of the most preventable forms of cancer in Canada <sup>[21]</sup>. Mortality due to cervical cancer decreased, from a rate of 11 per 100,000 in 1951 to 1.8 per 100,000 in 2008, while the incidence rate has declined by about 2% per year between 1996 and 2005 <sup>[22]</sup>. The screening by Pap smear test is also estimated to save more than 1500 lives among Canadian women each year. The continuous long-term drop in incidence and mortality of cervical cancer were most likely related to the uptake of and improvements in Pap smear screening among young females <sup>[23]</sup>.

#### 2.2.5 Uptake of Pap smear test and associated factors

A recent study pointed out that most of the new cases of invasive cervical cancer in Canada occur among women who have either been under-screened or never been screened <sup>[24]</sup>. This implies that the uptake of Pap smear screening is still unsatisfactory. In 2003, about 27% of Canadian women <sup>[13]</sup> and 30% of Alberta women <sup>[25]</sup> have not been screened during the preceding

three years. In addition, in the analysis of the Canadian Community Health Survey in 2007, Health Canada pointed out that Pap smear utilization in Canada was not uniform across all groups of women. Factors associated with under-screening were: lower socio-economic class; lower education; older age; living in rural areas; visible minority women (recently coming immigrants); and Aboriginal <sup>[17]</sup> <sup>[26]</sup> <sup>[27]</sup> <sup>[28]</sup>. General barriers for preventing women from taking Pap smear test have been identified by numerous previous studies. A literature review for cervical cancer screening summarized and categorized these barriers systematically <sup>[29]</sup> (Table 1).

**Table 1. Barriers for Cervical Cancer Screening**

Barrier Type	Components
Cognitive	<ul style="list-style-type: none"> <li>• Lack of knowledge about screening</li> <li>• Lack of understanding of the purpose of the test</li> <li>• Benefits of the test in early detection</li> <li>• Not necessary for them (i.e. older women do not feel they are at risk)</li> <li>• Cancer is not curable</li> <li>• Fatalistic beliefs</li> <li>• Desire to be treated as a whole person</li> </ul>
Psychological	<ul style="list-style-type: none"> <li>• Fear</li> <li>• Diagnosis of cancer or other disease (negative attitudes towards cancers)</li> <li>• Previous bad experience</li> </ul>

	<ul style="list-style-type: none"> <li>• Test is uncomfortable</li> <li>• Thinking that they may already have cancer if they were invited for an exam</li> <li>• Embarrassment</li> <li>• Not wanting a male physician to do the exam</li> <li>• Cervical cancer is linked to sexually transmitted disease</li> </ul>
Economic	<ul style="list-style-type: none"> <li>• Time</li> <li>• Taking time off work</li> <li>• Cost factors</li> </ul>
<b>Barrier Type</b>	<b>Components</b>
Logistic	<ul style="list-style-type: none"> <li>• Lack of consistent physicians</li> <li>• Access to physician or screening services</li> <li>• Office hours limited</li> <li>• Childcare</li> <li>• Transportation difficulties</li> <li>• Long waiting times</li> </ul>
Language	<ul style="list-style-type: none"> <li>• Use of technical language</li> <li>• Non-English speaking</li> </ul>
Social	<ul style="list-style-type: none"> <li>• My doctor did not recommend the test to me</li> <li>• Support from family and friends</li> <li>• Support within the physician's office</li> </ul>



Those barriers were categorized into six types in terms of their features. Of which, perceived understanding and knowledge about cervical cancer and Pap smear test were grouped to cognitive barriers, while psychological ones were more related to personal feelings and concerns for the procedure, economic and logistic barriers were associated with time and cost to access to health services. The supports from family members and friends as well as family doctors were grouped to social barriers. Other than the barriers listed in Table 2, women's chronic health conditions may also affect negatively their attitude towards cancer screening <sup>[30]</sup> <sup>[31]</sup>. A recent systematic review reported an inverse association between obesity and participation of cervical cancer screening. The study found that women with various levels of obesity compared to those with a normal body mass had combined odds ratios for Pap smear test of 0.91 (95% CI: 0.80–1.03), 0.81 (95% CI: 0.70–0.93), 0.75 (95% CI: 0.64–0.88), and 0.62 (95% CI: 0.55–0.69) for the overweight and class I, class II, and class III obesity categories, respectively <sup>[30]</sup>.

Furthermore, several previous Canadian studies have revealed that immigrant women, especially those who recently arrived (less than 10 years in Canada) have remarkably lower participation rates of Pap smear test <sup>[3]</sup><sup>[4]</sup><sup>[5]</sup><sup>[28]</sup>. These findings are consistent with results from other developed countries <sup>[32]</sup> <sup>[33]</sup> <sup>[34]</sup>. Table 2 shows a comparison of utilization of Pap smear test between Canada-born and immigrants in Canada as well as in Alberta. Barriers to cancer

screening have been proven to differ across subpopulations, defined by age, ethnicity, and/or region. For instance, African American women experience different barriers than Latino or Caucasian women <sup>[34]</sup>. Thus, in order to develop strategies to promote cancer screening programs, it is important to understand the social and cultural realities of the target population and address their barriers properly.

**Table 2. Comparisons of utilization of Pap smear test in the total population and immigrants in Canada and Alberta**

	Screened within last 3 years (%)	Ever Screened, but not within last 3 years (%)	Never screened (%)	Not stated (%)
<b>Canada</b>				
Total population	74.1	12.4	11.3	2.2
Immigrants	65.4	10.4	19.6	4.6
<b>Alberta</b>				
Total population	79.1	11.0	7.5	2.4
Immigrants	70.2	9.2	14.7	5.9

Source: 2003 Canadian Community Health Survey,  
<http://cansim2.statcan.gc.ca/cgi-win/cnsmcgi.pgm/>

## **2.3 Chinese Immigration to Canada**

### 2.3.1 Overview

The latest Canadian census in 2006 enumerated 6,186,950 foreign born, approximately 20% of the total population <sup>[35]</sup>. Asians is one of the fastest growing and most culturally diverse minority populations in Canada. In 2006, the proportion of recent immigrants born in Asia (including the Middle East) accounted for 58.3%, and its total number reached 2.5 million <sup>[36]</sup>. Since 1970s, the proportion of Asians among all immigrants increased rapidly, from less than 20 % in 1971 to close to 60% in 2006 <sup>[37]</sup>. Of the Asian immigrants to Canada, Chinese is the biggest subgroup with the total population over one million <sup>[38]</sup>.

Chinese immigration to Canada experienced three big waves in Canada since the late of eighteen century. The first record for Chinese immigrants could be found in 1788 when 30-50 Chinese were employed by Nootka Sound as shipwrights. The Chinese first appeared in large numbers in the Colony of Vancouver Island in the middle 1800s as part of the large migration to the colony from California during the Fraser Canyon Gold Rush. In the building of the section of the Canadian Pacific Railway, Chinese railway workers made the main labor force: more than 5,000 laborers were sent from China by ship; and 7,000 Chinese railway workers came from California <sup>[39]</sup>.

Chinese immigration rebounded in 1980s, majority of them were from Hong Kong and Taiwan. From 1987 to 1994, Hong Kong was the leading source of

Chinese immigrants to Canada. The number of Chinese immigrants increased steadily with approximately 30,000 immigrations annually, to a peak in 1994 of more than 48,000, which accounted for 20 percent of the total number of immigrants to Canada [39]. Thereafter the immigrants from Hong Kong declined gradually, while the mainland China has become the largest source of Chinese immigration, exceeding Hong Kong and Taiwan since 2000. In fact, it is currently the country with the highest number of immigrants to Canada <sup>[40]</sup>. According to the 2002 statistics from the Citizenship and Immigration Canada, the mainland China has supplied the largest number of Canadian immigrants, averaging over 30,000 immigrants per year, totaling an average of 15% of all immigrants to Canada. This trend shows no sign of slowing down, with an all-time high of more than 40,000 Chinese immigrants to Canada in 2005 <sup>[41]</sup>.

The 2006 Census showed that Chinese is Canada's third most common mother tongue group, behind English and French. For the first time, more than 1 million people reported one of the Chinese languages as their mother tongue, accounting for 3.3% of the total population of Canada, up from 2.9% five years earlier <sup>[42]</sup>.

### 2.3.2 Health behaviours among immigrants

Undoubtedly, the diversity of the immigrant population provides Canada with a unique and important opportunity to draw upon the languages, traditions, education, skills and work experience gained from different countries. Such diversity, however, also poses challenges not only in areas such as language

training but also in other social services, including health care services. Both health care service users and health care providers face these challenges. The Longitudinal Survey of Immigrants to Canada in 2005 reported that, after four years post arrival to Canada, 20% of new immigrants claimed encountering difficulties accessing health care services. The major types of difficulties included “language problems”, “not know where to go (unfamiliar with local health care system)”, “cannot find doctor accepting patients” and “long waiting list” [43].

Meanwhile, immigrants are experiencing health inequalities. According to a new study using five waves of longitudinal data from the National Population Health Survey, recent immigrants from non-European countries were at higher risk of experiencing deterioration in their health, more likely than Canadian-born to report a shift for health status from “excellent” or “good” towards “fair” or “poor” and have increased frequencies of contacting doctors (at least 6 times a year) [44].

Given the deterioration of immigrants’ health and their general difficulties to access health services, understanding of health behaviours of immigrants becomes critical. Appropriate strategies for health promotion and intervention could be built to reduce health disparity and enable new immigrants benefit from the Canadian healthcare system. This would ultimately improve the health of the entire population and reduce health inequities across population groups.

## **2.4 Guidelines for Cervical Cancer Screening Programs at the National and Provincial Levels**

Guidelines for screening frequency have varied over time. Based upon the recommendations from the National Workshop on Cervical Cancer Screening, held in 1989, the Canadian Task Force on Preventive Health Care (1991) recommends annual screening with the Pap smear after initiation of sexual activity or at age 18. The annual screening frequency may be reduced to every 3 years, until age 69, after two normal tests, given the screening program has appropriate quality control measures and information systems. More frequent testing may be considered for women at high risk (first intercourse at less than 18 years of age, multiple sexual partners, with a partner who has had multiple sexual partners, smoker, and/or low socio-economic status) <sup>[18]</sup>.

Alberta Cervical Cancer Screening Program (ACCSP) was developed in 2000. This provincial program recommends all women aged between 18 and 69 begin the screening after initiation of sexual activity or at age 18, consistent with the Canadian Task Force on Preventive Health Care. Screening frequency recommended in the ACCSP 2002 was annually up to age 69. This guideline was revised in October 2009. Specifically, women can start having routine Pap smear test at age 21 and most women need Pap smear test just once every 3 years instead of every year. Women should still have Pap smear test regularly at least until age 70<sup>[45]</sup>.

## **Chapter 3**

### **Materials and Methods**

#### **3.1 Study Settings**

##### 3.1.1 Overview

For achieving the ultimate goal of increasing the Pap smear test participation among female Chinese Albertans, we designed and conducted a church-based intervention study in Edmonton to disseminate of culturally- and linguistically-appropriate educational materials for promoting cervical cancer screening for Chinese immigrants. The trilingual educational materials (Mandarin, Cantonese and English) for cervical cancer screening were previously developed in a US National-Cancer-Institute(NCI)-funded cervical cancer screening promotion study for Chinese immigrants in Seattle (USA) and Vancouver (PI: Dr. Vicky Taylor, Fred Hutchinson Cancer Research Center): these materials were made available online by the US NCI (<http://rtips.cancer.gov/rtips/productDownloads.do?programId=155735&topicId=102264>.) as proven, effective intervention methods/materials for cancer prevention for the target population. See the subsection of “Intervention Materials” for details. The current study targeted Chinese women in Edmonton who were born outside of Canada. The target age range was set to between 18 to 69 years old, consistent with the recommended age range from federal and provincial guidelines for cervical cancer screening. The study was

reviewed and approved by the Health Research Ethic Board of University of Alberta.

### 3.1.2 Chinese churches as the dissemination-outreach location

Our study was carried out in Chinese churches in Edmonton. We chose Chinese churches for the place to conduct our dissemination study for two reasons. First, Chinese churches are the places where Chinese people get together to have activities routinely; this group setting enables us to approach Chinese women efficiently, compared to an individual-based outreach, and follow them up relatively easily. Second, because the churches are located in different regions of the city, Chinese people attending churches are diverse with respect to age, duration of living in Canada, education level, and the place of birth. This increases the generalizability of study findings, compared to, for example, targeting a specific neighbourhood.

The names and phone numbers of Chinese churches were searched on Internet using <http://www.yellowpage.ca> through a set of key words: “Chinese church, Edmonton” or “Chinese organization, Edmonton.” We also searched for Chinese churches through the website <http://www.edmontonchina.ca>. A total of seventeen Chinese churches were identified.

Alberta issued the first guideline for Alberta Cervical Cancer Screening Program (ACCSP) in 2002 and revised the guideline in September 2009. The standard regularity for cervical cancer screening we used in this study



followed the 2002 guideline, which suggested that women who are 18 to 69 years old should receive Pap smear test every year. The reason why we did not use the revised guideline is that, this study was proposed in April 2009 with developed questionnaires and approved by University of Alberta Ethics Board in August 2009. When the newest guideline was issued in September 2009, our first education session had already been conducted (August 29<sup>th</sup>, 2009). For consistency across all education sessions we decided to keep the 2002 version of the guideline for cervical cancer screening in Alberta.

## **3.2 Materials**

### 3.2.1 Intervention materials

Culturally- and linguistically-appropriate education intervention materials were downloaded from the website

<http://rtips.cancer.gov/rtips/productDownloads.do?programId=155735&topicId=102264>. These materials were developed previously in a US-NCI-funded study conducted in Seattle (USA) and Vancouver (BC) and proven to be effective in improving participation of Pap smear test among Chinese immigrants in these two cities.

Specifically, the educational materials were developed based on 87 qualitative interviews and 9 focus groups conducted in the two cities in order to identify specific barriers and knowledge deficiency. There are three parts in the educational materials (refer to appendix): a motivational pamphlet that

addressed barriers to cervical cancer screening in the form of questions and answers; an educational brochure was developed by the Federation of Chinese American and Canadian Medical Societies and provided the basic facts about cervical cancer and Pap smear test; and an educational entertainment video (available in both Cantonese and Mandarin, with English subtitles) that addressed cultural context and barriers for cervical cancer screening systematically.

The intervention materials were tested in a randomized controlled trial in Seattle and Vancouver. The study recruited 402 Chinese women who were identified as underusers of Pap smear test in the age range of 20-69 and randomly assigned them into three arms of intervention: (1) a “high intensity” outreach worker-based intervention where outreach workers delivered the materials to participants’ home, provided tailored responses to each woman’s individual barriers to cervical cancer screening and provided logistic assistance to women as necessary, including clinic referral and assistance with appointment scheduling, medical interpreter services during clinic visits for Pap smear test, and transportation assistance (i.e., taxicab transportation to and from clinic appointments or two bus passes); (2) a “low intensity” direct mail intervention where the educational materials were sent to participants directly by mail; and (3) a control group who received no intervention. In the 6 months between intervention and follow-up survey completion, 39% of women in the outreach group, 25% of women in the direct mail group, and 15% of women in the control group reported Pap smear test ( $P < .001$  for outreach worker versus

control,  $P = 0.03$  for direct mail versus control, and  $P = 0.02$  for outreach worker versus direct mail).

Based on the successful intervention effects of the Seattle-Vancouver study, we used the same materials in the current study's church-based outreach activities without any change.

### 3.2.2 Questionnaire development

The questionnaire contained the questions on basic demographic characteristics such as the current age, the region or country they originally came from, years living in Canada, the education level, and the marital status. Women were also asked about their knowledge of cervical cancer and Pap smear test: for example, if cervical cancer is preventable (yes/no), if Pap smear test in Canada is free (yes/no), whether they had ever received a suggestion from their family doctors to take Pap smear test, and how often they think Pap smear test should be taken. Pertaining to women's actual Pap smear test participation behaviours, they were queried if they had ever had a Pap smear test, and if so, whether they had been screened within last 12 months. In addition, women who had not had a recent Pap smear test (within last 12 months) were asked about reasons for not taking Pap smear test regularly. Multiple-choice questions for the reasons included cultural, language and traditional beliefs, which were identified as barriers in previous studies<sup>[6] [7] [8]</sup><sup>[46] [47]</sup>, as well as previous experience with the test (uncomfortable experience such pain when taking test) and social vulnerabilities that may be relevant to

new immigrants (e.g., “no time to go”, “do not know where to go”, and “transportation difficulty”). Women were asked to check all applicable answers as their reasons for not taking Pap smear test regularly.

All survey materials were developed in English, translated into Chinese by three bilingual investigators independently. The three sets of Chinese translations were reconciled to ensure the lexical accuracy and appropriateness. The translations were in the form of traditional Chinese script. The consideration of using only traditional Chinese script was that most of Chinese who know Simplified Chinese would know traditional Chinese, but not vice versa. In translation procedure, we only translated English materials into the traditional Chinese, we felt “back translation” was unnecessary for these materials. The materials in English and Chinese translations are attached in appendix.

### 3.2.3 Fact Sheet

A “Fact Sheet” was developed with a list of clinics with Chinese physicians in Edmonton available and prepared to address the cultural and linguistic barriers as well as the barriers to access facilities of public health service. The clinic information in Edmonton was obtained in the same way as churches through the online yellow pages, <http://www.yellowpage.ca>, with “clinic and Edmonton” as key search words. A total of sixty six clinics with full phone numbers and addresses were obtained.

After having basic clinic information at hand, phone calls were made to these clinics to confirm the capability to perform Pap smear test and availability of Chinese female physicians (regardless of physicians' language, Cantonese and/or Mandarin). Based on the confirmation, the list of the names, phone numbers and addresses of the clinics with Chinese female physicians available in Edmonton was created and attached to the education intervention materials. The fact sheet is available in appendix.

In addition to the education materials, the questionnaire and the Fact Sheet, we also provided three additional supplementary materials in the intervention package. One was a sheet of "questions and answers for recruitment" which mainly addressed study purposes, implications, participants' eligibilities and benefits, dissemination of study results, refer to appendix. Another was a study information statement which mainly serves to explain the consent form by items: possible benefits/risks to participants, confidentiality and security of the study data, voluntary participation, project procedures as well as contact names and telephone numbers for investigators and information of ethics review board at University of Alberta. The third was a confirmation letter to be signed by a healthcare provider when a participant receives a Pap smear test for follow-up and further study evaluation. The sample of confirmation letter is included in appendix.

All materials were packaged together and served as an education intervention materials package.

### **3.3 Study Procedure**

An overview of study design and procedure is summarized in Figure 1. The study procedure was composed of three blocks: recruitment of participants; outreach activities which included explaining the study purposes and distributing the package of educational materials, implementing the questionnaire survey, and watching the educational video as well as answering relevant questions; and a follow-up survey.

# Study Design

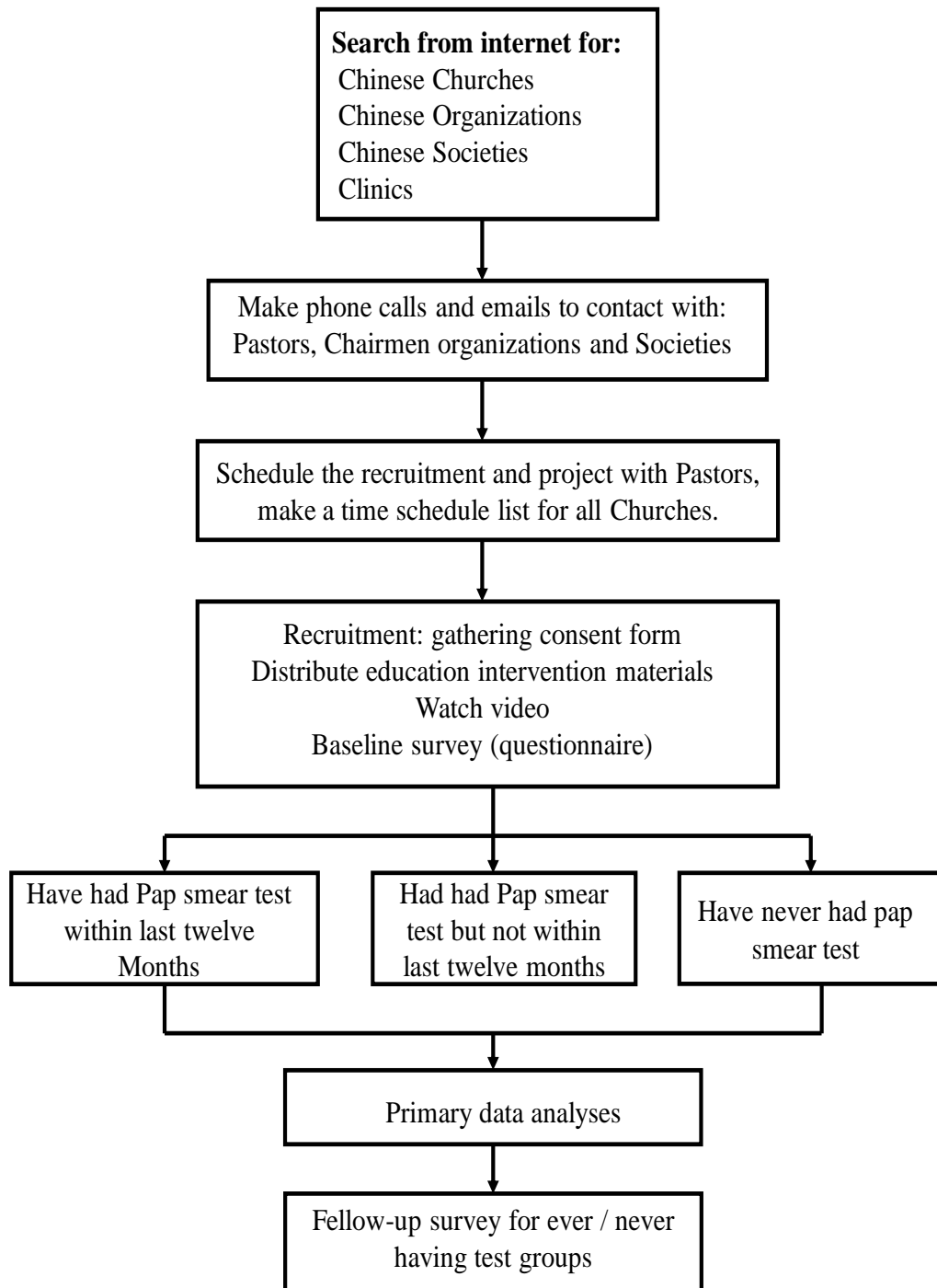


Figure 1. Overview of Study Design and Procedure

### 3.3.1 Recruiting Chinese churches

A total of seventeen Chinese churches, which provide Chinese language service (either in Cantonese, Mandarin or both) to Chinese immigrants in Edmonton, were identified. We first contacted the churches through phone calls and explained to the pastors the purposes of the project. Upon the pastors' requests, we also emailed detailed study documents including a description of ethics issues, a study overview, an information sheet containing the study purposes and commonly asked questions and answers, a consent form and an outreach work procedure outline. We also made flyers in Chinese to be posted in churches for participant recruitment and emailed them to pastors for their information.

Ten out of seventeen churches we contacted agreed to participate in the study and gave us a permission to hold an educational session following their regular church services or activities. The scheduling of the educational session was set according to the churches' convenience. The seventeen churches are listed in Table 3 with "Yes" indicates churches that agreed to participate in.



**Table 3. Chinese Churches in Edmonton and participation status**

<b>Name of Chinese churches in Edmonton</b>	<b>Participation Status</b>
Apostolic Bible Church	Yes
Edmonton Chinese Alliance Church	Yes
Edmonton Chinese Baptist Church	Yes
Edmonton Chinese Christian Church	No
Edmonton Chinese Mennonite Church	No
Edmonton Chinese Pentecostal Church	Yes
Edmonton Good Shepherd Chinese Lutheran Church	Yes
Edmonton Living Fountain Alliance Church	Yes
Edmonton New Chinese Lutheran Church	No
Ellerslie Road Baptist Church	Yes
Evangel Chinese Baptist Church	Yes
Holy Trinity, River bend Neighbourhood Church	No
Lansdowne Chinese Baptist Church	No
Mary Help of Christian Chinese Catholic Parish	No
North Edmonton Alliance Church	Yes
South Edmonton Alliance Church	Yes
United Church Of Canada	No

### 3.3.2 Participant recruitment

Having obtained the permission, an educational session was held at each of the 10 churches after church service/activity on an agreed date, in either Mandarin or Cantonese depending on the Chinese language used in the church. Three outreach workers who conducted the educational sessions were either trilingual of English, Cantonese and Mandarin, or bilingual of English and Mandarin.

At the beginning of the session, the package of education intervention materials was distributed to all women who attended the session. The outreach worker(s) explained the overview of the project, the study purposes, eligibility and the societal benefits of the study (implications of the study to women themselves and to their Chinese community).

The presentation emphasized four points of ethics considerations: 1) participation is completely voluntary; 2) confidentiality of responses; 3) security of data storage; and 4) benefits and risks of the study. Women were asked to sign the consent form if they agreed to participate after listening to the study explanation and reading the information sheet carefully.

### 3.3.3 Dissemination procedure and baseline survey

After collecting a signed consent form from each participant, the outreach worker(s) explained the contents of the motivational pamphlet and educational brochure, and watched the entertainment video together with the participants. They interacted with the participants and discussed concerns the participants had as well as answered relevant questions. In particular, the outreach worker(s) emphasized several key points pertaining to Pap smear test: (1) Pap smear test could be performed by a family doctor and in walk-in clinics most of which are open on weekends; and, perhaps more importantly, (2) women could ask for a Pap smear test when having an annual physical examination and it would not be necessary to make a specific appointment for Pap smear test. At the end of the activities, the outreach worker(s) asked participants to fill the baseline questionnaire and hand it in.

### 3.3.4 Follow up survey

After three months of the outreach activities at the churches, the follow-up survey was administered to the women who were identified as underusers of Pap smear test (i.e., not having had a Pap smear test in the last 12 months) at baseline. There were two purposes for the follow up survey: to assess the effects of the intervention and to understand underusers' screening behaviour and intention change towards the cancer screening program. The follow-up questionnaire included questions related to these two objectives as well as

whether women had a regular family doctor or not, whether they know they could receive a Pap smear test while taking annual physical examinations.

Specifically, the outreach workers went to the same 10 churches where the outreach activity had been conducted, and asked the women who were underusers of Pap smear test at baseline to complete the follow-up questionnaire. Each church was visited twice for approaching the underusers. After the two attempts, any of the women who could not be approached were considered “lost to follow up.” Women who were lost to follow up will be assumed in the analysis to have not taken any actions with respect to Pap testing after our education intervention.

### **3.4 Data Analyses**

Two separate data analyses were conducted. The primary analysis was an intervention evaluation analysis which addressed assessing the impacts of the intervention using culturally and linguistically-appropriate education materials on women’s participation behaviours in cervical cancer screening. The secondary analysis was baseline analyses which aimed at comparing the characteristics of women with different cancer screening participation behaviours.

### 3.4.1 Intervention evaluation analysis

The intervention analysis is to evaluate the effects of culturally and linguistically-appropriate education intervention. The primary outcome is binary and defined as “having taken Pap smear test within three months after the intervention” (yes/no). We assessed the primary outcome by calculating the proportion of women reporting Pap smear test in the three-month interval between the education session and the follow-up survey. The standard 95% confidence intervals and hypothesis testing for binomial proportions were used. In addition, we stratified this analysis by never users and under users so that we can evaluate the intervention effects among never users and underusers separately.

### 3.4.2 Baseline analysis

Descriptive analyses were first conducted to summarize the characteristics of study population and participation rates of Pap smear test at baseline. Two comparisons were made. Specifically, baseline analyses compared characteristics of: (1) women who have ever been screened versus women who have never been screened; and (2) women who have been screened recently vs. women who have not been screened recently. Thus, two outcomes for the baseline analyses are: “ever had screened” (yes/no), defined as having had Pap smear test at least once; “recently having test” (yes/no), defined as having had the test within last 12 months at survey point. Chi-square tests and, when necessary, Fisher’s exact tests, were used to determine whether there are

statistically significant differences in proportion of taking Pap smear test by study group characteristics. Multivariable analyses were performed to identify the specific barriers for Chinese Albertan women and assess their independent associations with Pap smear test participation (ever screened versus never, and screened within last 12 months versus not screened routinely).

Using logistic models, the binomial probabilities of participation for ever screened and currently screened women are modeled as a function of a set of explanatory variables:

$$\text{logit} ( p_i ) = \ln \{ p_i / (1 - p_i) \} = \beta_0 + \beta_1 X_{1,i} + \dots + \beta_k X_{k,i}$$

$$Y_i \sim \text{Bernoulli} ( p_i ), \text{ for } i = 1, \dots, m \text{ subjects,}$$

$$p_i = \text{Probability} ( Y_i = 1 / X_i \text{'s} )$$

where  $p_i$  is the probability for  $i^{\text{th}}$  woman being ever screened or currently screened,  $\beta_j$  are unknown parameters representing adjusted odds ratios of a screening status associated with the explanatory variables and estimated by maximum likelihood, and  $X$ 's are a set of explanatory variables that might explain the screening probability.

In this study, the logistic regression model was employed to assess the associations of socio-demographic factors on the uptake and compliance rate of cervical cancer screening. These explanatory factors include age categorized as (18-34, 35-54, 55-69), the place of birth (China, Hong Kong and other), the length of staying in Canada (0-5, 6-10, 11-20, over 20 years),

education level (<12 years, 12-16 years, over 16 years), marital status (currently married, single), receiving a recommendation of Pap smear test from health care providers (yes /no). The backward selection method was used for variables selection.

Adjusted odds ratios and 95% confidential intervals were reported. All statistical tests are two sided with statistical significance at  $\alpha=0.05$  level.

## **Chapter 4**

### **Results**

#### **4.1 Summary of Study Participants**

We conducted the educational outreach session at each of the ten churches that agreed to participate in the study. A total of 179 sets of materials were distributed and 156 women were approached in ten educational sessions. Extra 24 sets of materials were taken by women for their friends and other family members. Of these approached 156 women, 135 signed consent forms and filled baseline questionnaires: this represents 87% of women who attended the education sessions. Fifteen women were excluded from analysis for the following reasons: five women reported a personal history of hysterectomy with the cervix removed completely; two were over 69 years old; two were visiting Canada temporarily; and six had either incomplete consent forms or questionnaires with too many missing answers. Excluding the fifteen, a total of 120 Chinese women were included in our analysis.

#### **4.2. Sociodemographic Characteristics of Participants**

The sociodemographic characteristics of the 120 women were summarized in table 4.1.



**Table 4.1 Sociodemographic Characteristics of Participants**

<b>Characteristics</b>	<b>All participants n=120 (%*)</b>	<b>Having ever screened n=93 (%**)</b>	<b>Recently screened n=47(%**)</b>
<b>Age</b>			
8-34	15 (12.5)	5 (33.3)	1 (6.7)
35-54	75 (62.5)	61 (81.3)	31 (41.3)
55-69	30 (25.0)	27 (90.0)	15 (50.0)
<b>Education level</b>			
<12 years	39 (32.5)	32 (82.0)	20 (51.3)
12-16 Years	48 (40.0)	39 (81.3)	16 (33.3)
over 16 years	33 (27.5)	22 (66.7)	11 (33.3)
<b>Years in Canada</b>			
<5 years	31 (25.8)	19 (61.3)	6 (19.4)
6-10 year	26 (21.7)	18 (69.2)	5 (19.2)
11-20years	21 (17.5)	19 (90.5)	13 (61.9)
over 20 years	42 (35.0)	37 (88.1)	23 (54.8)
<b>Place of birth</b>			
Mainland China	64 (53.3)	44 (68.8)	18 (28.1)
Hong Kong	27 (22.5)	23 (85.2)	11 (40.7)
Others	29 (24.2)	26 (89.7)	18 (62.1)
<b>Marital status</b>			
Married	105 (87.5)	87 (82.9)	44 (41.9)
Single	15 (12.5)	6 (40.0)	3 (20.0)

\*The percentage in this column is the column percentage, e.g. the percentage of age 18-34 in the study population is 12.5%, (15/120).

\*\* The percentage in the column is the row percentage, e.g. the percentage of having ever screened among age 18-34 group is 33% (5/15); percentage of recently screened among this age group is 6.7% (1/15) .

The majority (63%) of the participants were in age group of 35 to 54, and 53% came from the mainland China, followed by Hong Kong (22%) and other places (mainly Malaysia and Singapore). Two thirds of the respondents (68%) had had a post secondary education (over 12 years of education). Approximately half (48%) of the participants were recent immigrants (living in Canada less than 10 years), and a little more than one third (35%) have been in Canada for over 20 years. Married women were the great majority: 105 (87.5%) of the 120 participants were currently married.

### **4.3 The Baseline Analysis**

#### **4.3.1 Pap smear test participation behaviours**

At the time of baseline survey, 93 participants reported that they had received Pap smear test on at least one occasion, accounting for 78% of the total 120 women. Forty seven respondents (38%) reported that they had received Pap smear test in the preceding year. Twenty seven women, accounting for 23%, had never had a Pap smear test before, as shown in Table 4.2.

<b>Total Participants (N)</b>	<b>120</b>
<b>Having ever screened</b>	93 (77.5%)
Recently screened*	47 (39.2%)
Not recently screened**	46 (38.3%)
<b>Never screened</b>	27 (22.5%)

**Table 4.2 Participation behaviours at baseline survey**

\* Screened within last 12 months prior to survey.

\*\* Screened over 12 months prior to survey.

Women in young age group (18-34 years old) had lowest percentages of having ever had a Pap smear test (33.3%) and having a test (6.7%) within recommended 12 months, compared with 55 to 69 years old group, 90%,  $p < 0.001$  and 50%,  $p < 0.05$  respectively. Women who immigrated to Canada from the mainland China reported less participation of having ever screened (69%) and screened last year (28%) than women from other regions (90%,  $p < 0.05$  and 62%,  $p < 0.01$ , respectively). Compared to single women, married women reported a higher percentage of participation of Pap smear testing (40% in single women vs. 82.9% in married women,  $p < 0.0001$ ). When stratified by the education level, the proportion of having ever screened and screened last year appeared to differ little between below and over 12 years education ( $p > 0.05$ ).

#### 4.3.2 Suggestion from family doctors

Table 4.3 shows the Pap smear test participation by whether the women have received a suggestion for Pap smear test from a family doctor. Of 118 who answered the family doctor suggestion question, 70 (59%) of them reported having received a recommendation from a family doctor or a health care provider. For seventy women who had received recommendation, sixty seven (96%) reported ever having a Pap smear test, and forty one (59%) having had Pap smear testing within last 12 months. In contrast, among forty eight (41%) women who have not received a recommendation from a family doctor, 52% of them reported having ever screened and only 11% having screened within last 12 months.

**Table 4.3 Proportion of participants receiving a recommendation for Pap smear test from physicians**

<b>Characteristics</b>	<b>All participants n=120 (%*)</b>	<b>Ever screened n=93 (%**)</b>	<b>Recently screened n=47(%**)</b>
<b>Family doctor suggestion<sup>(1)</sup></b>			
<b>Yes</b>	70 (58)	67 (96)	41 (59)
<b>No</b>	48 (41)	25 (52)	5 (11)

(1) Two missings

\*The percentage in this column is the column percentage, e.g. the percentage of women who have recommendation from family doctors 58% (70/120).

\*\* the percentage in the column is the row percentage e.g. the percentage of having ever screened among women who received family doctor’s suggestion is 96% (67/70); the percentage of recently screened among women who received family doctor’s suggestion is 59% (41/70) .

#### 4.3.3 Barriers against the uptake of Pap smear test

Of the 73 women who did not have Pap smear test within last 12 months, 61 women were not taking Pap smear testing regularly. Table 4.4 shows the reasons cited by these women for not taking Pap smear test regularly. Among eleven reasons given, where the respondents were allowed to give multiple reasons, the top three were “often forget” (38%), “no time” (26%), “can’t find Chinese female doctor” (25%). Other common reasons were “embarrassing”, “language barriers”, “do not know where to go”, each given by 13% of the women who do not take Pap smear testing regularly.

**Table 4.4 The reasons for not taking Pap smear test regularly (n=61)**

<b>Reasons</b>	<b>N (%)</b>
often forget	23 (38)
no time	16 (26)
can't find Chinese female physician	15 (25)
embarrassing	8 (13)
language barrier	8 (13)
do not know where to go	8 (13)
others	5 (8)
not necessary	3 (5)
transportation difficulty	3 (5)
terrible experience	1 (2)

#### 4.3.4 Knowledge about Pap smear test

With respect to knowledge about Pap smear test, after translating Pap smear test into Chinese and described the procedure, most of respondents claimed knowing what Pap smear test was, what it was for and the frequency of Pap smear test: either every year recommended by Alberta Cervical Cancer Screening Program\*, or every 3 year recommended by Canadian Cervical Cancer Screening Program.

\*: In the guideline of Alberta Cervical Cancer Prevention Program (ACCPP) (2002 Version), eligible women were recommended to take Pap smear test every year. In guideline of Canadian Cervical Cancer Screening Program, it is recommended that eligible women take Pap smear test every three years after three consecutive negative testing results. In ACCPP 2009 version (issued in September 2009), the regularity complies with the CCCSP. We considered the answer was correct if participants checked either one year or three years as the recommended frequency for Pap smear test because when the study initiated, ACCPP 2009 version had not been issued yet.

### **4.4 Associations of Sociodemographic Factors with Pap Smear Test Participation**

#### 4.4.1 Univariate analysis

Table 4.5 summarizes univariate associations of sociodemographic factors with Pap smear test participation for having ever been screened and recently screened.

In our univariate analysis, with having ever been screened, we observed that older age ( $p < 0.001$ ), longer stay in Canada ( $p = 0.024$ ), married women ( $p < 0.001$ ) and receiving suggestion for Pap smear test from family doctors ( $p < 0.001$ ) were significantly positively associated with the having ever screened. Country of birth was marginally associated ( $p = 0.056$ ). The association of education level with participation was not statistically significant ( $p = 0.220$ ).

With respect to recent uptake of Pap smear test, length of residing in Canada ( $p < 0.001$ ), country of birth ( $p = 0.010$ ) and having a suggestion from a family doctor ( $p < 0.001$ ) were significantly associated, while age was marginally associated ( $p = 0.055$ ). Education level ( $p = 0.170$ ) and marital status ( $p = 0.120$ ) were not statistically significantly associated.



**Table 4.5 Numbers, percentages and crude odds ratios of Pap smear test behaviours by sociodemographic factors**

		Having ever screened (N=93)		Recently screened (N=47)	
Factors		Crude OR (95% CI)	p-value	Crude OR (95% CI)	p-value
<b>Age group</b>			<0.001		0.055
	18-34	1.0		1.0	
	35-54	8.7 (2.6-29.5)		9.9 (1.2-78.9)	
	55-69	18.0 (3.6-89.6)		14.0 (1.6-120.3)	
<b>Education level</b>			0.22		0.17
	<12 years	1.0		1.0	
	12-16 Years	0.9 (0.3-2.8)		0.5 (0.2-1.1)	
	over 16 years	0.4 (0.1-1.3)		0.5 (0.2-1.2)	
<b>Years in Canada</b>			0.024		<0.001
	<5 years	1.0		1.0	
	6-10 year	1.4 (0.5-4.3)		1.0 (0.3-3.7)	

	11-20years	6.0 (1.2-30.5)		6.8 (1.9-23.7)	
	over 20 years	4.7 (1.4-15.2)		5.0 (1.7-14.8)	
<b>Place of birth</b>			0.056		0.010
	Mainland China	1.0		1.0	
	Hong Kong	2.6 (0.8-8.6)		1.8 (0.7-4.5)	
	Others	3.9 (1.1-14.6)		4.2 (1.7-10.6)	
<b>Marital status</b>			<0.001		0.12
	Single	1.0		1.0	
	Married	7.2 (2.3-22.9)		2.9 (0.8-10.8)	
<b>Suggestion from physicians</b>			<0.001		<0.001
	No	1.0		1.0	
	Yes	20.5 (5.7-74.5)		12.2 (4.3-34.4)	

#### 4.4.2 Multivariable analyses

For multivariable analyses, unconditional logistic regression with the backward variable-selection method was employed to summarize of the associations of Pap smear test participation with the explanatory factors. A basic model comprised of five sociodemographic factors, including age, origin of birth country, education level, length residing in Canada and marital status, which started the backward selection. Adjusted odds ratios and corresponding 95% confidence intervals, along with p-values, are shown for the factors in the final summary models for having ever screened in Table 4.6 and for recently screened in Table 4.7.

Without “receiving family doctor’s suggestion” in the basic model, length of staying in Canada and marital status showed independent associations with Pap smear test participation for both ever screened and recently screened. Women who have been in Canada longer than ten years are more likely to have ever been tested (OR= 25.8 for 11-20 years and OR= 15.5 for over 20 years,  $p=0.006$ ) and recently screened (OR= 9.2 for 11-20 years and OR= 6.3 for over 20 years respectively,  $p<0.001$ ), relative to women who have been in Canada for 10 years or less. Compared with single women, married women were more likely to have ever had a Pap smear test (OR=30.2,  $p<0.001$ ) and recently screened (OR=5.3,  $p=0.021$ ).

**Table 4.6 Adjusted odds ratios with / without a recommendation from physician in the model for having ever screened**

Effect	Adjusted odds ratio without MD recommendation		Adjusted odds ratio with MD recommendation	
	(95% CI)	p-value	(95% CI)	p-value
<b>Years in Canada</b>		0.0059		0.12
0-5 years	1.0		1.0	
6-10 years	1.9 (0.6, 6.5)		1.4 (0.4, 5.4)	
11-20 years	25.8 (2.8, 239.3)		9.3 (1.0, 86.6)	
over 20 years	15.5 (2.9, 83.5)		7.3 (1.1,47.2)	
<b>Marriage Status</b>		0.0001		0.0080
single	1.0		1.0	
married	30.2 (5.4, 169.9)		12.3 (1.9, 78.5)	
<b>Suggestion from physician</b>				0.0006
no			1.0	
yes			10.8 (2.8, 42.0)	

After adding the family doctor’s suggestion to the basic model, associations of length of residence in Canada and marital status with Pap smear testing participation behaviours changed. For having ever been screened, length in Canada was no longer associated ( $p=0.120$ ) and the odds ratios for marital status was attenuated from 30.2 to 12.3 ( $p=0.008$ ). For having recently screened, marital status was no longer associated ( $p=0.320$ ), while length in Canada also became less associated (OR=9.3 for 11-20 years and OR=7.3 for over 20 years,  $p=0.022$ ), relative to the women who immigrated to Canada for ten years or less. The strong associations of family doctors’ suggestion with

Pap smear test participation were observed with ever having a Pap smear test (OR= 10.8,  $p<0.001$ ) and compliance with screening guideline (recent screening) (OR= 18.5,  $p<0.001$ ).

**Table 4.7 Adjusted odds ratios with / without a recommendation from physician in the model for recently screened**

Effect	Adjusted odds ratio without MD recommendation		Adjusted odds ratio with MD recommendation	
	(95% CI)	p-value	(95% CI)	p-value
<b>Years in Canada</b>		0.0002		0.022
0-5 years	1.0		1.0	
6-10 years	1.1 (0.3, 4.1)		0.7 (0.2, 3.1)	
11-20 years	9.2 (2.5, 34.0)		5.0 (1.2, 21.4)	
over 20 years	6.3 (2.1, 19.2)		3.1 (0.9, 10.7)	
<b>Marriage Status</b>		0.021		0.32
single	1.0		1.0	
married	5.3 (1.3, 21.6)		2.3 (0.4, 11.9)	
<b>Suggestion from physicians</b>				0.0002
no			1.0	
yes			18.5 (2.8, 26.1)	

In the summary for multivariable analyses, therefore, three variables were observed to be independently associated with cervical cancer screening participation: longer length in Canada, being currently married, and having a recommendation from family doctors.

## **4.5 Intervention Evaluation Analysis**

### **4.5.1 Follow - up survey**

We carried out the follow up survey to the women who have either never taken a Pap smear test, or not having taken a Pap smear test recently, being consistent with the guideline of ACCPP at baseline. A total of seventy three women, 46 from the ever screened women and 27 from the never screened women, met the inclusion criteria for following up. Out of seventy-three (73) underusers of Pap smear test, a total of forty five (45) completed follow-up survey, accounting for 62 percent. The rest twenty-eight (28), accounting for 38 percent, were not approachable for the second survey. The reasons can be attributed to multiple factors. One church with ten participants was lost to follow up entirely because the Pastor with whom we contacted at beginning left after intervention, the succeeded Pastor was reluctant to continue the participation in the study. The remaining 17 people were lost to follow up for one of following reasons: four (4) women refused to be followed-up, one moved out the city and two (2) women claimed being pregnant, eleven women did not appear when follow-up survey was conducted.

### **4.5.2 Consequence of education intervention**

Table 4.8 exhibits the proportions of the women who reported either having had Pap smear test, or having made an appointment with doctor or having willingness to take part in the test regularly in follow-up survey, with the

assumption that lost to follow up women did not take any actions after intervention.

Among all 73 never- or under-screened women at the baseline, 20 women had taken the test within 3 months post intervention, accounting for 27% (95%CI: 18%-39%), 10 women (14%, 95%CI: 7%-24%) had made an appointment with physicians for Pap smear test, and 37 (51%, 95%CI: 39%-63%) presented a willingness to take test regularly. Among 27 women who had never screened before, 11 out of 27 (41%, 95%CI: 22%-61%) had taken the test within 3 months post intervention, 3 (11%, 95%CI: 4%-34%),) had made an appointment with physicians and 16 (59%, 95%CI: 39%-78%) presented the willingness to follow the guidelines for cervical cancer screening.

**Table 4.8 Intervention consequences and component of followed up with lost to follow up**

	The number of eligible women to follow up (%*)	Followed up				Lost to follow up
		Total (%**)	Having taken (%**)	Having made an appointment (%**)	Willing to take test regularly (%**)	Total (%**)
Total	73	45 (62%)	20 (27%)	10 (14%)	37 (51%)	28 (38%)
Ever but not currently screened	46 (63%)	25 (54%)	9 (20%)	7 (15%)	21 (46%)	21 (46%)
Never screened	27 (37%)	20 (74%)	11 (41%)	3 (11%)	16 (59%)	7 (26%)

\* The percentage in this column is the column percentage, e.g. among never screened women, the percentage of eligible women to follow up among is 37%, (27/73).

\*\* The percentage in the column is the row percentage e.g. among ever but not currently screened, the percentage of having taken is 20% (9/46); the percentage of having made an appointment 15% (7/46), 21 of them lost to follow up, accounting for 46% (21/46).



Table 4.9 summarized a comparison of Pap smear testing behaviours before and after the intervention. This distribution of educational intervention materials increased the prevalence of adherence to Pap smear test guidelines from 40% at the baseline to 56% within three months of the baseline, decreased the proportion of never screened women from 23% at the baseline to 13% within three months of the baseline. The additional 22% women who did not take the test but made an appointment with physicians would also likely increase the prevalence of ever/recently screened for cervical cancer screening shortly after the follow up survey. Among the 20 women who reported having taken the Pap smear test, we received 16 confirmation letters signed by their health care provider which confirmed the patient had done the test.

**Table 4.9. The comparison of women’s participation behaviours before and after intervention (N=120)**

	Currently screened	Ever but not currently screened	Never screened	Made an appointment	Willing to take regularly in the future
Before Intervention	47(39%)	46 (38%)	27 (23%)	NA	NA
After Intervention	67 (56%)	37 (31%)	16 (13%)	10	37

## **Chapter 5**

### **Discussion and Conclusion**

The primary objective of this study was to evaluate whether the trial-proven educational intervention materials can be disseminated effectively to Chinese immigrants in Edmonton through Chinese churches to increase their utilization of Pap smear test for cervical cancer prevention (the intervention evaluation analysis). The secondary objective was to understand the participation behavior and identify the facilitators and barriers of participation among underscreened Chinese women in Alberta (the baseline analysis). The discussion in this chapter will focus on these two objectives. The primary objective (the intervention evaluation analysis) will be discussed first, followed by the discussion on the secondary objective (the baseline analysis).

#### **5.1 Discussion on Intervention Evaluation Analysis**

As part of the intervention, 10 educational sessions were held within three months along with the collection of baseline survey data, distributing a total of 179 sets of educational materials. The baseline survey had 156 Chinese female respondents. The 10 churches are of varying denominations and located across Edmonton.

The results from the intervention evaluation analysis demonstrate an appreciable improvement in participation and compliance for Pap smear test screening guidelines. Including those who were lost to follow up, 11 out of 27 (41%) of the never users and 20 out of 73 (27%) of the under users at baseline survey had a Pap smear test within three months. If we include those who reported making an appointment with physicians to have a Pap smear test, these percentages would increase to 52% and 41%, respectively. While we do not have a comparison group, these are substantive changes consistent to the Seattle-Vancouver study in which the intervention materials were developed. Within six months after intervention, the Seattle-Vancouver study achieved 39% of women in the outreach group and 25% of women in the direct mail group reporting Pap smear test, in comparison to 15% of women in the control group<sup>[11]</sup>.

The culturally and linguistically tailored educational intervention material is considered main contributor for the study achievements. In particular, the explanation of both medical terminology and the test procedure are greatly helpful for the women with language barriers to have a better understanding what Pap smear test refers to and what the purpose of the test is, while statistics facts ( such as over 90% of cervical cancer could be prevented if taking routine Pap smear test) for cervical cancer and Pap smear test provided in this intervention package raised substantively awareness of the prevention for cervical cancer among this population. These facts encouraged undersers of Pap smear test, especially for those who never had had the test, to take the action actively.

The achievement of this study may be attributable in part to the information provided in the intervention sessions, which included a list of medical practices with Chinese female doctors available in Edmonton and information on how to ask for Pap smear test when taking an annual physical examination.

Another possible explanation to the enhanced participation in screening activities may be the composition of our intervention group, which involved women who both had ever screened and currently screened compared to some of the studies which only involved underscreened women<sup>[11][29][33][48]</sup>. For instance, the Seattle-Vancouver intervention consisted of one-on-one interventions, with an outreach worker and an underscreened woman. The composition of having experienced women in our sessions provided an opportunity for sharing their positive experiences with those who were either not screened regularly or never screened, as we observed active interactions among attendees through the education sessions. For the underscreened women with different barriers, experiences and positive encouragement shared by their friends or acquaintances (attending to the same church) may have been effective in removing obstacles and answering questions.

Note that the improvement of Pap smear test participation rates in this study was a conservative estimate as we assumed that the “lost-to-follow-up” women did not take any actions within three months with respect to Pap smear test (i.e., we assumed that they did not take a test or made an appointment for a future test).

We could have assumed that women who were lost-to-follow-up had similar Pap smear test behaviours as women who continued in the study during the 3-month post-intervention period. This assumption seems reasonable, as 10 lost-to-follow-up women (36% of all lost-to-follow-up) were lost due to a changing of a Pastor in a specific church where the new Pastor was no longer supportive of the participation of the congregation in the study, limiting our ability to connect with the respondents. As the reason for loss to follow-up in this specific church was an external factor to the respondents, it is likely that the women who were attendees of this specific church would not be significantly different from those in others. Under this assumption, during the three-month interval following the educational intervention, the prevalence of recently taking the test would further increase from 56% to 66%. If we add the percentage of women making an appointment for Pap smear test, the participation rate of Pap smear test would increase to 79%, while the adherence rate, underscreened women who presented willingness to take the test regularly, would increase to 89%.

In addition, the intervention emphasized that women could ask for a Pap test during a physical exam. Some women may have waited for their next physical exam appointment.

The Enhancement of the participation rate in cervical cancer screening in this study has significant implications for population health. Given that 80% to 90% of diagnosed cervical cancer patients are under-users of Pap smear testing <sup>[24] [49]</sup>,

this type of health intervention could help approximately 60% of the under-users in the study population, especially the 41% of women who have never been screened, to reduce the probability of developing cervical cancer up to four times, consequently reducing the incidence of cervical cancer and mortality in this population. Therefore, widely disseminating this culturally- and linguistically-appropriated educational intervention among the Canadian Chinese population will significantly increase the utilization of Pap smear testing, therefore reduce the incidence of cervical cancer and enhance their health status.

The achievements of this survey design indicate the efficiency and effectiveness of using existing portals to a community, such as churches, to disseminate culturally- and linguistically- appropriated educational intervention materials for cervical cancer screening among Chinese population. Therefore, this type of educational intervention needs to be spread widely. Furthermore this study design might be generalizable to develop the prevention program for other chronic diseases among minority populations.

## **5.2 Discussion on Baseline Analysis**

### **5.2.1 Low prevalence of Pap smear testing and associated factors**

The baseline analysis of our study showed a low prevalence of Pap smear testing rate among Chinese women who attend Chinese churches in Edmonton: the

proportion of those who had never been screened is relatively high (23%), compared with 11.5% of the national average and 8.5% of Alberta provincial average in 2005<sup>[50]</sup>. The relatively high prevalence of having never been screened for cervical cancer among North American Chinese immigrants was also observed in the previous investigations (26% in Vancouver<sup>[5]</sup>, 24% in Seattle<sup>[32]</sup>).

Several factors associated with the baseline low participation rate of Pap smear testing for our study participants were found. Consistent with previous research<sup>[3]</sup>, which reported lower percentages of Pap smear testing in more recently arrived immigrants (less than ten years in Canada), the length of residence in Canada was positively associated with the Pap smear test participation behaviour in our study. Compared to the women who resided in Canada for less than 10 years, the odds for women residing in Canada for more ten years were almost 10 times higher to have ever had a Pap smear test ( $p=0.12$ ) and 5 times higher to have taken a Pap smear test recently ( $p=0.022$ ), adjusting for marital status and recommendation from physicians. This result is not surprising. The previous studies demonstrated that, with increasing years of residency in Canada, immigrants would be more adjusted and familiar with the Canadian healthcare systems and increase their use of health care services<sup>[43][52]</sup>. A qualitative study conducted among elderly Chinese immigrants in Canada also identified the short length of residence in Canada as one of most important barriers to access to healthcare services<sup>[10]</sup>. A similar phenomenon was also observed in U.S. population-based study for immigrants for cancer interventions<sup>[51]</sup>. These



findings provide policy makers with evidence for developing preventive strategies that target recent immigrants in order to diminish the disparities in utilization of health preventive programs that exist between the general Canadian population and immigrants.

Marital status for Chinese appeared to be a positive factor for both uptake and compliance with guidelines of Pap smear testing. The odds of having had a Pap smear test at least once for married women was over 12 times higher than unmarried women ( $p < 0.001$ ), while odds of having been recently screened for cervical cancer was 2 times higher than unmarried women ( $p = 0.008$ ), after adjusting for length of residence in Canada and recommendations of family doctors. This result may reflect partially the influence of Chinese cultural perception on cervical cancer screening <sup>[8] [10] [53] [54]</sup>: In traditional Chinese cultures, unmarried women were perceived to be sexually inactive and considered be low risk for developing cervical cancer. Therefore, Pap smear testing is likely perceived unnecessary for the women who have never been married. This result is also observed in previous cervical cancer screening studies for other North American Asian groups such as Vietnamese <sup>[55]</sup> and Korean <sup>[56]</sup> and also studies from other regions (e.g., New Zealand <sup>[57]</sup>).

Recommendation from health care providers presented a very strong positive impact on both the probability of ever having, and regularity of, Pap smear tests in the Chinese women we studied. Comparing women who received a family

doctor's recommendation with those who did not, after adjusting for length of residency in Canada, marital status, the odds of having ever been screened was 10 times higher ( $p < 0.001$ ), and the odds of having currently been screened was over 18 times higher ( $p < 0.001$ ). These high odds ratios indicate the importance of physicians' recommendation on improving the participation rates for cancer screening in this population. In a study among older Chinese immigrants in the US, the physician recommendation was also the most important reinforcing factor for cancer screening<sup>[10]</sup>. Our results are consistent with study findings conducted in Seattle and Vancouver<sup>[7]</sup>, in which odds of having ever screened and that of never screened were increased by recommendation from healthcare providers by a factor of greater than 4.5 after adjusting for confounders. In Addition, our results also provide quantitative confirmation to some of previous qualitative studies that have identified lack of physicians' support or recommendation as a social barrier for cancer screening program.

In spite of the positive impact on screening behaviours, a high proportion of the Chinese women we studied have not received Pap smear test recommendation from physicians. Among the women who were not screened in the past 12 months prior to the survey, 60% reported having never received any recommendation from physicians: this proportion was 88% among the women who were never screened. Therefore, it is possible that recommendation from health care providers for cervical cancer screening could significantly improve the low compliance rate to the Pap smear test guideline in the Chinese population.

Most of previous studies have found that older age was associated with lower rates of cervical cancer screening. In contrast, in our study, older age appeared to be associated with higher participation of Pap smear test. This seemingly “opposite” association between age and screening rate may be partially attributable to the fact that age was highly correlated with the length of residence in Canada in our study population, given that the length of residence in Canada is associated with the degree of acculturation to healthcare concepts/systems in Canada. Among women in the age group of 18-34 years old, 93.3% resided in Canada less than 10 years, compared with 3.3% of women in the age group of 55+ years old ( $p < 0.001$ ). The disappearance of age effect on the screening rate observed in the multivariable analysis adjusting for the length of residence in Canada is consistent to this speculation.

The studies in the general population of Alberta <sup>[58]</sup> and Toronto <sup>[28]</sup> found that women with higher education levels had a tendency to have higher uptake of Pap smear testing. Our study, however, observed that the education level was not significantly associated with Pap smear test participation, with respect to both ever-screened and recently-screened rates. This may be explained by the fact that, in our study, women who resided in Canada less than ten years had relatively high education levels: among the women who was living in Canada less than years, 74% of them had an over 12 years of education, compared to 49% of their counterparts who have lived in Canada over ten years ( $p = 0.03$ ). Thus, the potential effect of higher education levels on increasing the screening rate might

have been diluted by the effect of the shorter length of residence in this population.

### 5.2.2 Barriers to Pap testing participation

Common barriers regardless of their education levels may exist for new/recent immigrants that prevent them from taking cancer screening tests. Specifically, new immigrants are unfamiliar with the Canadian healthcare system and their focus following the immigration to Canada is usually to adjust to a new country. These are consistent with the participants' responses to the question of reasons for not taking Pap smear test such as "do not know where to go", "often forgot", and "no time."

Several reasons for non-participation of Pap smear test stood out from the baseline analysis. "Often forgot" (to take a Pap smear test) was the principal reason for non-participation, which may suggest the importance of a reminding mechanism in cancer screening programs for Chinese immigrants. In the Alberta Cervical Cancer Screening Program (ACCSP), which started in 2003, the Calgary health region initiated sending reminder letters to women in its catchment area<sup>[45]</sup>. While we are not aware of any published evaluation on the effectiveness of the reminder mechanism implemented by ACCSP, our finding implies that this type of reminding mechanism may be effective for Chinese immigrants. "Lack of time (no time)" was another significant barrier for recent immigrants. "Cannot

find Chinese female physicians” and language difficulty were also major barriers which have been reported in most previous studies. Embarrassment and unfamiliarity with the Canadian healthcare system, such as “do not know where to go” (to take Pap smear test), were likely common to other non-native English speaking populations <sup>[51] [55] [56]</sup>.

### **5.3. Study Limitations**

We have observed an appreciable improvement in the participation rate of Pap smear test after our educational intervention. We also identified facilitators and barriers for Chinese Albertan women by our baseline survey. Nonetheless, this study has several limitations, affecting the internal and external validity of the results, which are discussed in the following sections.

#### **5.3.1 Internal validity of the study results**

A formal assessment of internal validity of our intervention effect is not possible by the lack of a comparison group in this study. This is a major limitation of our study with respect to evaluation of the intervention effect.

We viewed and designed our study as a dissemination study. While our intervention delivery method was not exactly the same as those of the Seattle/Vancouver (S/V) Trial, which showed the efficacy of the intervention, its

intensity and nature were between the two intervention arms of the S/V Trial (outreach home visit and mailing only of the intervention materials). Since both of the intervention arms of the S/V trial had significant effects, but different degrees, in comparison to a control group, we expected our study's church-based intervention to have an effect with an intermediate degree between those of the two S/V arms.

The changes we observed of Pap testing participation behaviour after our intervention were indeed consistent with our expectation. The observed post-intervention proportion of Pap-test-guideline-compliance in our study was 41% among the never screened women and 20 % in the ever but not regularly screened women. The S/V study found 39% in the outreach arm and 25% in the direct mailing arm among under-users (including women having ever but not regularly screened and never screened) having had a test after intervention. While we cannot prove the change we observed was due to our intervention, it is consistent to what we expected based on the S/V Trial results.

Several biases may have been introduced in the stage of recruitment and/or data collection, which could also affect internal validity of the study results.

Non-response bias

Only women who attended the education sessions in the 10 churches and agreed to complete a baseline survey joined the study. Among approached 156 women,

21 of them, accounting for approximately 13%, did not respond to the survey. Thus, non-response bias may have been introduced and our study results are subject to this bias.

#### Recall bias

The Pap testing behaviour in the baseline survey was self-reported and thus subject to recall bias. This bias causes misclassification, which could lead to over- or under- estimation of prevalence of having ever screened and regularly screened. The direction and magnitude of this misclassification and its effect on the prevalence estimate are impossible to estimate. However, the participation rates of having ever screened and never screened we observed in this study were very close to those from the S/V Trial's baseline survey.

#### Lost to Follow Up

In the follow up survey, a total of 28 women were unreachable, accounting for 38% of total eligible women for the follow-up survey. The study results based on the follow up survey are subject to the bias from this "lost to follow up". This bias is difficult to eliminate in the analysis stage. Thus, we made a conservative assumption that the women who were "lost to follow up" did not take any actions after intervention.

The study is subject to another kind of non-response bias, which may impact both internal and external validity. Of the 17 churches we approached, 7 churches' pastors or committees declined the participation in the study. Women who attend

these 7 churches did not have an opportunity to participate. Our participants may, therefore, not be representative of all Chinese women attending churches in Edmonton. Thus the generalizability of study results is limited.

In addition, the participation behaviours and barriers identified in this study may not be demonstrated accurately due to the non-participation of the 7 churches, which might have impacted internal validity. Since it was not the women themselves who declined participation, it may be reasonable to assume that the women in the 7 non-participating churches would have had similar screening behaviours and barriers as the participated women, unless the churches' decisions to participate were somehow associated with women's screening behaviours and barriers.

### 5.3.2 External validity of the study results

The study has several limitations, which may affect study generalizability. Firstly, as the participants were recruited from Chinese churches, the results may not be generalizable to all Chinese women in Alberta. Church attendees are, however, often diverse in many demographic factors, such as age, education level, and length of residence in Canada, and our data on the demographic profile of study participants suggest that they were similar to the population structure of Chinese immigrants in Alberta. Calculated based on 2006 census, for Alberta Chinese female immigrants, the percentages of year residency in Canada are: 18% for less



than 5 years, 13% for 6-10 years, 17% for 11-15 years and 52% for over 15 years. The percentages of age group among this population: age group 15-24 accounted for 7%, age group 25-54 for 63% and 33% for age group 55 and over<sup>[59]</sup>.

Second, due to between-province differences in the healthcare system and the composition of Chinese immigrants, the barriers and facilitators identified in this study may not be generalizable to Chinese women living in other provinces.

Third, only women who agreed to complete a baseline questionnaire were eligible to join the study, thus a non-response bias may have been introduced. In this study, 21 of all 156 approached women, accounting for approximately 13%, did not attend the intervention session.

#### **5.4 Policy Implications**

Chinese immigrants were observed to be less likely to have undergone a Pap smear test, consistent to previous studies<sup>[3] [5] [6] [8]</sup>. Importance of effective interventions targeted for this high-risk group such as those used in this study is clearly established in order to improve the uptake and maintenance of Pap smear testing. Public health policy needs to promote the broad delivery of such interventions using effectiveness-proven interventions such as those used in this study. In particular, an appreciable proportion (41%) of the never screened women had a Pap smear test following the intervention for the first time in their

life. The effect on this highest-risk group must be kept in mind in developing intervention programs at the population level.

The study results demonstrated higher proportions of Pap smear testing participation among Chinese women who had received recommendations from healthcare providers. For successful cervical cancer prevention in less acculturated populations, having primary care providers and getting their recommendations for screening may play a key role in improving the utilization of Pap smear test.

In this study, the most commonly reported reason for not taking Pap smear test was “often forgot”. Developing an appropriate follow-up reminder mechanism may be effective.

Intervention cost is an important element for policy makers in making health policy decisions. Specifically in relation to our study, developing strategies for disseminating this culturally- linguistically appropriate education intervention to Chinese immigrants would require an evaluation of cost effectiveness of the intervention. In this study, however, the cost effectiveness analysis was not planned and cost data were not collected.

## 5.5 Conclusion

This study has provided insights into the Chinese immigrant population regarding cervical cancer screening behaviour in Edmonton, Alberta. Participation of cervical cancer screening among Chinese immigrants who are members of Chinese churches in Edmonton was found to be lower than the provincial average of the general population. Using churches as a portal to reach Chinese female immigrants for the dissemination of materials and the recruitment into this study proved to be both efficient and effective.

Overall, married women and those who have been living longer in Canada (more than 10 years) appeared to be independently associated with higher participation rates of Pap smear test and compliance rates to the screening guideline. Women who received a recommendation from their healthcare providers had a significantly higher proportion of participation and adherence to Pap smear testing guidelines.

In this study, barriers to having a Pap smear test were reported as “often forgot”, “no time”, and “cannot find Chinese female doctors” among the survey respondents.

After three months post intervention, 41 % of never-screened women took the test and the overall utilization of Pap smear testing, consistent to the screening

guideline, increased significantly from 40% to 56%, with another 11 % having made appointments with physicians. In the follow up survey, 82% of women exhibited a willingness to take the test routinely in the future. Therefore, the culturally and linguistically appropriate educational materials for cervical cancer screening appeared effective in increasing the uptake of Pap smear testing for under-screened Chinese immigrants who attend churches in Edmonton.

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## **Appendix**

### **List of Appendix**

#### **English**

- 1) Frequent asked questions and answers for participant recruitment
- 2) Information Statement
- 3) Consent form
- 4) Baseline questionnaire
- 5) fact sheet how to make an appointment with health care providers for a  
Pap smear test
- 6) Follow up questionnaire
- 7) Flyer for A study of Dissemination of Culturally- Linguistically  
appropriated educational intervention materials for cervical cancer  
screening in Edmonton

#### **Chinese:**

- 1) 常見問題解答
- 2) 關於向愛城華人女性派發子宮頸癌篩查教育材料的研究簽同意書前要  
知道的信息  
(Information Statement)
- 3) 同意書
- 4) 基礎問卷
- 5) 預約做子宮頸抹片檢查
- 6) 回訪問卷

7) 子宫颈癌筛查教育材料的传播研究的传单



## Questions and Answers for Participants Recruitment

(Q: Question, A: Answer)

### **Q: What is the project about?**

A: The project will examine if our dissemination of an educational intervention for cervical cancer can be successful for Chinese women in Alberta. The Chinese women who live in Edmonton are being asked to participate in the project.

### **Q: Why are you doing this project?**

A: Chinese women, both in China and Canada, are at high risk for developing cervical cancer which can be preventable by Pap testing. And Chinese Canadian women have a significantly lower participation rate of Pap testing compared to other Canadian women. This project aims to promote Pap testing utility among Chinese women in Alberta through disseminating an educational intervention that has been proven to improve Chinese women's participation rate of Pap testing.

### **Q: Which organizations are involved in this project?**

A: School of Public Health, University of Alberta is working on this project in Edmonton. Chinese Churches, organizations and societies are the places where the project will be carried out.

### **Q: How did you decide to choose these organizations to carry out the project?**

A: We choose these organizations being a place to conduct our project for two reasons. First, Chinese churches, organizations and societies are the places where Chinese people get together to have activities routinely. This makes the project approach Chinese women and follow-up efficiently. Second, people attending churches and organizations are diverse with respect to various aspects: age; length of life in Canada; place of birth; and so forth. This will allow the project to reach diverse Chinese women in Alberta.

### **Q: Who is being asked to be part of the project?**

A: Chinese women aged 18 to 69, who live in Edmonton, Alberta are invited to be part of the project.

### **Q: What topic will be covered in the project?**



A: It is a research project associated with cervical cancer prevention.

**Q: What will I do if I choose to be in the project?**

A: You will be asked to sign a consent form to be part of this project: this is to protect you and required by law. You will then be asked to complete a short questionnaire. The short questionnaire will take about 10 minutes, including questions about you and your health related issues. You will be given educational materials on cervical cancer including a pamphlet and a video in Chinese languages. After two months, you will be contacted again at this place, and asked to complete a second survey.

**Q: If I complete the short survey, do I need to complete the second survey after two months?**

A: You do not have to complete the second survey after two months just because you completed the short survey. However, the project will only be successful if most participants complete both surveys.

**Q: How will my information be kept private?**

A: The law says that information from research projects must be kept private. The information collected from participants will never be shared with anyone. Project information will be seen by project staff only. All completed questionnaires will be kept in a locked cabinet.

**Q: What will I get out of the study?**

A: You will benefit greatly from this educational intervention if you follow its message and take positive action for protecting you from cervical cancer. Your participation may also help other Chinese women for their protection from cervical cancer.

**Q: How will the project findings be used?**

A: If we find this dissemination method is effective in improving participation of Pap testing among Chinese women in Edmonton, this method can be used in other Canadian cities such as Calgary and Toronto.





Dissemination of Education Intervention for Cervical Cancer Screening in  
Chinese Women in Edmonton

## Information Statement

Principal Investigator: Yutaka Yasui, Ph D

Contact Person: Fei Xu, Ph D.

Contact Person: Wanhua Su, Ph D

You are invited to participate in a research project to help us understand if our dissemination of an educational intervention for cervical cancer, that has been proven to be effective in improving participation rate of Pap smear test, can be successful for Chinese women in Alberta.

### **Voluntary Participation:**

In Canada, we must ask for informed consent before you participate in research projects. This is to protect you. The purpose of this consent form is to give you the information you will need to help you decide whether or not to participate. You may ask questions about the purpose of the research, what we would ask you to do, the possible risks and benefits, your rights as a volunteer, and anything else about the research or this form that is not clear. You are free to withdraw from the study at any time without having to give a reason. If you decide to participate in the research project, please sign the consent form.

We are asking Chinese women who attend Chinese churches, organizations and societies in the Edmonton area to participate in this project.

### **Procedures:**

If you choose to participate in the project, you will complete a short questionnaire and be given health education materials as well as a letter with postage paid envelop. To be part of the project, you will need to complete the questionnaire, read pamphlets, and watch videos we provide. If you take Pap smear test, we would like you and your physician to sign the letter we provide and mail this letter to our research group. However, if you choose not to be part of the project and complete the questionnaire, you can still have the health educational materials.

The short questionnaire will include questions about yourself (e.g., your age, educational level) and health-related issues, and take about 10 minutes to complete. You will receive a frame as a token of appreciation for completing the short questionnaire. Two months later, we will contact the participants who



completed the short questionnaire, and ask to complete a follow-up survey. The participants who complete the follow-up survey will be offered a Chinese-designed stamp as a token of appreciation for taking time to complete the questionnaire. If there are any questions on the questionnaire that you do not want to answer, you do not have to answer them you should be clear that do not have to participate in both surveys.

**Confidentiality:**

The information from completed questionnaires will only be seen by project staff. Nobody outside the project will know what any one person said. They will only see the information that is gathered from all the participants. The information collected from you will never be shared with anyone. The completed questionnaires will be kept in a locked cabinet. Any report published as a result of this study will not identify you by name.

**Possible Benefits/Risks:**

Participating in this project may not only benefit you personally if you take positive action on Pap smear test, it also may improve Chinese women's health related quality of life in the future, and Chinese community as a whole may also benefit from this education intervention. Whether you participate in the project or not will not affect you at all aspects.

**Contact Names and Telephone Numbers:**

If you have concerns about your rights as a research participant, you may contact the Health Research Ethics Board at the University of Alberta at 780-492-0302. This office has no affiliation with the study investigators. Please contact any of the individuals identified below if you have any questions or concerns:

Name and title: Fei Xu, Ph D  
492-9951

Telephone Number: 780-

Name and title: Wanhua Su, Ph D  
492-8228

Telephone Number: 780-

Name and title: Ms. Weihong Hu  
492-9951

Telephone Number: 780-

Name and title: Prof. Yutaka Yasui, Ph D  
492-4220

Telephone Number: 780-



Study Consent Form
Dissemination of Education Intervention for Cervical Cancer Screening
in Chinese Women in Edmonton

Part 1 (to be completed by the Principal Investigator):

Principal Investigator(s): Yutaka Yasui, Ph D Phone Number:
780-492-4220
Contact Name: Fei Xu, Ph D Phone Number:
780-492-9951
Contact Name: Wanhua Su, Ph D Phone Number:
780-492-8228
Contact Name: Ms. Weihong Hu Phone Number:
780-492-9951

Part 2 (to be completed by the research subject):

Yes No
Do you understand that you have been asked to be in a research study?
Have you read and received a copy of the attached Information Sheet?
Do you understand the benefits and risks involved in taking part in this research study?
Have you had an opportunity to ask questions and discuss this study?
Do you understand that you are free to withdraw from the study at any time, without having to give a reason and without affecting your future medical care?
Has the issue of confidentiality been explained to you?
Do you understand who will have access to your records, including personally identifiable health information?
Who explained this study to you?

I agree to take part in this study: YES NO



13-103 Clinical Sciences Building  
Edmonton, Alberta, Canada T6G 2G3

Tel: 780-492-6408  
Fax: 780-492-0364

[WWW.phs.ualberta.ca](http://WWW.phs.ualberta.ca)

Signature of Research Subject	
_____	
(Printed Name)	
_____	
Date:	_____
Signature of Witness	
_____	
I believe that the person signing this form understands what is involved in the study and voluntarily agrees to participate.	
Signature of Investigator or Designee	_____ Date
_____	
<b>THE INFORMATION SHEET MUST BE ATTACHED TO THIS CONSENT FORM AND A COPY GIVEN TO THE RESEARCH SUBJECT</b>	



## Baseline Questionnaire

**First name** \_\_\_\_\_; **Last name** \_\_\_\_\_;

The first part of this questionnaire is about you.

**1) What is your age?**

Ans: 1) 18-34; 2) 35-54; 3) 55-69; 4) not in this range

If you choose (4) then go to the end of the questionnaire.

**2) Where were you born?**

Ans: 1) Mainland China; 2) Hong Kong; 3) Taiwan; 4) Other

If you choose (4), please specify \_\_\_\_\_

**3) How long have you been in Canada?**

Ans: \_\_\_\_\_ years

**4) How many years of formal education (starting from the elementary school) did you receive in total (including in your home country and Canada)?**

Ans: \_\_\_\_\_ years

**5) What is your marriage status?**

Ans: 1) currently married; 2) single living with family; 3) single living alone

The following questions are about your health related issues.

**(A) Do you know what Pap smear test is?**

Ans: 1) Yes; 2) No

If (2), go to the end of the questionnaire.

**(B) Is Pap smear test free in Canada?**

Ans: 1) Yes; 2) No; 3) Don't know

**(C) Can Pap smear test prevent women from getting cervical cancer?**

Ans: 1) Yes; 2) No; 3) Don't know

**(D) How often should women take Pap smear test?**

Ans: 1) Every 1-3 years; 2) Every 4-5 years; 3) Every 10 years; 4) Once in life

**(E) Has your family doctor suggested you to take Pap smear test?**

Ans: 1) Yes; 2) No; 3) Don't remember



**(F) Have you ever taken Pap smear test?**

Ans: 1) Yes; 2) No; 3) Don't know;

If (2) or (3), go to the end of questionnaire

**(G) When was your last time you took Pap smear test?**

Ans: 1) within last 12 months; 2) more than 12 months; 3) Cannot remember;

If (1), go to the end of questionnaire

**(H) What were your reasons for not taking Pap smear test regularly?**

**Choose all that apply to you.**

Ans: 1) I do not need the test anymore because of having uterus removed

2) I do not need it unless I have symptoms

3) Embarrassing

4) Language problems

5) No time

6) Transportation problems

7) Do not know any Chinese female physicians available

8) Do not know where to go

9) Had had a terrible experience on the test before (painful or something wrong)

10) Cannot remember to take it

11) Other: please specify \_\_\_\_\_



## Letter to Healthcare Provider

To Whom It May Concern:

We are conducting a research study of disseminating educational materials for cervical cancer screening promotion for Chinese women in Edmonton. The study plan has been reviewed for its adherence to ethics guidelines and approved by the Research Ethics Board (Panel B) at the University of Alberta. One of the study objectives is to measure the frequency and rate of participation in Pap test by the participants. To ensure an accurate ascertainment of Pap testing participation, we would like to request your confirmation of Pap Testing as health care providers. If you performed a Pap test for the woman who submitted this letter to you, please sign this form and return it to the woman. Thank you very much for your help.  
Your Name (Please Print)

---

Your Signature

Date:

---

Clinic name, address, and telephone number

---

If you have any questions about this study please feel free to contact us.  
We thank you very much again for your support.

Sincerely;

Fei Xu, Ph.D.  
School of Public Health  
University of Alberta  
Phone 780-492-9551  
Email: feixu@phs.med.ualberta.ca

Yutaka Yasui, Ph.D., Professor  
School of Public Health  
University of Alberta  
Phone 780-492-4220  
Email: yyasui@ulaberta.ca

## 常見問題解答

### 1) 本研究項目的目的？

針對愛城華人社區，通過發放介紹關於女性宮頸癌知識的小冊子和錄像，了解通過教育手段是否能夠提高本省華人女性對宮頸癌的預防意識。

### 2) 為什麼開展這個研究項目？

華人女性，無論是在中國還是加拿大，都是宮頸癌的高危人群。多數人談癌色變，而事實上，該疾病是可以預防的。子宮頸抹片檢查（Pap test）預防該疾病的有效手段。在加拿大，華人女性的Pap test子宮頸抹片檢查的參與率和其他種族相比要低很多。我們的目的，是通過宣傳教育，提高華人女性朋友對Pap test子宮頸抹片檢查的利用進而提高Pap test參與率。

### 3) 本次研究項目的組織機構？

School of Public Health, University of Alberta

是本課題的發起者。我們選擇一些愛城華人社團，例如華人教會，華人組織開展調研活動。

### 4) 為什麼選擇這些華人團體作為目標人群？

兩個原因：一，這些團體有華人定期活動，參與人員相對穩定，便於跟蹤回訪。二，這些團體的參與人員在年齡，出生地，來加居留時間等方面相對多元化，以便於我們接觸更多的具有不同社會特征的華人女性。

### 5) 什麼人可以參加？

我們邀請年齡在18至69歲，在愛城居住的華人女性參加。

### 6) 針對哪些話題？

這是一個關於子宮頸癌預防的研究項目。

### 7) 如果我選擇參加這個項目，我需要做什麼？

如果您決定參加研究項目，首先您要簽參加項目同意書。這是法律規定也是為了保護您。然後請您填一份關於健康方面的簡短問卷，大概十分鐘。同時，我們還會發給您一份手冊和光碟，兩個月後，我們會再次聯系您請您協助完成第二次問卷。

### 8) 如果我完成初次調研問卷，我是否也必須完成第二次調研？





沒有這個要求，但是如果您能夠完成兩次問卷，研究結果會更有意義，我們希望得到您的支持與配合。

**9) 如何保證我的隱私不被公開？**

您對隱私的顧慮我們完全理解，科研活動中對個人隱私保護問題有明確的法律規定：受訪者的信息除了參與項目的研究人員外，他人無權獲得，所有填寫過的問卷將被存在UofA內上鎖的櫃子中。

**10) 這次活動能夠使我從中受益嗎？**

如果您能按照宣傳資料的知識積極主動地採取措施預防，您和您的家人都會受益。同時也有助於其他華人女性朋友預防宮頸癌。

**11) 研究結果如何使用？**

如果研究發現我們的教育宣傳資料和這種普及方法能夠有效的提高愛城的華人女性參與宮頸抹片檢查率（Pap testing），我們將會在加拿大的其他城市例如卡加裡，多倫多逐步推廣這種教育普及方式，讓更多的華人女性姐妹受益於子宮頸抹片檢查。



## 關於向愛城華人女性派發子宮頸癌篩查教育材料的研究 簽同意書前要知道的信息 (Information Sheet)

主負責人: Yutaka Yasui 博士

聯系人: 許 斐 博士

聯系人: 蘇婉華 博士

聯系人: 胡偉宏 女士

我們誠意邀請您參加我們的研究項目，以幫助我們了解派發有關子宮頸癌的教育材料是否能提高阿省華人女性的子宮頸抹片檢查的參與率。

### 自願參與原則:

為了保護您的權益，在您決定參加這個研究項目前，我們必須征求您的同意。這份提供了相關信息以幫助您決定是否要參與這項研究。您可以就這個項目的研究目的，您將要做的事，對您可能存在的風險和益處，您作為一個自願者的權利，以及其他不清楚的地方向我們提出疑問。您可以隨時退出這個研究項目而不需要給出任何理由。如果您決定參加，請簽署這份同意書。我們誠意邀請那些定期參加愛城華人教會，華人組織和華人社區活動的華人女性參加我們的研究項目。

### 具體流程:

如果您選擇參加我們的項目，您將會收到一份簡短的問卷，相應的關於子宮頸抹片檢查的健康教育材料，一封信和一個郵資已付的回郵信封。請您把問卷填好，閱讀兩本小冊子和觀看我們提供的小影片。如果您去做子宮頸抹片檢查，請您和您的醫生在我們所提供的信上簽字，然后把簽好字的信用我們所提供的回郵信封寄給我們。如果您不願意填問卷，不想參加我們的項目，也歡迎您把健康教育材料留著。

這份簡短的問卷包括兩部分：第一部分是有關您的個人信息，如您的年齡，學歷等；第二部分是有關健康方面的問題。大約需要10分鐘完成。填完短問卷后，您將獲得一個小鏡框聊表我們的謝意。兩個月后，我們再請您填一份跟進問卷。完成跟進問卷的參與者會收到一張特別的中國郵票作為紀念。若問卷中有些問題您不想回答，您可以不回答。希望您清楚地了解，你不是必須參加這兩個問卷調查的。



**保密性:**

隻有負責這個項目的研究人員可以看到問卷的信息。我們永遠不會把您的信息與任何人分享。填好的問卷將會保存在一個鎖著的櫃子裡。任何發表的報告中有關這個項目的研究結果都不會提到您的名字。

**可能存在的風險和益處:**

如果您能積極參加子宮頸抹片檢查，不但您自己將會受益於該項目。同時我們華人婦女在健康方面的生活質量也將會提高，從而使整個華人社區受益於這個健康教育課程。您參加與否對您生活各方面不會有任何影響。

**聯繫人和電話:**

如果您對作為一個研究項目參與者的權益有任何想法，您可以致電阿爾伯特大學的健康研究倫理委員會，電話號碼是780-492-0302。這個委員會和本項目的所有研究人員沒有任何關係。

如果您有任何問題，請致電以下人員：

許 斐 博士	電話： 780-492-9951
蘇婉華 博士	電話： 780-492-8228
胡偉宏 女士	電話： 780-492-9951
Yutaka Yasui 教授	電話： 780-492-4220



關於向愛城華人女性派發子宮頸癌篩查教育材料的研究  
研究同意書

Part 1 (由主調查人填寫):

主調查人: 教授 安井 裕 博士

電話號碼 : 780-492-4220

聯系人姓名 : 許 斐 博士

電話號碼 : 780-492-9951

蘇 婉華 博士

電話號碼 : 780-492-8228

胡 偉宏 碩士研究生

電話號碼 : 780-492-9951

Part 2 (由參加者填寫):

是 不是

您明白您已經被邀請參加一個研究項目了嗎?

您收到並且讀過與該研究相關信息的附件了嗎?

您知道參與到該研究中的利益和風險了嗎?

您得到機會問問題和討論該研究了嗎?

您知道您可以在任何時候, 不用給出任何理由, 退出該研究而不會影響將來您受到的任何醫療服務嗎?

關於該研究如何保密條款對您解釋了嗎?

您知道誰可以看到您的記錄, 包括能識別您的個人健康信息嗎?

誰向您解釋了這個研究項目? \_\_\_\_\_

\_\_\_\_\_

我同意參加這個研究

同意  不同意

研究參與者的簽字 \_\_\_\_\_

(正楷體姓名) \_\_\_\_\_ 日期: \_\_ \_\_

証人簽字 \_\_\_\_\_

我相信在這個表上簽字的人明白該研究所包含的內容並且自願同意參加該研究.

調查人員或指定人員簽字 \_\_\_\_\_ 日期 \_\_\_\_\_

\_\_\_\_\_



UNIVERSITY OF  
**ALBERTA**

School of Public Health  
Department of Public Health Sciences

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13-103 Clinical Sciences Building  
Edmonton, Alberta, Canada T6G 2G3

Tel: 780-492-6408

Fax: 780-492-0364

[WWW.phs.ualberta.ca](http://WWW.phs.ualberta.ca)

**THE INFORMATION SHEET MUST BE ATTACHED TO THIS CONSENT  
FORM AND A COPY GIVEN TO THE RESEARCH SUBJECT**



## 基礎問卷

名\_\_\_\_\_ 姓\_\_\_\_\_

這個問卷的第一部分是有關於您自己

### I) 您的年齡?

- 1) 18-34      2) 35- 54      3) 55-69      4) 不在這個範圍  
如果您選擇4) 結束這個問卷調查

### II) 您的出生地在哪兒?

- 1) 中國大陸      2) 香港      3) 台灣      4) 其他地方  
如果您選擇 4) 請寫下具體國名\_\_\_\_\_

### III) 您在加拿大多少年了?

\_\_\_\_\_年

### IV) 從小學開始您受過的正規教育年數,

(包括在您出生地國家和加拿大所受到的教育年數。例如: 您在香港上學到高中第三年(12年), 在加拿大社區學院兩年(2年), 那麼您受過的正規教育共計14年。)

\_\_\_\_\_年

### V) 您的婚姻狀態是什麼?

- 1) 已婚      2) 單身和家人住一起  
3) 單身自己住;

下面的問題是關於子宮頸抹片檢查和子宮頸腫瘤的預防

### A) 您知道子宮頸抹片檢查是什麼嗎?

- 1) 知道      2) 不知道  
3) 如果不知道結束這個問卷調查。



**B) 在加拿大子宮頸抹片檢查是免費的嗎?**

- 1) 是免費的      2) 不是免費的      3) 我不知道

**C) 子宮頸抹片檢查能預防子宮頸癌嗎?**

- 1) 能    2) 不能    3) 不知道

**D) 婦女應該多長時間做一次子宮頸抹片檢查?**

- 1) 每1-3年      2) 每年      3) 每4-5年    4) 每10年  
5) 一生中隻要做一次

**E) 您的家庭醫生有建議過您做子宮頸抹片檢查嗎?**

- 1) 有      2) 沒有      3) 不記得有沒有

**F) 您曾經有做過子宮頸抹片檢查嗎?**

- 1) 有      2) 沒有      3) 不知道有沒有

如果回答2) 沒有或者3) 不知道有沒有 請直接回答問題H

**G) 您最后一次做子宮頸抹片檢查是什麼時候?**

- 1) 最近12個月以內    2) 12個月以前    3) 不記得了

如果回答1) 結束這個問卷調查

**H)**

您沒有常規做子宮頸抹片檢查的原因是什麼? 請對所有符合您情況的打鉤

。

- 1) 不需要子宮頸抹片檢查, 因為子宮已經切除。
- 2) 子宮頸抹片檢查是不必要的, 除非有症狀;
- 3) 難為情 (尷尬)
- 4) 語言障礙
- 5) 沒時間 (工作或家務太忙)
- 6) 到醫院去交通不方便
- 7) 不知道哪兒有會說中國話的女醫生
- 8) 不知道到哪兒去做
- 9) 以前有過很可怕的檢查經歷 (比如很痛, 或者很不舒服)
- 10) 常常記不得去做。

其他。請說明\_\_\_\_\_



婦女健康講座 (子宮頸抹片檢查教育講座)

回訪問卷

姓 \_\_\_\_\_  
名 \_\_\_\_\_

(A) 在我們上次子宮頸抹片檢查教育講座之後的這段時間,  
您有沒有去做子宮頸抹片檢查?

- (1) 我已經做了 (2) 還沒有, 但我已經預約了醫生去做子宮頸抹片檢查  
(3) 沒有做

如果您的回答是1 或 2, 請跳至問題 C.

(B) 您沒有去做子宮頸抹片檢查的原因是什麼? 選擇所有符合您情況的回答.

- 1) 我認為子宮頸抹片檢查是不必要的, 除非我有相關症狀;
- 2) 難為情 (尷尬)
- 3) 英語能力不好
- 4) 抽不出時間做 (工作或家務太忙)
- 5) 交通不方便
- 6) 找不到講中文的女醫生
- 7) 不知道到哪兒去做
- 8) 以前有過很可怕的檢查經歷 (比如很痛, 或者很不舒服)
- 9) 記不得去做。
- 10) 其他原因.

請說明 \_\_\_\_\_

(C) 您以後是否 (打算) 每年都會去做?

- (1) 是的, 我每年會去做, (2) 我沒有這個打算

(D) 您有家庭醫生嗎?

- (1) 有 (2) 沒有

(E) 您是否知道每一個阿省居民都享有免費的年度身體健康檢查 (體檢)?

- (1) 知道 (2) 不知道

(F) 您是否每年都有做身體健康檢查?

- (1) 是 (2) 否





(G)

您是否知道當您做年度身體健康檢查(體檢)時,您可以同時要求做子宮頸抹片檢查?

- (1) 知道            (2) 不知道

# 愛城女性健康教育行

關愛您的健康—子宮頸癌預防知多少

親愛的姊妹們，您知道嗎？

- 1) 華人女性子宮頸癌發病率遠高於平均水平
- 2) 子宮頸癌可以通過子宮頸抹片檢查預防
- 3) 華人女性做子宮頸抹片檢查的參與率很低

因此我們希望華人女性加強對子宮頸癌的預防意識，提高我們華人女性的健康水準。

關愛我們的生命是  
保證我們家庭幸福的根本！

我們期待您的參與

講員：蘇婉華 博士(粵語)  
許 斐 博士(國語)  
(阿爾伯塔大學公共衛生系)

日期: 10月17日  
時間: 11am -11:45 am  
查詢: 780-478-1443

地點: 愛城宣道會城北堂  
5108 McLeod Rd  
Edmonton T5A 3J2