PAP TESTING PRACTICES AMONG VIETNAMESE IMMIGRANT WOMEN LIVING IN THE UNITED STATES: AN ECOLOGICAL COLLABORATIVE APPROACH

By

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ABSTRACT

TITLE: **Pap Testing Practices Among Vietnamese Immigrant Women Living in the United States: An Ecological Collaborative Approach**

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Background

Significance of the problem. Vietnamese American women (VAW) (U.S.-born and immigrants) are diagnosed with cervical cancer and die at rates twice that of non-Hispanic White women and the highest of all larger Asian ethnic subgroups and presented with later stage (regional) cervical cancer than non-Hispanic White, Korean, and Japanese women. A Papanicolaou (Pap) test screens for pre-cancerous and cancerous lesions of the cervix. Across studies, only 37-80% of VAW reported ever having a Pap test on at least one occasion, and 68% reported having a Pap test in the past three years. These screening rates are low compared to the Healthy People 2010 Objectives. Vietnamese immigrant women (VIW) as a group (non U.S.-born) may hold different health beliefs about Pap testing than women with other backgrounds; may encounter cultural barriers to engaging in cancer screening; may not participate because of worry about confidentiality issues in obtaining a Pap test; and their view of the quality care of care delivered in the U.S may also influence participation. What little is known about VIW's cancer and Pap testing beliefs includes perceiving cancer as death, preferring not to know about something if it cannot be changed, and believing in not looking for problems unless there was a strong reason for it. There is

paucity in research about knowledge of the human papilloma virus (HPV) vaccine to Pap testing with VIW. Understanding influencing factors would allow for a full examination of what contributes to Pap testing among VIW.

Theoretical framework. The Ecological Model (EM) guided our understanding of multiple influencing factors in obtaining a cervical Pap test. The EM included intrapersonal, interpersonal, organizational, community, and health insurance mandate influences as explanations, and thereby, moved beyond individuals being the only responsible factor for not engaging in cervical cancer screening. Daley et al. (2011) found the EM to provide a comprehensive framework for identifying and understanding barriers to cervical cancer screening.

Purposes/Aims

Primary study aims. The primary aims of this descriptive cross-sectional community based participatory research (CBPR) were (1) to examine the association between awareness, knowledge, confidentiality issues, and beliefs regarding cervical cancer and Pap testing, individual and external influencing factors, and quality of care from the health care system with Pap test receipt and Pap test adherence; (2) to examine the association between knowledge of the HPV vaccine with Pap test receipt and Pap test adherence; and (3) to describe community resources. Included in the process was the translation of the study instruments using a CBPR and the U.S. Census Bureau's team approach that involved a translation committee and a translation reviewer consisting of a Vietnamese bilingual, bicultural investigator and Vietnamese community members.

Secondary study aims. The secondary aims were (4) to explore exposure to media regarding cervical cancer and Pap testing with Pap test receipt and Pap test adherence, (5) to

explore the intention of Vietnamese immigrant women living in the United States ages 21-99 years who has never had a Pap test in obtaining a Pap test within the next three years, and (6) to describe the psychometric properties of the Vietnamese translated version questionnaire.

Methods

The study protocol was approved by the Oregon Health & Science University (OHSU) Internal Review Board and the OHSU Knight Cancer Institute. The methods consisted of a two step process: (1) instrument development and translation and (2) the survey study with VIW. Both parts were integrated and a CBPR approach was used; the psychometric testing was conducted on the sample.

Instrument development and translation. Instrument development included: (1) initial instrument modifications, (2) having community members and two PhD prepared Community Experts review the initial modified instruments, (3) using a CBPR approach and the U.S. Census Bureau's team approach to translation, (4) simultaneous pre-testing of the Vietnamese and English version questionnaires with 10 VIW participants who resembled the survey study participants, and (5) psychometric testing. Cronbach's alpha for internal consistency reliability, exploratory factor analysis to assess dimensionality of factor structures for comparison purposes with respective original factor structure, and confirmatory factor analysis for structural validity were on the sample (n = 201) of VIW who completed the questionnaire in Vietnamese. Internal consistency of the perceived susceptibility, benefits, and common barriers subscales of the modified Revised Susceptibility, Benefits, and Barriers Scale (SBBS) were moderate to high with Cronbach's alphas of .86, .69, and .86, respectively. The modified Cultural Barriers to Screening Inventory (CBSI) subscales, utilization of eastern medicine, modesty, crisis orientation, and lack of family support yielded

moderate to high Cronbach's alphas of .69, .83, .77, and .91, respectively. The Confidentiality Issues Scale (CIS) had a Cronbach's alpha of .89, and the alpha for the Quality of Care from the Health Care System Scale (QoC) was moderately low at .57. The incremental fit index (IFI) of the three factor structure of the SBBS was at .83 and the root mean square error of approximation (RMSEA) was at .094. The IFI of the four factor structure of the CBSI was at .88 and the RMSEA was at .098.

Survey study. Purposive sampling enrolled a total of n = 211 VIW who had never been diagnosed with cervical cancer and was able to read and speak Vietnamese or English from 12 Asian community organizations in the Northwest metropolitan area of the U.S. Data were collected between February 27, 2010 and July 3, 2010 using a self-administered questionnaire that adapted and modified items from five instruments: the SBBS, CBSI, Vietnamese Women's Health Project Questionnaire, Health is Gold Survey, and Foreign Born Chinese Women's Mammography and Pap Testing Questionnaire. Descriptive statistics were reported on the observed data; and findings from the chi-square and logistic regression analyses ($p < .10$, significance) were reported on the imputed data (n = 211). Bivariate analyses were conducted with each independent variable with Pap test receipt and Pap test adherence. Chi-square analyses were conducted for categorical variables, and logistic regression analyses for continuous variables. Twenty-one significant variables were further examined in the exploratory final multivariate logistic regression model for Pap test receipt and 11 significant variables for Pap test adherence.

Results

Sample characteristics. The VIW sample was middle aged (M = 50 years, range = 21-87 years), had a mean age of 35 years when immigrated to the U.S. (SD = 15), 40% spoke

English poorly or not at all, 66% were married or living with a partner, 39% < high school education, and 33% < $15,000 annual household income.

Pap testing history. For the imputed data, only 74% have received a Pap test on at least one occasion and 69% were adherent.

Exploratory final multivariate logistic regression model. In the exploratory final multivariate model, longer years lived in the U.S. (OR = 1.12), currently married or living with a partner (OR = 2.81), having some college or a graduate degree (OR = 2.62), and having a friend(s) suggested Pap testing (OR = 2.62) were more likely to have had a Pap test and utilization of eastern medicine (OR = .78) and lack of family support (OR = .84) were less likely to have had a Pap test. Having a doctor or nurse practitioner recommended Pap testing (OR = 4.90) and health care insurance coverage (OR = 5.07) were more likely to adhere to Pap testing. Fifty-one percent did not know of cervical cancer screening programs in the community, and only 11% knew where to get a free or low-cost Pap test. Of 24% who had never had a Pap test, only 13% of VIW reported as *strongly agree* or *agree* with obtaining a Pap test within the next three years.

Conclusions

External explanations such as access to a provider and having a doctor or nurse practitioner recommended Pap testing, family, friends suggested Pap testing, health care insurance coverage, visibility/availability of screening programs contribute to the EM for explaining VIW's engagement in cervical cancer screening; and moves beyond explanations that hold individuals solely responsible for not engaging in screening. Vietnamese language instruments were produced using a combination of CBPR and the U.S. Census Bureau's team approach to translation and demonstrated moderate to strong subscale internal consistency

reliability. Using such approaches can advance cross cultural measurements nursing science because cultural perspectives and values are discussed; decisions are made as a team in resolving ambiguities, and provide a way of capturing the team's decisions about what items mean rather than relying on back-translation. Further research is needed to further examine external influencing variables to Pap testing and how variables interact across levels of the EM, as well as the adaptation and development of culturally appropriate instruments with the EM for VIW.

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CHAPTER 1

Introduction

Overview of the Organization of the Dissertation

The main contents of this Dissertation include five chapters in which chapters two, three, and four are in a manuscript format. Chapter one is focused on the introduction and significance of the problem, primary and secondary study aims, overall study design, and implications. Chapter two is a literature review manuscript that is focused on synthesizing the breadth and depth of contributing factors to cervical cancer screening, as well as breast, and colorectal cancer screening, hepatitis B screening and practices among Vietnamese Americans. Chapter three is an instrument development and translation manuscript that focuses on describing the adaptation and meaningful translation of instruments that measured Vietnamese immigrant women's held Papanicolaou (Pap) testing health beliefs, perceived cultural barriers to screening, confidentiality issues in obtaining a cervical Pap test, and the view of the quality of care from the health care system. Chapter three addressed secondary aim 6. In order to address the other research questions addressed in primary and secondary study aims 1-5 and trust the findings, the instruments needed to be further tested to examine the internal consistency reliability and structural validity as a retrospective analysis. Chapter four is a results manuscript that focused on the findings of research questions addressed in primary and secondary study aims 1-5 and includes a description of the methodology that addressed these study aims. Chapter five expanded on the discussion of key study findings and implications reported in chapters three and four and cultural lessons learned.

Overview

Cancer is the leading cause of death for Asian American and Pacific Islanders (AAPI) at 26.8% of the total deaths, while heart disease is the leading cause of death for White non-Hispanic, African American, American Indian and Alaska Native, and Hispanic individuals (Heron, 2007). The combined AAPIs as a group represent more than 60 racial-ethnic groups or subgroups (Burlew, 2003). Vietnamese is a fast growing ethnic subgroup within the AAPI racial group in the United States (U.S.). Since 1990, the Vietnamese population in the U.S. has doubled from about 614,869 to approximately 1.1 million (Barnes & Bennett, 2002; Paisano et al., 1993). Cancer screening among Vietnamese Americans is urgently needed to address cancer control for this at risk population.

The term Vietnamese American women (VAW) is understood as including Vietnamese women who were born in the U. S. and those women who had immigrated from Vietnam or another country to the U.S. (U.S. Census Bureau, 2004). The term Vietnamese immigrant women living in the U. S. (VIW) is defined in this study as Vietnamese women who were not born in the U. S., but had immigrated from Vietnam or another country to the U.S. (U.S. Census Bureau).

Screening for Cancer Control

Screening is searching for cancer diseases in people who are asymptomatic. This is different than cancer prevention. Prevention is an action taken to decrease cancer risk by eliminating or reducing contact with factors known to cause cancer or by changing conditions that contribute to cancer such as a lifestyle (American Cancer Society [ACS], 2011). Cancer screening increases the likelihood of early detection of pre-cancerous and cancerous lesions and treatment. This is significant because regular screening exams may

result in detection and removal of pre-cancerous growths before they become malignant; thereby, contributing to increased control of cancer (ACS, 2009a).

Significance of the Problem

Pathophysiology Overview of Cervical Cancer

The human papilloma virus (HPV) has been shown to be the primary cause in the development of cervical cancer, and is primarily acquired through sexual activity (Waggoner, 2003). The prevalence of HPV in cervical cancer is 99.7% worldwide (Herzog, 2003). Cervical cells get invaded by a HPV type, and the HPV takes over the intracellular machinery resulting in the manufacture of more viruses. Among the many HPV types associated with invasive cervical cancer, HPV 16 and 18 have two transcriptional units, E6 and E7 oncoproteins. E6 and E7 encode proteins necessary for viral replication (Waggoner). The E6 oncoprotein binds to and inactivates the tumor-suppressing gene *TP53* through degradation, and interrupts the cell to cycle checkpoint. The E7 oncoprotein binds to and inactivates products of the retinoblastoma gene (*pRb*), a tumor-suppressing gene, which results in cell to cycle progression in HPV 16 or 18 infected cells (Waggoner). *TP53* and *pRb* normally regulates cell growth and keeps cells from growing and dividing too quickly or in an uncontrolled way; and they can do so by signaling a DNA damaged cell to undergo apoptosis (programmed cell death) (Genetics Home Reference, 2011a, b).

There are other possible factors that may place VAW at a higher risk for developing cervical cancer including socioeconomic disparities in work, wealth, education, housing, preventative quality of care services, early detection, and treatment, and the impact of racial and ethnic discrimination on these factors, as well as culturally related issues such as language and cultural barriers (ACS, 2009a). Having a history of genital warts, receiving

immunosuppressive medications, being human immunodeficiency virus (HIV) positive, cigarette smoking, and exposure to environmental tobacco are also other risk factors for developing cervical cancer (Waggoner, 2003).

Cervical Cancer Incidence

Surveillance data (2001-2006) reported lower age-adjusted cervical cancer incidence rates among AAPI women (7.6 per 100,000) compared to White non-Hispanic women (7.9 per 100,000) and lower compared to African American (11.1 per 100,000) and Hispanic women (12.7 per 100,000) (Jemel, Siegel, Xu, & Ward, 2010). The most current available data on Asian subgroups (1998-2002) indicated that VAW (16.8 per 100,000) were diagnosed at twice the rate of White non-Hispanic women (8.1 per 100,000) and at the highest rate than all larger Asian ethnic subgroups (Chinese, Filipino, Korean, Japanese) (Miller, Chu, Hankey, & Ries, 2008). This rate has improved from earlier data (1988 to 1992) that showed age-adjusted cervical cancer incidence rate was five times higher among VAW (43 per 100,000) compared to White non-Hispanic women (7.5 per 100,000) and the highest of all other racial-ethnic and Asian ethnic women subgroups (National Cancer Institute [NCI], n.d.).

Late Stage Cervical Cancer Diagnosis, Survival, and Mortality Rates

VAW (36%) had higher late stage (regional) cervical cancer diagnosis compared to White non-Hispanic women (28%) and also when compared to Korean and Japanese women subgroups (Miller et al., 2008). Five year cancer survival rates for cervical cancer among AAPI women (75.4%) were higher compared to White non-Hispanic men and women (73.1%) (Clegg & Gloeckler, n.d.). There is currently no survival data available for VAW. However, according to Miller et al. VAW died at two times the rate from cervical cancer (4.4

per 100,000) compared to White non-Hispanic women (2.4 per 100,000) and have the highest death rate of all larger Asian ethnic subgroups (Miller et al.).

Cervical Cancer Estimates

In 2010, it was estimated that 12,200 women would be diagnosed with cervical cancer in the U.S. and it was estimated that 4,210 women would die from cervical cancer (Jemel et al., 2010). Cervical cancer is likely to be successfully treated if detected in its early stages with a relative survival rate at nearly 100% for pre-invasive cervical cancer lesions, and at nearly 92% at five years for invasive localized cervical cancer lesions (ACS, 2010b; ACS, 2010c). Cervical cancer is diagnosed at an early stage more often in women younger than age 50 (61%) than in women ages 50 and older (36%) (ACS, 2010b). Women who have never been screened or have not been screened within the past five years have a significant risk of developing invasive cervical cancer (NCI, 2010). Between 60-80% of women with advanced cervical cancer have not had a Papanicolaou (Pap) test (cervical cancer screening) in the past five years (ACS, 2010c).

Cervical Cancer Screening

Cancers such as cervical cancer that can be prevented or detected earlier by screening account for at least 50% of all new cancer cases (ACS, 2009a). A Pap test is a screening procedure that collects a small sample of cervical cells, via a vaginal examination, that are then examined under the microscope for indications of pre-cancerous and cancerous lesions of the cervix (ACS, 2006). The pooled absolute sensitivity of a Pap test in detecting pre-cancerous lesions of the cervix varied with approximately 55.2% (95% CI 45.5-64.7) for high grade lesions or worse; 75.6% (95% CI 66.5-83) for low grade lesions or worse; and 88.2% (95% CI 80.2 to 93.2) for atypical squamous cells of underdetermined significance or worse

(Arbyn et al., 2008). Pap testing should be carried out no later than age 21 years (ACS, 2010a; NCI, 2006). The ACS (2010a) suggests that women ages 70 years and older may no longer need Pap testing if they have had three or more normal/negative Pap tests and no abnormal Pap tests in the past 10 years. Though the U.S. Preventative Services Task Force (USPSTF) for cervical cancer screening recommends to not routinely perform cervical cancer screening among women older than age 65 years if they have had adequate recent screening with normal/negative Pap tests (USPSTF, n.d.). The USPSTF also recommends against routine screening for women who have had a total hysterectomy for a non-cancerous condition (U.S. Department of Health & Human Services, 2003). Women who have never been screened or have not been routinely screened should begin to engage in cervical cancer screening (USPSTF). Women should continue to have a Pap test at least once every three years (Saslow et al., 2002).

According to the ACS, the overall use of Pap testing among women in the U. S. for early detection of cervical cancer lesions have become more common (ACS, 2007). Yet, VAW continue to have low Pap testing rates, and this may be a contributing factor that places VAW at a higher risk for developing cervical cancer.

The Pap testing rate in the past three years was low among Asian American women (64.4%) compared to White non-Hispanic women (78.1%) and was also lower compared to all racial-ethnic groups (Centers for Disease and Control [CDC], 2007). Across studies (year 1998 to April 2009), approximately 37-80% of VAW reported having had at least one Pap test in their lifetime (Gomez, Tan, Keegan, & Clarke, 2007; Ho et al., 2005; Nguyen, Withy, Nguyen, & Yamada, 2003; Nguyen, McPhee, Nguyen, Lam, & Mock, 2002; Schulmeister & Lifsey, 1999; Taylor et al., 2004; Tung, Nguyen, & Tran, 2008; Xu, Ross, Ryan, & Wang,

2005; Yi, 1998). Approximately 68% of VAW reported having had a Pap test within the past three years (Taylor et al., 2004). These rates were low compared to the Healthy People 2010 objectives that specify 97% of women aged 18 years and older to have had at least one Pap test in their lifetime and for 90% of women to have a Pap test within the past three years (CDC, 2003). See table 1 for Pap testing rates among VAW.

Table 1. Pap Testing Rates Among Vietnamese American Women

Author	n	At Least Once (%)	In Past One Year (%)	In Past Three Years (%)
Gomez et al., 2007	226	80	–	–
Ho et al., 2005	209	68	89	–
Kandula et al., 2006	857	–	–	62.3
Nguyen et al., 2003	952	51.7	–	–
Nguyen et al., 2002	1,566	76	82.5	–
Schulmeister & Lifsey, 1999	96	46	30	–
Taylor et al., 2004	352	71	45	62[b], 68
Tung et al., 2008	80	62.5	–	–
Xu et al., 2005	284	60.1	–	–
Yi, 1998	201	36.8	–	89.1[a,b]

Note. n, sample size; %, percentage.
[a] performed within past one year.
[b] performed within past two years.

Limitations Across Reviewed Studies

Individual and External Influencing Factors

There are several factors that may contribute to whether VAW do or do not get screened for cervical cancer. These contributing factors can be differentiated into individual factors or external influencing factors. Individual factors include the influence of age, marital status, educational level, knowledge of Pap testing, held and perceived beliefs including cultural beliefs regarding Pap testing. Purnell (2008) reported several beliefs including rarely seeking care when asymptomatic, relying on the family and traditional means (e.g., balancing hot and cold forces to ensure good health) of providing their health care needs, believing that life is predetermined, and perceiving the possibility of surgery as terrifying. External contributing factors include having received a recommendation from a doctor (health care provider [HCP]), family member(s), and friend(s) about getting a Pap test. No study to date has examined whether awareness of Pap testing is associated with ever having had a Pap test and having had a Pap test in the past three years. Approximately 48% of Vietnamese are immigrants. Little is known about what is different for Vietnamese immigrant women (VIW) only as a group, as most studies do not differentiate between U.S.-born and immigrant participants (U.S. Census Bureau, 2004). This makes it challenging to determine whether there are any differences between these respective groups (U.S.-born versus immigrants) and whether these differences may contribute to Pap testing. This is a possible explanation for why most studies did not find adaptation to the U.S. to be a contributing factor to screening.

Conceptual or Theoretical Frameworks

Most descriptive and intervention studies lacked a conceptual or theoretical framework (Bird et al., 1998, Do et al., 2007; Jenkins et al., 1999; Kandula, Wen, Jacobs, &

Lauderdale, 2006; Mock et al., 2007; Ponce et al., 2006; Xu et al., 2005; Yi, 1998). Variations in theoretical perspectives have been used across studies which focused on either the individual cervical cancer screening behavior such as the Health Belief Model, Theory of Reasoned Action, and the Transtheoretical Model of Change (Ho et al., 2005; Schulmeister & Lifsey, 1999; Tung et al., 2008), or studies that have focused on both the individual behavior and external contributing factors to cervical cancer screening such as the Health Behavior Framework and the Pathways model which originated from the PRECEDE/PROCEED framework (Lam et al., 2003; Nguyen et al., 2002; Taylor et al., 2004).

Study-Specific Instruments

Most studies used study-specific instruments that were translated into Vietnamese (Do et al. 2007; Jenkins et al., 1999; Lam et al., 2003; Mock et al., 2007; Nguyen et al., 2002; Taylor et al., 2004). Several studies included aspects of instrument development that included focus groups, working with established Vietnamese coalition or an advisory board, or pilot testing. However, most studies did not report on the reliability and validity of the instruments (Do et al., 2007; Jenkins et al., 1999; Lam et al., 2003; Mock et al., 2007; Nguyen et al., 2002; Taylor et al., 2004). Not having evidence for validity is of particular concern for the Vietnamese translated versions because the meaning of the constructs might not hold for the VIW population. The operational definitions across studies were inconsistent in their examination of contributing individual and external factors to cervical cancer screening. For example, many studies had a limited definition of HCP that only included the primary care physician and failed to include nurse practitioners. Advanced

practice nurses are increasingly doing Pap testing and can also promote screening and education.

Purpose and Aims

Vietnamese is a fast growing ethnic subgroup within the AAPI racial group (Barnes & Bennett, 2002; Paisano & et al., 1993). The first step in this program of research was to examine what is different among VIW regarding Pap testing practices and influencing factors to Pap testing; to use a theoretical framework that includes multiple influences on Pap testing; and to explore the psychometric properties of the questionnaires. This is a quantitative, descriptive, cross-sectional study that has used a community based participatory research approach to examine associations of awareness, knowledge, confidentiality issues, and beliefs regarding cervical cancer and Pap testing, associations of knowledge of the HPV vaccine with Pap testing, and community resources regarding cervical cancer screening. This included examining individual influencing factors (sociodemographic characteristics/ background and self-empowerment regarding having requested a Pap test) and external influences (ever having a friend(s), family member(s), doctor or nurse practitioner recommended Pap testing, having a regular primary HCP, view of the quality of care from the health care system, and having health care insurance coverage) with Pap test receipt and Pap test adherence. Included in the process was the translation of the study instruments using a community based participatory research (CBPR) approach and the U.S. Census Bureau's team approach that involved a translation committee and a translation reviewer consisting of a Vietnamese bilingual, bicultural investigator and Vietnamese community members; and to describe the psychometric properties on the sample of VIW.

The implementation of a CBPR approach included active involvement of community members (i.e., community consultant, advisors, and liaisons) and researchers in the research process. CBPR is an approach to gaining input and discussion with community leaders and members regarding instruments, translation, implementation and recruitment, communication with organizations, and interpretation.

The involvement of Volunteer Community Members (VCMs) in the research design led to the following strong recommendation regarding the use of the term VIW living in the U.S. versus Vietnamese American immigrant women. The latter term may not be well perceived by Vietnamese women in the community because Vietnamese women who had immigrated to the U. S. may not identify or refer to themselves as Americans.

Data was collected at a single point in time using a single self-administered questionnaire that combined instruments and was available in both English and a Vietnamese translated written language version relevant to VIW. The following were primary study aims and research questions for this study.

Primary Study Aims and Research Questions

Aim 1. To examine the association between awareness, knowledge, confidentiality issues, and beliefs regarding cervical cancer and Pap testing, individual and external influencing factors, and quality of care from the health care system with Pap test receipt and Pap test adherence.

Research question 1.1. What are the Pap testing practices of Vietnamese immigrant women ages 21 to 99 years living in the United States?

Research question 1.2. To what extent is awareness of cervical cancer or Pap testing associated with Pap test receipt and Pap test adherence?

Research question 1.3. How knowledgeable are Vietnamese immigrant women ages 21 to 99 years living in the United States about cervical cancer and Pap testing?

Research question 1.4. To what extent is knowledge associated with Pap test receipt and Pap test adherence?

Research question 1.5. To what extent are confidentiality issues regarding having a Pap test associated with Pap test receipt and Pap test adherence?

Research question 1.6. What are the beliefs of Vietnamese immigrant women ages 21 to 99 years living in the United States ages related to Pap testing use?

Research question 1.7. To what extent are beliefs about Pap testing associated with Pap test receipt and Pap test adherence?

Research question 1.8. What individual factors (sociodemographic characteristics/background and self-empowerment regarding having requested a Pap test) and external influencing factors (ever having a friend(s), family member(s), doctor or nurse practitioner recommended Pap testing, having a regular primary health care provider, and having health care insurance coverage) are related to Pap testing use?

Research question 1.9. To what extent are individual and external influencing factors associated with Pap test receipt and Pap test adherence?

Aim 2. To examine the association of knowledge of the human papilloma virus (HPV) vaccine with Pap test receipt and Pap test adherence.

Research question 2. How knowledgeable are Vietnamese immigrant women ages 21 to 99 years living in the United States about the HPV vaccine?

Aim 3. To describe community resources.

Research question 3. What are the identified available cervical cancer screening programs in the community?

Secondary Aims and Research Questions

Aim 4. To explore exposure to the media regarding cervical cancer and Pap testing with Pap test receipt and Pap test adherence.

Research question 4. To what extent is exposure to the media regarding cervical cancer and Pap testing associated with Pap test receipt and Pap test adherence?

Aim 5. To explore the intention of Vietnamese immigrant women ages 21 to 99 years living in the United States who have never had a Pap test to obtain a Pap test within the next three years.

Research question 5. What are the intentions of Vietnamese immigrant women ages 21 to 99 years living in the United States who have never had a Pap test to get a Pap test within the next three years?

Aim 6. To describe the psychometric properties of the Vietnamese translated version questionnaire.

Research question 6.1. What is the internal consistency reliability of the questionnaire?

Research question 6.2. What are the factor structures of the questionnaire?

Ecological Model of Health Behavior

The Ecological Model (EM) of health behavior (Sallis, Owen, & Fisher, 2008) was the theoretical framework that guided this study. As previously discussed, most descriptive and intervention studies lacked a conceptual or theoretical framework (Bird et al., 1998; Do et al., 2007; Jenkins et al., 1999; Kandula et al., 2006; Mock et al., 2007; Ponce et al., 2006;

Xu et al., 2005; Yi, 1998) or the study's theoretical perspectives have primarily focused on the intrapersonal influences (individual influences) on cervical cancer screening behavior (Ho et al., 2005; Schulmeister & Lifsey, 1999; Tung et al., 2008). The EM was the best fit because this theoretical framework contains the central concept that health behavior has multiple interacting determinants of influences. Additionally, the EM provided a broader, comprehensive framework for understanding these multiple influences on cervical cancer screening behavior (Pap test receipt and Pap test adherence) (Minkler & Wallerstein, 2003; Sallis et al., 2008). The EM framed the understanding of how VIW interacted with their environments (Sallis et al.). The EM is differentiated from behavioral models that focus only on individual characteristics (Ho et al., 2005; Schulmeister & Lifsey; Tung et al.). The components of the EM included intrapersonal, interpersonal, organizational, community, and health insurance mandate influences.

An underlying assumption is that a combination of both individual-level and environmental and policy-level interventions are needed to have sustained changes in health behavior (Sallis et al., 2008). This study is the first step in the program of research and results that will help inform culturally appropriate and language sensitive interventions directed at increasing Pap testing rates. The EM has four principles (Sallis et al.). (1) Multiple factors influence health behaviors (intrapersonal, interpersonal, organizational, community, health insurance mandate). (2) Influences on behaviors interact across these different levels. There are multiple variables at each level. (3) The EM should be behavior specific in order to guide research and intervention. (4) Multi-level interventions might be the most effective in changing behavior. This implies that single-level interventions are unlikely to have sustained effects.

In this study, intrapersonal influence included self-empowerment in ever having requested a doctor or nurse practitioner for a Pap test; cervical cancer awareness (ever having heard of); Pap test awareness (ever having heard of); knowing that Pap tests are necessary for women who are asymptomatic, sexually inactive, or postmenopausal; knowledge of the HPV vaccine (having ever heard of the HPV vaccine, would recommend the HPV vaccine to others who would qualify); confidentiality issues (being worried that a doctor or nurse practitioner or Vietnamese interpreter will let others know about an individual obtaining a Pap test); Pap testing health beliefs (perceived susceptibility to developing cervical cancer, perceived benefits of Pap testing, perceived common barriers to Pap testing); and perceived cultural barriers to Pap testing.

Interpersonal influences included having a family member(s) and friend(s) ever suggested Pap testing. Organizational influences included having a doctor or nurse practitioner (HCP) ever recommended Pap testing, having a regular primary HCP, and view of the quality of care from the health care system. Community influences included available cervical cancer screening resources within the community and knowing where to go to get a free or low-cost Pap test. A health insurance mandate influence included having health care insurance that provides coverage for Pap testing. A health insurance mandate is a requirement for an insurance company or health plan to cover or offer coverage for specific benefits (Bunce & Wieske, 2009). Cervical cancer screening is a health insurance mandated benefit in the state of Oregon (Bunce & Wieske). See figure 1 for the EM as the theoretical framework.

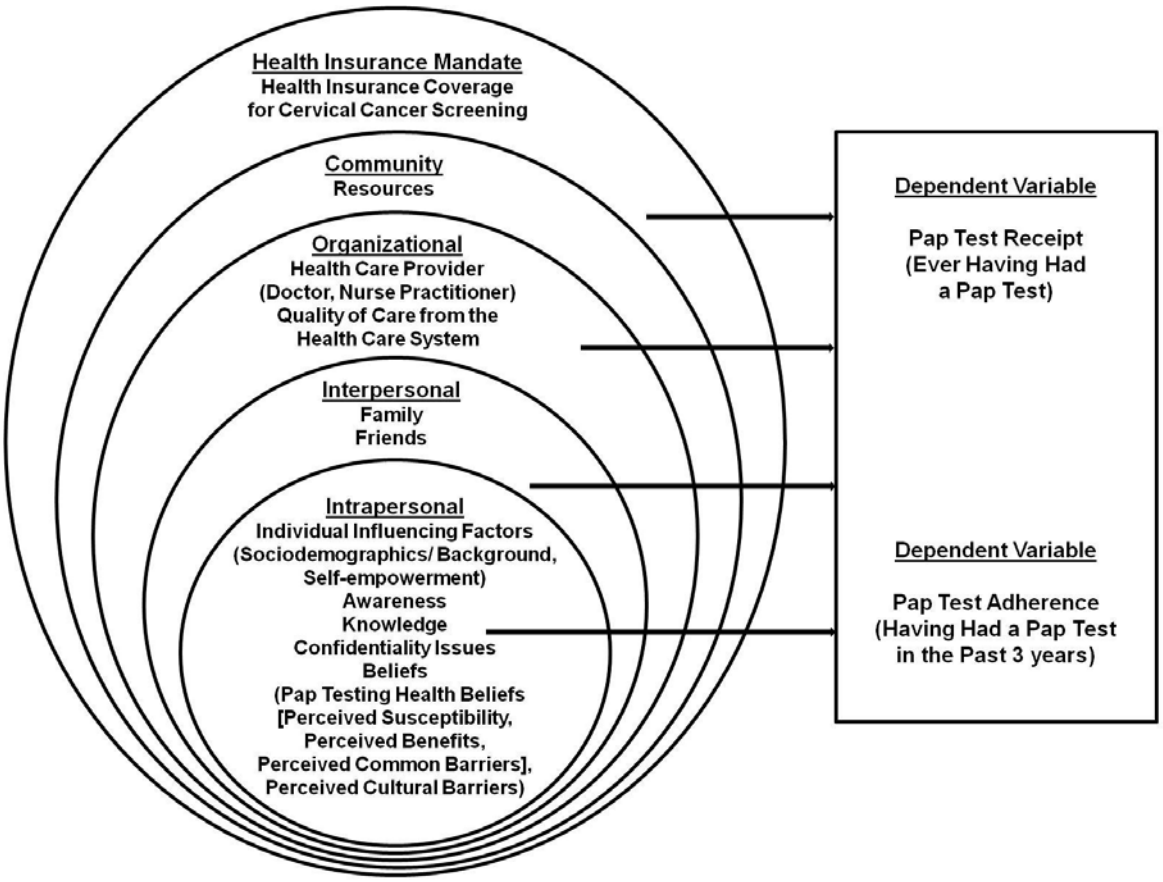

Figure 1. Ecological Model as the Theoretical Framework

Instrument Material

Vietnamese Women's Health Project Questionnaire (VWHPQ)

Twelve items were derived from the Taylor et al. (2004) VWHPQ. These items included Pap test receipt; Pap test awareness; knowing that Pap testing is still needed for asymptomatic, sexually inactive, and post-menopausal women; having a regular place of care; having a regular HCP; history of a hysterectomy; self-empowerment in requesting a Pap test; having a doctor or nurse practitioner recommended Pap testing; a family member(s), and friend(s) suggested Pap testing. Permission was granted by the author (Taylor et al., 2004) to use and modify the instrument for this study. The entire VWHPQ consists of 91 items which are primarily categorical items and includes six sections: health care (ten items), doctor interactions (19 items), women's health regarding cervical cancer and Pap testing (24 items), heart disease (16 items), sociodemographic characteristics (19 items), and a final section regarding the survey and contact information (three items).

There was no reported validity or reliability; however, the instrument development was guided by an earlier qualitative study by the researchers (Burke et al., 2004; Taylor et al., 2004). Taylor et al. (2004) used the Health Behavior Framework to examine predictors of Pap testing behavior among VAW. The Health Behavior Framework is a heuristic framework in that it represents a synthesis of some of the major theoretical frameworks including the Transtheoretical Model of Change, components of the PRECEDE-PROCEDE framework, the Health Belief Model, the Theory of Reasoned Action/Planned Behavior, and social influence theory (Taylor et al., 2004).

Health is Gold Survey (HGS)

Nine items were derived from the Nguyen et al. (2006) HGS. These items included awareness of cervical cancer, identifying cervical cancer causes, community resources, and adapted items from attitudes towards the health care system and quality of care from the health care system. Permission was granted by the instrument developer (Nguyen et al., 2006) to use and modify the instrument for this study. The entire HGS consists of 124 items, and includes topics on sociodemographic characteristics, cervical cancer screening, and breast cancer screening, of which 98 include the following and are primarily categorical items: sociodemographic characteristics (25 items), a translator for patients who do not speak English well (one item), awareness of cervical cancer (one item), causes of cervical cancer (one item), awareness of a Pap test (one item), Pap test receipt (one item), Pap test planning (seven items), time since last Pap test (one item), reasons for obtaining a Pap test (two items), Pap test frequency within the past three years (one item), how often one should have a Pap test (one item), doctor recommended Pap testing (one item), having requested a Pap test (one item), preference of gender for a Pap test (one item), prefer female standby if male doctor performs a Pap test (one item), preference of Vietnamese-speaking or non-Vietnamese speaking for a Pap test (one item), belief in women including age 18 and non-sexual women needing regular Pap tests (two items), having had a hysterectomy (one item), perceived susceptibility (one item), smoking (seven items), exposure to media (eight items), receipt of intervention (four items), community resources (six items), breast cancer screening (14 items), depression (one item), attitudes towards the health care system (five items), quality of care from the health care system (one item) and cost of health care insurance (one item).

Although, this is a study-specific instrument with no reported validity or reliability, the Vietnamese Community Health Promotion Project at the University of California San Francisco developed the instrument with the Vietnamese Reach for Health Initiative, a community coalition, in Santa Clara County, California that included questions from prior projects based on community focus groups and key informants (T. Nguyen, personal communication, January, 7, 2009). The instrument was based on the Pathways Model (Nguyen, et al., 2006). Nguyen et al. used this model to examine VAW's interaction between the community/sociocultural and medical pathways with the assumption that the components of the interaction between these two pathways were determinants of Pap test receipt.

Revised Susceptibility, Benefits, and Barriers Scale (SBBS)

Beliefs about cervical cancer and Pap testing were measured using the SBBS (Champion, 1999). The SBBS consists of 19 items and has three subscales: perceived susceptibility (three items, range = 3-15), perceived benefits (five items, range = 5-25), and perceived barriers (11 items, range = 11-55). This scale was originally developed for mammography screening and was modified in this study to address Pap testing. Permission was granted by the instrument developer (Champion) to use and modify the instrument for Pap testing for this study. A 5-point Likert scale was used for each item which ranges from 1 to 5, with 1 being strongly disagree to 5 being strongly agree. Higher scores indicated greater perceived susceptibility, perceived benefits, and perceived barriers. Content validity was supported by both expert and focus groups of women (Champion). Evidence to support structural validity was demonstrated by an exploratory factor analysis, which accounted for 54% of the variance for three extracted factors (perceived susceptibility, perceived benefits,

and perceived barriers) (Champion). Structural validity was also supported by a confirmatory factor analysis with a Goodness of Fit Index of .87. Internal consistency reliability in the revised version was acceptable for perceived susceptibility, perceived benefits, and perceived barriers (Cronbach's alpha = .87, .75, .88, respectively). Test-retest reliability in the revised version was conducted using 804 women for mammography screening who completed the questionnaire again at approximately six weeks with moderate internal consistency reliability for perceived susceptibility, perceived benefits, and perceived barriers (r = .62, .61, .71, respectively) (Champion).

An item was removed from Champion (1999) perceived barriers subscale, "Having a mammogram exposes me to unnecessary radiation". This item was removed because having a Pap test would not expose a woman to radiation. The modified SBBS version for this study consisted of 18 items and has three subscales: perceived susceptibility (three items), perceived benefits (five items), and perceived common barriers (ten items). The conceptual term perceived common barriers was used in this study instead of perceived barriers in order to differentiate perceived common barriers from perceived cultural barriers.

Cultural Barriers to Screening Inventory (CBSI)

Perceived cultural barriers was measured using the CBSI from Tang, Solomon, and McCracken (2000). The CBSI consists of 17 items and has four subscales: utilization of Eastern medicine (three items, range = 3-15), modesty (six items, range = 6-30), crisis orientation (four items, range = 4-20), and lack of family support (four items, range = 4-20) (Tang et al., 2000). This inventory was originally developed for breast and colorectal cancer screening (Tang et al.). Permission was granted by the instrument developer (Tang et al.) to use and modify the instrument for Pap testing for this study. Items were rated on a 5-point

Likert scale (1 being strongly disagree to 5 being strongly agree). Higher scores indicated greater endorsement of utilization of Eastern medicine, modesty, crisis orientation, and lack of family support. Evidence to support structural validity was demonstrated with an exploratory factor analysis, which accounted for 53.9% of the variance for four extracted factors (utilization of Eastern medicine, modesty, crisis orientation, and lack of family support) (Tang et al.). The inventory also demonstrated moderate internal consistency reliability for utilization of Eastern medicine, modesty, crisis orientation, and lack of family support subscales (Cronbach's alpha = .72, .72, .61, .54, respectively) (Tang et al).

The term HCP was changed to doctor and nurse practitioner to clearly define what was meant by HCP. One item was removed from the modesty subscale, "I would feel embarrassed examining my own breasts for lumps" because self-examination of the cervix does not currently exist in the Pap testing guidelines (ACS, 2010a; NCI 2006; USPSTF, n.d.). An item was added to the lack of family support subscale, "My spouse or partner has recommended that I get checked for cancer" because there was an item referring to adult children but not an item on spouse or partner. The term friends was removed because the focus is on lack of family support, and for this study family was defined as blood kin for all applicable items. The modified CBSI version for this study consisted of 17 items and has four subscales: utilization of Eastern medicine (three items), modesty (five items), crisis orientation (four items), and lack of family support (five items).

Foreign Born Chinese Women's (FBCW) Mammography and Pap Testing Questionnaire

Seven items were derived from Lee-Lin et al.'s (2008) FBCW Mammography and Pap Testing Questionnaire. These items included Pap test adherence, pap testing frequency,

health insurance coverage, preference for a female HCP to perform a Pap test, knowing anyone who has had cervical cancer, and knowing anyone in the immediate family who has had cervical cancer. One proxy item for health insurance mandate was having health insurance coverage for Pap testing. Permission was granted by the instrument developer (Lee-Lin et al., 2008) to use and modify the instrument for this study. This instrument consists of 93 items and these include sociodemographic characteristics (20 items), knowledge (11 items), perceived cancer risk factors (10 items), perceived susceptibility of developing breast cancer (three items), perceived benefits of mammography (seven items), perceived common barriers of obtaining a mammogram (21 items), perceived cultural barriers (total of 17 items and includes four subscales, crisis prevention orientation (five items), modesty (five items), family support (four items), use of Eastern medicines (three items), and mammography screening (four items). Perceived susceptibility, perceived benefits, perceived common barriers, and perceived cultural barriers (four subscales, crisis prevention orientation, modesty, family support, use of Eastern medicines) were measured on a 5-point Likert scale with higher scores indicating greater perceived susceptibility, perceived benefit, perceived common barrier, modesty, family support, and use of Eastern medicines. For the crisis prevention orientation subscale, higher scores indicated a lower degree of crisis orientation and a higher degree of prevention orientation.

Definitions of Research Variables of Interest

Definitions of Dependent Variables

Conceptual definition of Pap test receipt. A Pap test is done to find out if a woman has pre-cervical cancer or cervical cancer. Pap test receipt was defined as a woman who has had a scraping of cells from the cervix inside the vagina during a pelvic exam.

Operational definition of Pap test receipt. Pap test receipt was measured with one categorical item (no = 0, yes = 1, not sure/do not know = -8) and was adapted and modified from the VWHPQ (Taylor et al., 2004). See question 9 in Appendix A.

Conceptual definition of Pap test adherence. Pap test adherence was defined as a woman having had a Pap test done within the past three years.

Operational definition of Pap test adherence. Pap test adherence was measured with one categorical item that contained eight multiple-choice responses (less than/just about 1 year ago = 1, more than 1 year ago but not yet 2 years = 3, just about 2 years ago = 4, more than 2 years ago = 5, just about 3 years ago = 6, more than 3 years ago = 7, other [please specify in months and years], not sure/do not know = -8) and was adapted and modified from the FBCW Mammography and Pap Testing Questionnaire (Lee-Lin et al., 2008). Asking the question in this way helped to provide descriptive data. Pap test adherence was recoded to (0 = have not had a Pap test within the past three years, 1 = having had a Pap test within the past three years). See question 10 in Appendix A.

Definitions of Independent Variables for Primary Study Aims

Conceptual definition of Pap test awareness. Pap test awareness was defined as having ever heard of a Pap test.

Operational definition of Pap test awareness. Pap test awareness was measured with one categorical item (no = 0, yes = 1, not sure/do not know = -8); the responses were reported as a frequency, percentage, mean, and standard deviation. This item was adapted and modified from the VWHPQ (Taylor et al., 2004). See question 8 in Appendix A.

Conceptual definition of cervical cancer awareness. Cervical cancer awareness was defined as having ever heard of cervical cancer.

Operational definition of cervical cancer awareness. Cervical cancer awareness was measured with one categorical item (no = 0, yes = 1, not sure/do not know = -8); the responses were reported as a frequency, percentage, mean, and standard deviation. This item was adapted and modified from the HGS (Nguyen et al., 2006). See question 6 in Appendix A.

Conceptual definition of knowledge. Knowledge was defined as knowing that Pap tests are necessary for women who are asymptomatic, sexually inactive, or postmenopausal.

Operational definition of knowledge. Knowledge was measured with three items using a true or false response scale (true, false, not sure/do not know = -8). The responses were scored as the number of correct responses, frequency range 0-3, and the percentage of correct responses, 0-100%. Items were adapted and modified from the VWHPQ (Taylor et al., 2004). See questions 13-15 in Appendix A.

Conceptual definition of confidentiality issues. Confidentiality issues was defined as an individual being worried about obtaining a Pap test because one's doctor, or nurse practitioner, or Vietnamese interpreter will let others know.

Operational definition of confidentiality issues. Confidentiality issues was measured with two items using a 5-point Likert scale with 1 being strongly disagree to 5 being strongly agree. The responses for the Confidentiality Issues Scale (CIS) were summed (range = 2-10) with a higher score indicating greater worry about confidentiality when obtaining a Pap test. The CIS was developed with two Community Experts. See questions 36 and 37 in Appendix A.

Conceptual definition of perceived susceptibility. Perceived susceptibility was defined as an individual's beliefs about risk of threat or harm related to developing cervical cancer.

Operational definition of perceived susceptibility. Perceived susceptibility was measured with three items on a 5-point Likert scale with 1 being strongly disagree to 5 being strongly agree (range = 3-15). A higher score indicated greater perceived susceptibility. The subscale was adapted and modified from the SBBS (Champion, 1999). See questions 21 to 23 in Appendix A.

Conceptual definition of perceived benefits. Perceived benefits was defined as an individual's belief about positive benefits of Pap testing.

Operational definition of perceived benefits. Perceived benefits was measured by five items on a 5-point Likert scale with 1 being strongly disagree to 5 being strongly agree (range = 5-25). A higher score indicated greater perceived benefits. The subscale was adapted and modified from the SBBS (Champion, 1999). See questions 24, 25, 55-57 in Appendix A.

Conceptual definition of perceived common barriers. Perceived common barriers was defined as an individual's personal obstacles that prevents Pap testing.

Operational definition of perceived common barriers. Perceived common barriers was measured by ten items on a 5-point Likert scale with 1 being strongly disagree to 5 being strongly agree (range = 10-50). A higher score indicated greater perceived common barriers. The subscale was adapted and modified from the SBBS (Champion, 1999). See questions 26-35 in Appendix A.

Conceptual definition of perceived cultural barriers. Perceived cultural barriers was defined as an individual's beliefs about utilization of Eastern/Asian medicine for illness, modesty about one's body, efficacy of Pap testing, and lack of family support as obstacles to Pap testing.

Operational definition of perceived cultural barriers. Perceived cultural barriers was measured by 17 items on a 5-point Likert scale with 1 being strongly disagree to 5 being strongly agree. Scores were summed for each subscale, and a higher score indicated greater degree of the component. Subscales measured utilization of Eastern medicine (3 items, range = 3-15), modesty (5 items, range = 5-25), crisis orientation (4 items, range = 4-20), and lack of family support (5 items, range = 5-25). The subscale was adapted and modified from the CBSI (Tang et al., 2000). See questions 38-54 in Appendix A.

Conceptual definition of self-empowerment. Self-empowerment was defined as an individual ever having requested a Pap test to be performed.

Operational definition of self-empowerment. Self-empowerment was measured with one categorical item (no = 0, yes = 1, not sure/do not know = -8). The responses were reported as a frequency, percentage, mean, and standard deviation. This item was adapted and modified from the VWHPQ (Taylor et al., 2004). See question 20 in Appendix A.

Conceptual definition of sociodemographic characteristics/background. Sociodemographic characteristics/background included the following: adaptation to the U.S. (age at immigration, years lived in the U. S., English speaking ability), identification with a religion, marital status, highest level of formal education, and knowing someone in the immediate family who has had cervical cancer.

Operational definition of sociodemographic characteristics/background. Sociodemographic characteristics/background were assessed with seven items with most being categorical items of which two were ordinal responses (English speaking ability, education), and two used an open-ended format for age moved to the U.S. and years lived in the U.S. The responses were reported as frequencies, percentages, mean, and standard deviation. One item was adapted and modified from the FBCW Mammography and Pap Testing Questionnaire (Lee-Lin et al., 2008) (knowing anyone in the immediate family who has had cervical cancer) See questions 78-80, 82-84, and 92 in Appendix A.

Conceptual definition of having a friend(s) ever suggested Pap testing. Having had a friend(s) ever suggested Pap testing.

Operational definition of having a friend(s) ever suggested Pap testing. One categorical item (no = 0, yes = 1, not sure/do not know = -8) was adapted and modified from the VWHPQ (Taylor et al., 2004). The response was reported as a frequency, percentage, mean, and standard deviation. See question 18 in Appendix A.

Conceptual definition of having a family member(s) ever suggested Pap testing. Having had a family member(s) who was a blood kin(s) or relative(s) ever suggested Pap testing.

Operational definition of having a family member(s) ever suggested Pap testing. One categorical item (no = 0, yes = 1, not sure/do not know = -8) was adapted and modified from the VWHPQ (Taylor et al., 2004). The response was reported as a frequency, percentage, mean, and standard deviation. See question 17 in Appendix A.

Conceptual definition of having a regular primary health care provider. Having seen a regular primary health care provider.

Operational definition of having a regular primary health care provider. One categorical item (no = 0, yes = 1, not sure/do not know = -8) was adapted and modified from the VWHPQ (Taylor et al., 2004). The response was reported as a frequency, percentage, mean, and standard deviation. See question 2 in Appendix A.

Conceptual definition of having a doctor or nurse practitioner ever recommended Pap testing. Having had a doctor or nurse practitioner ever recommended Pap testing.

Operational definition of having a doctor or nurse practitioner ever recommended Pap testing. One categorical item (no = 0, yes = 1, not sure/do not know = -8) was adapted and modified from the VWHPQ (Taylor et al., 2004). The response was reported as a frequency, percentage, mean, and standard deviation. See question 16 in Appendix A.

Conceptual definition of quality of care from the health care system. Quality of care from the health care system was defined as an individual's view on the quality of care from the health care system.

Operational definition of quality of care from the health care system. Quality of care from the health care system was measured by five items on a 5-point Likert scale ranging from 1 to 5, with 1 being strongly disagree to 5 being strongly agree. The responses were summed (range = 5-25) with a higher score indicating a greater view of the quality of care from the health care system. Items were adapted and modified from the HGS (Nguyen et al., 2006) (five items, quality of care from the health care system). Of the original five items for the quality of care from the health care system scale, one item was not adapted because the question pertained to trust in the doctors and other HCPs to do what is best for

patients which was not relevant to the conceptual definition in this study. One other item was adapted and modified to, "When going to a doctor or nurse practitioner for health care services, Vietnamese receive the same quality of health care as Caucasian/non-Hispanic Whites" because this pertained to thoughts on the quality of care from the health care system. The remaining five items were developed into a scale. The original response scale varied across items. See questions 70-74 in Appendix A.

Conceptual definition of health care insurance coverage for cervical cancer screening. Having health care insurance which provides coverage for cervical cancer screening.

Operational definition of health insurance coverage for cervical cancer screening. One categorical item (no = 0, yes = 1, not sure/do not know = -8) for health insurance coverage for cervical cancer screening was adapted and modified from the FBCW Mammography and Pap Testing Questionnaire. The responses were reported as a frequency, percentage, mean, and standard deviation. See question 89 in Appendix A.

Conceptual definition of the HPV vaccine. The HPV vaccine was defined as a medication that is given by an intramuscular route to prevent some forms of the human papilloma virus which can lead to the development of cervical cancer.

Operational definition of HPV vaccine. The HPV vaccine was assessed with five items. Four items were categorical (no = 0, yes = 1, not sure/do not know = -8) with one open-ended format ("Please list other concerns you have regarding the HPV vaccine"). The responses were reported as frequencies, percentages, means, and standard deviations. See questions 58-62 in Appendix A.

Conceptual definition of community resources. Community resources was defined as identifying available cervical cancer programs in the community.

Operational definition of community resources. Community resources was assessed with seven items. Six items were categorical (no = 0, yes = 1, not sure/do not know = -8) with one open-ended format (specify names of the cervical cancer programs in the community). Two items were adapted and modified from the HGS (Nguyen et al., 2006) (knowing where to go to get free or low-cost Pap test, having ever attended a Community Forum on cervical cancer and Pap testing). The responses were reported as frequencies and percentages. See questions 64-69 in Appendix A.

Definitions of Research Variables for Secondary Aims

Conceptual definition of exposure to media. An individual who has heard of, read, or seen anything about cervical cancer and Pap testing on television, radio, or internet, or in a newspaper, booklet, or brochure.

Operational definition of exposure to media. Exposure to media was assessed with one categorical item (no = 0, yes = 1, not sure/do not know = -8). The responses were reported as a frequency, percentage, mean, and standard deviation. See question 63 in Appendix A.

Conceptual definition of Pap test intention. Pap test intention was defined as the degree to which an individual who has never had a Pap test is planning to obtain a Pap test within the next three years.

Operational definition of Pap test intention. Pap test intention was assessed with one item using a 5-point Likert response scale with 1 being strongly disagree to 5 being

strongly agree. The responses were reported as frequencies and percentages. See question 9a in Appendix A.

Definitions of Other Descriptive Variables

Other descriptive individual influencing factors at the intrapersonal level. Country of birth (one item, Vietnam, other), region of Vietnam where primarily raised (one item, Northern region, Central region, Southern region), age (one item, open-ended), Vietnamese speaking ability (one item, not at all, poorly, average, well, fluently), employment status (one item, not employed, less than part-time, more than part-time, full time), occupation (one item, homemaker, student, retired, other), total household income (one item, less than $15,000, between $15,000 and $29,999, between $30,000 and $44,999, between $45,000 and $59,999, between $60,000 and $74,999, between $75,000 and $89,000, greater than or equal to $90,000), having a history of a hysterectomy (one item, no, yes), and knowing anyone who has had cervical cancer (one item, no, yes) were only meant to be descriptive in which results were reported as frequencies and percentages. Items were adapted and modified from the FBCW Mammography and Pap Testing Questionnaire (Lee-Lin et al., 2008) (one item, knowing anyone who has had cervical cancer) and from the VWHPQ (Taylor et al., 2004) (one item, having a history of a hysterectomy). See questions 12, 75-77, 81, 85-87, and 91 in Appendix A.

Other descriptive external influencing factors at the organizational level. Having a regular place of care (one item; no, yes), gender of regular primary HCP (one item), Vietnamese ethnicity or non-Vietnamese regular primary HCP (one item), and having a preference for a female HCP to perform a Pap test (one item; yes, no, does not matter) were only meant to be descriptive. Results were reported as frequencies and percentages. Items

were all adapted and modified from the VWHPQ (Taylor et al., 2004) except for preference for a female HCP to perform a Pap test (FBCW Mammography and Pap Testing Questionnaire, Lee-Lin et al., 2008). See questions 1, 4, 5, and 90 in Appendix A.

Conceptual definition of perceived causes of cervical cancer. Perceived causes of cervical cancer was defined as identifying causes of cervical cancer.

Operational definition of perceived causes of cervical cancer. Perceived causes of cervical cancer was assessed with one categorical item that contained eight multiple-choice responses (infection with HPV [human papilloma virus] = 0, 1, infection with STDs [sexually transmitted diseases] = 0, 1, genetics/family history = 0, 1, smoking/second hand smoking = 0, 1, hygiene/cleanliness = 0, 1, God's will = 0, 1, other [please specify] = -99, not sure/do not know = -8). See question 7 in Appendix A. This item was adapted and modified from the HGS (Nguyen et al., 2006). The responses were recorded as frequencies and percentages.

Conceptual definition of Pap testing frequency. Pap testing frequency was defined as how often an individual has a Pap test.

Operational definition of Pap testing frequency. Pap testing frequency was assessed with one categorical item that contained five multiple-choice responses (0 = none at all, 1 = once every year, 2 = once every 2 years, 3 = once every 3 years, other [please specify] = -99). The responses were reported as frequencies and percentages. This item was adapted and modified from the FBCW Mammography and Pap Testing Questionnaire (Lee-Lin et al., 2008). See question 11 in Appendix A.

The final English and Vietnamese version study questionnaire, the Vietnamese Immigrant Women's Pap Testing Questionnaire, consisted of 92 items (Appendix A). See Appendix B for the Proposed Questionnaire Map Plan.

Study Addressed Gaps in the Literature

This study has addressed some of the gaps in the literature. (1) There are little data regarding what might be different among VIW regarding contributing factors to Pap testing (Burke et al., 2004; Ho et al., 2005; Nguyen, Barg, Armstrong, Holmes, & Hornik, 2007; Nguyen et al., 2003; Schulmeister & Lifsey, 1999) as most studies did not differentiate between U.S.-born and immigrant data (Bird et al., 1998; Do et al., 2007; Gomez et al., 2007; Jenkins et al., 1999; Kandula et al., 2006; Lam et al., 2003; Mock et al., 2007; Nguyen, et al., 2002; Ponce et al., 2006; Taylor et al., 2004; Tung et al., 2008; Xu et al., 2005; Yi, 1998). This study has examined awareness, knowledge, confidentiality issues, beliefs regarding cervical cancer and Pap testing, Pap testing practices, individual and external influencing factors, and quality of care from the health care system with that of Pap test receipt and Pap test adherence among VIW. (2) Most descriptive and intervention studies lacked a conceptual or theoretical framework (Bird et al., 1998; Do et al., 2007; Jenkins et al., 1999; Kandula et al., 2006; Mock et al., 2007; Ponce et al., 2006; Xu et al., 2005; Yi, 1998). The EM of health behavior (Sallis et al., 2008) was used as the theoretical framework in this study. The EM included intrapersonal explanations as well as external explanations (interpersonal, organizational, community resources, and health insurance mandate influences) regarding VIW's engagement in cervical cancer screening. (3) Studies similar to this study did not report on the reliability and/or validity of the instruments (Do et al., 2007; Ho et al., 2005; Nguyen et al., 2002; Taylor et al., 2004). This study addressed meaningful translation which helps enhanced validity of the Vietnamese translated instruments. Validity enhancement in cross cultural research is important in the areas of translation of instruments and measurement procedures so as to support construct equivalence of the original and

adapted instrument; and the use of literal translation can lead to construct bias (Vijver & Leuong, 1997). This study has also assessed the internal consistency reliability of the scale items using a Cronbach's alpha. The knowledge of the structural validity of the modified Revised Susceptibility, Benefits, and Barriers and of the modified Cultural Barriers to Screening Inventory has been extended, as no study to date has examined the fit of these factor structures for VIW.

The knowledge gained from this study has moved the science forward through explanation of what is different for VIW regarding contributing factors to Pap testing. This study used a theoretical framework that included examining multiple influences on cervical cancer screening, and will help to inform culturally appropriate and relevant interventions directed at increasing Pap test screening rates among VIW. The findings will also inform primary HCPs about this at risk underserved population.

Implications and Significance to Nursing

The low cervical cancer screening rates reduce the likelihood of early detection of pre-cancerous and cancerous lesions when cervical cancer is curable. VAW have had higher late stages of cervical cancer diagnoses than White non-Hispanic women (Miller et al., 2008). Further education and promotion about cervical cancer screening is needed for VAW. The knowledge gained from this study has moved the science forward by explaining what is different for VIW regarding contributing factors to Pap testing. Understanding contributing factors to cancer screening among VIW is necessary to inform culturally sensitive and relevant interventions to increase cervical cancer screening for this underserved group. This includes the consideration of targeting individual and external influencing factors that can be changed, and to also inform primary HCPs about this at-risk underserved

population. The definition of primary HCPs was expanded to include nurse practitioners to reflect current practice of advanced practice nurses. The findings will impact nursing practice because advanced practice nurses are increasingly doing cervical cancer screenings and can promote education and screening by understanding these influencing factors. External explanations such as access to a provider, having a doctor or nurse practitioner ever recommended Pap testing, family or friends ever suggested Pap testing, health care insurance coverage, and visibility/availability of screening programs, all contribute to the EM for explaining VIW's engagement in cervical cancer screening. These move beyond explanations that hold individuals solely responsible for not engaging in screening.

Studies that used community-based and adopted culturally relevant methods for teaching cervical cancer screening have shown promise for improving Pap testing rates. The assessment of psychometric properties of the questionnaires in this study can be used to inform future studies that use these measures of confidentiality issues regarding Pap testing, beliefs, and view of the quality of care from the health care system for VIW.

Using a CBPR approach for this study is the most appropriate method for addressing the cervical cancer health disparity. This is significant in nursing because of its orientation to research that was collaborative and community-based rather than community-placed (Minkler & Wallerstein, 2003). This partnership approach in conducting research strived to equitably and actively involve community members, organizational representatives, and researchers in all aspects of the research process (Israel, Eng, Schulz, & Parker, 2005). CBPR principles included having addressed a relevant local public health issue in the Vietnamese community and having used the EM as a comprehensive framework for examining influencing multiple factors to Pap testing. Another CBPR principle that was

implemented focused on promoting co-learning and capacity building. For example, researchers learned from community members' held understandings about the Vietnamese community by participating in community outreach activities. Active involvement of community members in all aspects of the research process helped community members acquire skills in how to conduct research. Study design addressed issues around cultural sensitivity and appropriateness which helped improve the quality of this study.

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CHAPTER 2 LITERATURE REVIEW MANUSCRIPT

Contributing Factors to Cervical, Breast, and Colorectal Cancer Screening, Hepatitis B Screening, and Practices Among Vietnamese Americans

Contributing Factors to Cervical, Breast, and Colorectal Cancer Screening, Hepatitis B Screening, and Practices Among Vietnamese Americans

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Abstract

Purpose/Objectives: Held cultural values and diagnosis of taboo diseases such as cancer may be contributing factors to the high incidence of deaths among Asian American Pacific Islanders. The leading cancers among Vietnamese Americans are cervical, breast, colorectal, and liver and bile duct. Hepatitis B is a sexually transmitted disease and can be passed during childbirth and is included in this review because of relevant screening for treatment. The objective of this paper is to conduct a systematic integrative descriptive review of published research that examined contributing factors to cervical, breast, and colorectal cancer screening and hepatitis B screening and practices among Vietnamese Americans. Cervical and breast cancer screening are primarily targeted at women while colorectal cancer and hepatitis B screening are targeted at both women and men.

Data Sources: Ovid MEDLINE ®, Cumulative Index to Nursing and Allied Health Literature, and PsycINFO computerized databases from January 1998 to the fourth week in April 2009.

Data Synthesis: Of the 35 studies reviewed, 23 (66%) were descriptive, seven (20%) were interventions, and five (14%) were qualitative. Instruments were developed, adapted, or translated into the Vietnamese language. Inconsistent operational definitions for contributing factors to cancer screening made it challenging to make comparisons across studies. Colorectal, hepatitis B, and cervical cancer screening is consistently low among Vietnamese Americans; although breast cancer screening appears to be adequate among Vietnamese American women.

Conclusions: Some intervention studies showed promise in improving cervical and breast cancer screening rates. Further intervention studies are needed to increase cervical cancer

screening, colorectal and hepatitis B screening. Contributing factors including sociodemographic characteristics, knowledge, beliefs, and influences were identified. **Implications for Nursing:** Vietnamese is a fast growing ethnic subgroup within the Asian American Pacific Islander group and therefore, further research is urgently needed to address cancer control. Future studies should focus on United States-born and immigrants and women and men as disaggregated subgroups. Culturally sensitive and relevant interventions may improve cancer screening rates.

Keywords: literature review, cancer screening, cervical cancer screening, breast cancer screening, colorectal cancer screening, hepatitis B screening, Vietnamese Americans

Contributing Factors to Cervical, Breast, and Colorectal Cancer Screening, Hepatitis B Screening, and Practices Among Vietnamese Americans

Introduction

Cancer is the leading cause of death for Asian American and Pacific Islanders, (AAPI) at 26.8% of the total deaths, while heart disease is the leading cause of death for White non-Hispanic, African American, American Indian and Alaska Native, and Hispanic individuals (Heron, 2007). The leading cancers among Vietnamese Americans, a subgroup within the AAPI racial group, are cervical, breast, colorectal, liver and bile duct. Cancer screening among Vietnamese women and men living in the United States (U. S.) (U.S.-born and immigrants) is urgently needed to address cancer control for this at-risk population.

The combined AAPI as a group represent more than 60 racial-ethnic groups or subgroups (Burlew, 2003). Since 1990, the Vietnamese population in the U.S. has doubled from about 614, 869 to approximately 1.1 million (Barnes & Bennett, 2002; Paisano et al., 1993). Cultural held beliefs, barriers, and access issues that might prevent early detection of pre-cancerous and cancerous lesions among Vietnamese Americans need to be better understood in order to decrease cancer incidence and mortality rates.

An explanation of cancer incidence and mortality rates, late stage diagnoses of cancer related infection (cervical and liver cancer), common cancer rates (breast and colorectal cancer), and cancer screening rates are provided, followed by the systematic review of published relevant studies.

Cancer Incidence, Mortality Rates, and Late Stage Diagnoses

Cancer related infection. Cervical and liver cancer can be caused by a viral infection (human papilloma virus (HPV), hepatitis B virus (HBV) respectively) (American

Cancer Society [ACS], 2009). Surveillance data (2001-2006) reported lower age-adjusted cervical cancer incidence rates among AAPI women (7.6 per 100,000) compared to White non-Hispanic women (7.9 per 100,000) and lower compared to African American and Hispanic women (Jemel, Siegel, Xu, & Ward, 2010). However, data (1998-2002) indicated that Vietnamese American women (VAW) were diagnosed at twice the rate of White non-Hispanic women (16.8 vs. 8.1 per 100,000 respectively) and higher than all larger Asian ethnic subgroups (Chinese, Filipino, Japanese, and Korean) (Miller, Chu, Hankey, & Ries, 2008). VAW were more often diagnosed with late stage (regional) cervical cancer compared to White non-Hispanic women (36% vs. 28% respectively) and Korean and Japanese Asian women subgroups (Miller et al., 2008). In addition, VAW died at a higher rate from cervical cancer compared to White non-Hispanic women (4.4 vs. 2.4 per 100,000 respectively) and higher than all larger Asian ethnic subgroups (Miller et al.).

Surveillance data (2002-2006) reported higher age-adjusted incidence rates for liver and bile duct cancer among AAPI women compared to White non-Hispanic women (8.1 vs. 2.8 per 100,000 respectively) and among AAPI men compared to White non-Hispanic men (21.4 vs. 8.0 per 100,000 respectively) (Jemel et al., 2010). Data (1998-2002) also indicated that VAW were diagnosed higher with liver and bile duct cancer compared to White non-Hispanic women (16.8 vs. 2.6 per 100,000 respectively). The incidence of liver and bile duct cancer was also higher among Vietnamese American men (VAM) compared to White non-Hispanic men (55.5 vs. 6.7 per 100,000 respectively) and higher than all larger Asian ethnic subgroups (Chinese, Filipino, Japanese, Korean) (Miller et al., 2008). In addition, the liver and bile duct cancer death rate was highest in Vietnamese Americans among the larger Asian subgroups (Chinese, Filipino, and Japanese) and White non-Hispanic (Miller et al.).

Common cancer. The leading cause of cancer among AAPI women was breast cancer (Centers for Disease Control and Prevention [CDC], 2010). VAW were diagnosed with breast cancer lower than White non-Hispanic women (52.8 vs. 145.2 per 100,000 respectively) and lower than all larger Asian ethnic subgroups (Miller et al., 2008). However, breast cancer was the leading cause of cancer among VAW and presented more often with late stage (regional) diagnosis compared to White non-Hispanic women (36% vs. 26% respectively) and also to all other larger Asian ethnic subgroups (Miller et al.). VAW who were diagnosed with regional (regional spread or metastases to the regional lymph node) breast cancer had a lower five year cause-specific survival rate (68.7%) (1988-2001) compared to all larger Asian ethnic subgroups (Chinese, Filipino, Japanese, Korean) (Clegg & Gloeckler, n. d.).

The second leading cause of cancer for AAPI women is colorectal cancer, where as it was the third leading cause of cancer for AAPI men (CDC, 2010). Data (1998-2002) indicated that VAW were diagnosed with colorectal cancer lower than White non-Hispanic women (33.3 vs. 47.6 per 100,000 respectively). The rate of colorectal cancer was also low among VAM when compared to White non-Hispanic men (41.2 vs. 65.6 per 100,000 respectively) and lower than most larger Asian ethnic subgroups (Chinese, Japanese, and Korean) (Miller et al., 2008). However, colorectal cancer was one of the top five leading causes of cancer for both VAW and VAM. In addition, VAW presented more often with late stage (regional) colorectal cancer diagnosis compared to White non-Hispanic women (43% vs. 32% respectively) as did VAM when compared to White non-Hispanic men (42% vs. 30% respectively) and when compared to all larger Asian ethnic subgroups (Miller et al.).

Deaths attributed to colorectal cancer were one of the top five cancer mortality rates for Vietnamese Americans.

Cancer Screening Rates

A Papanicolaou (Pap) test screens for pre-cancerous and cancer lesions of the cervix. Women should adhere to Pap testing at least once every three years (Saslow et al., 2002). Adherence to Pap testing was lower among Asian American women compared to White non-Hispanic women (64.4% vs. 78.1% respectively) and lower compared to all racial-ethnic groups (CDC, 2007). This rate was also low compared to the Healthy People 2010 objectives, which specifies for 90% of women aged 18 and older to have a Pap test within the past three years.

Breast cancer screening (mammogram) rates in the past two years was low among Asian women compared to White non-Hispanic women (54.6% vs. 68.4% respectively) and low compared to all other racial-ethnic groups (CDC, 2007). This rate was also lower than the Healthy People 2010 objective which specifies for 70% of women aged 40 years and older to have received a mammogram within the past two years (CDC, 2003).

Colorectal cancer screening rates (fecal occult blood test (FOBT) in the past year and/or a sigmoidoscopy or colonoscopy in the past ten years) among AAPI women and men were low compared to White non-Hispanic women and men (55.9% vs. 62.6% respectively) (CDC, 2008). This rate appeared to meet the Healthy People 2010 objective that specifies 50% of adults aged 50 and older should have received a sigmoidoscopy and a FOBT in the past two years (CDC, 2003).

Those with chronic hepatitis B are recommended to undergo regular liver cancer screening beginning at the age of 30 years (Hepatitis B Foundation Cause for a Cure, 2003-

2008). Currently, there are no formally stated objectives for hepatitis B screening rates. National cancer screening rates are not available for VAW and VAM.

Literature about contributing factors to cancer screening and screening practices among Vietnamese Americans (U.S.-born and immigrants) is growing. An integrative review of the literature is necessary for summarizing existing research to systematically assess contributing factors to cervical (Pap test), breast (mammography, clinical breast examination [CBE]), and colorectal cancer screening (FOBT, sigmoidoscopy, or colonoscopy), and hepatitis B screening (Hep B serologic testing [hepatitis B test]) among Vietnamese Americans. Vietnamese Americans can hold cultural health beliefs including rarely seeking care when asymptomatic, relying on the family and traditional means (e.g., balancing hot and cold forces to ensure good health) to provide their health care needs, believing that life is predetermined, and perceiving the possibility of surgery as terrifying (Purnell, 2008). Understanding contributing factors to cancer screening among this group is necessary to inform culturally sensitive and relevant interventions to increase cervical, breast, and colorectal cancer and hepatitis B screening for this underserved group.

The review focused on cervical, breast, and colorectal cancer and hepatitis B screening practices among Vietnamese Americans; identified contributing factors to cancer screening; and reviewed interventions to increase adherence to cervical and breast cancer screening among VAW. Screening was defined as the searching for disease including cancer in people who are asymptomatic. Prevention is an action taken to decrease cancer risk by eliminating or reducing contact with factors known to cause cancer or by changing conditions that contribute to cancer such as a lifestyle change (ACS, 2011). This review focused on screening because with screening cancers of the cervix, breast, colon and rectum

can be detected in its early stage. This is significant to cancer control because regular screening exams can result in detection and removal of pre-cancerous lesions before they become malignant (ACS, 2009). Hepatitis B screening was considered a parallel model for liver cancer screening in this review because a common risk factor for liver cancer is chronic infection with HBV; an infection is common in Asian countries (ACS, 2010). Asian Americans who develop chronic hepatitis B soon after birth have a high risk of developing liver cancer at an early age with men at greater risk (Hepatitis B Foundation Cause for a Cure, 2003-2008).

Methods

Search strategies were developed with an Oregon Health & Science University Senior Reference and Instruction Librarian, and included subject headings (MeSH), keywords, and descriptors as appropriate. Language restrictions were applied (English and Vietnamese). The initial search was conducted in three computerized databases from January 1998 to April 2009: Ovid MEDLINE (R), Cumulative Index to Nursing and Allied Health Literature (CINAHL), and PsycINFO. Search strategies were first developed for Ovid MEDLINE (R) and then MeSH, keywords, and descriptors were translated for CINAHL and PsycINFO. See table 1 for search strategies in Ovid Medline (R). A broad approach was tested which combined terms relating to the population and topic of interest that resulted in 87 references. Ovid MEDLINE (R), CINAHL, and PsycINFO yielded 54, 22, and 11 articles, respectively. The first and second author independently conducted the search and assessed the title and abstract of each retrieved references, met for discussion, and then arrived at a consensus.

Table 1. Search Strategies in Ovid Medline (R)

	Ovid Medline (R) 1996 to April Week 4, 2009	Articles Yielded
1	exp mass screening/	53535
2	screen$.mp.	198844
3	1 or 2	201536
4	cancer screening.mp.	6836
5	Vietnam$.mp.	4166
6	4 and 5	37
7	exp Neoplasms/	798932
8	3 and 7	42413
9	5 and 7	208
10	3 and 5 and 7	67
11	3 or 9	201677
12	9 and 10 and 11	67
13	Limit 12 to yr = “1998-2008”	54

Note. exp, explode; $, truncation; mp, searches the title, abstract, heading word, table of contents, key concepts; yr, year.

Of the 87 retrieved references, 19 articles were duplicated among the computerized databases, and thus 68 retrieved references remained. Two dissertations, two literature reviews, and two non-research articles were excluded from the review that resulted in 62 retrieved references. The screening process was by title, then by abstract, and lastly by full papers. Of the 62 retrieved references, 24 articles were excluded at the title screening stage and five were excluded at the abstract stage because they did not pertain to both the population and topic of interest. Seven additional references were retrieved after a manual hand search of the reference lists from the remaining 33 articles. Of the 40 articles examined, eight articles were excluded after a full paper review because it involved nonspecific Asian populations, was a literature review, did not pertain to the topic of interest, or summarized results of a study which are included in the retrieved references. An updated search was conducted from May 2008 to the fourth week in April 2009 and adhered to the same inclusion and exclusion criteria established for the initial search. Four additional articles resulted from the search of which one article was excluded after a full paper review. A total of nine excluded articles were summarized in table 2. The Smith & Stullenbarger (1991) model was used as a tool to systematically extract variables of interest and generic study elements for this systematic integrative review. See table 3 for a summary of the 35 reviewed studies. Twenty-three (66%) studies were descriptive, seven (20%) were interventions, and five (14%) were qualitative. Fourteen focused on both VAW and VAM, 19 on VAW only, one on VAM only, and one on local health care delivery providers for Vietnamese Americans. For types of screening, 11 focused on colorectal cancer, six on hepatitis B, 13 on breast cancer, and 18 on cervical cancer. Some of the studies focused on

more than one type of cancer screening. See table 4 for the cervical, breast, colorectal cancer, and hepatitis B screening rates.

Table 2. Excluded Articles Post Full Paper Review

Study	Rationale for Exclusion
De Alba et al., 2004	Nonspecific Asian population
Kagawa-Singer & et al., 2007	Nonspecific Asian population
Phipps et al., 1999	Nonspecific Asian population
Wang et al., 2008	Nonspecific Asian population
McPhee, 1998	Literature review
McPhee & Nguyen, 2000	Literature review
Nguyen, McPhee, Bui-Tong, & et al., 2006	Did not pertain to review topic
Tanjasiri et al., 2004	Did not pertain to review topic
Nguyen, McPhee, Gildengorin, & et al., 2006	Results summary

Table 3. Cervical, Breast, and Colorectal Cancer Screening, and Hepatitis B Screening Studies on Vietnamese Americans

Study	Purpose/Aim	n	Participants	Setting	Design
Women					
Bird et al., 1998	Develop and test the impact of a community outreach intervention to promote screening for breast and cervical cancer	645 (baseline) 717 (follow-up)	U.S. born & immigrant F, ethnic is Chinese, born in Vietnam	San Francisco, CA (intervention), and Sacramento CA (control)	Intervention, three-year period; lay health workers; intervention study
Burke et al., 2004b	To identify cultural factors influencing Pap testing knowledge, including barriers and facilitators to testing; to develop intervention materials to promote knowledge about cervical cancer risk factors and to increase Pap testing rates	total n =53 25 individual interviews, 5 focus groups	immigrant F, mean age 57 years	Seattle, WA	Qualitative interviews, focus groups
Do et al., 2007	To examine knowledge of established cervical cancer risk factors and beliefs about the causes of cervical cancer	352	U.S. born & immigrant F	Seattle, WA	Descriptive

Study	Purpose/Aim	n	Participants	Setting	Design
Gomez et al., 2007	To identify clustered characteristics of Asian American women most likely not to follow mammography screening guidelines and examined Pap test and colorectal screening practices	total n = 1521 Vietnamese, n = 226	U.S. born & immigrant F	CA	Descriptive
Ho et al., 2005	To describe and test the effects of demographic factors, beliefs, and barriers to cervical and breast cancer screening	209	immigrant F	Harris County, TX	Pilot study, Descriptive
Jenkins et al., 1999	To improve rates of annual checkups and breast and cervical cancer screening tests by Vietnamese American women	933 (baseline) 876 (follow-up)	U.S. born & immigrant F	Santa Clara and Alameda Counties, California (intervention), and Los Angeles and Orange Counties, CA (control)	Intervention, 24-month period (1992-1994), midpoint surveys and randomized post-intervention telephone interviews

Study	Purpose/Aim	n	Participants	Setting	Design
Lam et al., 2003	To compare the impact of a media education campaign alone versus a lay health worker outreach program and the media education campaign to increase women's cervical cancer awareness, knowledge, and screening	400	U.S. born & immigrant F	Santa Clara County, CA	Intervention
McGarvey et al., 2003	To examine breast cancer health beliefs of low-income, older Hispanic, Vietnamese, and Cambodian American women to inform the development of an intervention	total n = 78 Vietnamese, n =28	U.S. born & immigrant F	northern Virginia, non-profit health and occupational counseling agency	Descriptive
Mock et al., 2007	To compare a lay health worker outreach plus media-based education and media-based education only to increase women's	968	U.S. born & immigrant F	Santa Clara County, CA	Intervention

Study	Purpose/Aim	n	Participants	Setting	Design
	awareness, knowledge, and pap testing				
Nguyen, et al., 2002	Predictors of cervical screening: awareness, intention, and receipt	1, 566	U.S. born & immigrant F, and ethnic Chinese, born or lived in Vietnam	Santa Clara County, CA, and Harris County, TX	Descriptive
Nguyen, et al., 2001	To promote early detection of breast cancer and continue medical education seminars for Vietnamese physicians	807	U.S. born & immigrant F, mean age 51.5 years (intervention), 52.5 yrs (control)	Alameda County, CA (intervention), and Los Angeles and Orange Counties, CA (controls)	Intervention, neighborhood-based interventions
Ponce et al., 2006	To examine the relationship between primary language use and receipt of cervical cancer screening	total n = 38, 931 Vietnamese, n = 396	U.S. born & immigrant F	CA	Descriptive
Sadler et al., 2001	To examine breast cancer knowledge, attitudes, and screening adherence	275	U.S. born & immigrant F, mean age 42 years	Asian grocery stores in San Diego, CA	Intervention (part of a larger breast cancer education study)

Study	Purpose/Aim	n	Participants	Setting	Design
Schulmeister & Lifsey, 1999	Knowledge of, beliefs, and practices of cervical cancer screening	96	immigrant F	five Vietnamese churches in southeastern Louisiana	Descriptive
Taylor et al., 2004a	Factors associated with interval Pap testing adherence	352	U.S. born & immigrant F	southern metropolitan Seattle, WA	Descriptive
Tung et al., 2008	To examine stages of change, self-efficacy, and perceived benefits and barriers to Pap testing	80	U.S. born & immigrant F, mean 39.9 years	Los Angeles and San Francisco, CA including cities: Atlanta, New York Phoenix, Salt Lake City, and Tucson	Descriptive
Yi, 1998	Prevalence of Pap test screening among college-aged women	201	U.S. born & immigrant F, mean age 22.7 years	University of Houston TX	Descriptive
Yi & Luong, 2005	To evaluate the effect of an apartment-based breast cancer educational program on breast cancer knowledge and screening	n=166 (control) n=179 (intervention)	U.S. born & immigrant F, mean age 55 years	low-income apartments, Houston, TX	Intervention
Yi & Reyes-Gibby,	To determine the prevalence and	345	U.S. born & immigrant F,	apartment complexes in	Descriptive

Study	Purpose/Aim	n	Participants	Setting	Design
2002					
	predictors of breast cancer screening including breast self examination, CBE, and mammography screening		mean age 55 years	Houston, TX	
Health Care Providers					
Chilton et al., 2005	To identify factors that have a negative impact on cervical cancer prevention and screening	17	local health care delivery providers	Houston, TX	Qualitative interviews
Women and Men					
Burke et al., 2004a	(1) To identify cultural factors influencing hepatitis B knowledge, including self-knowledge, transmission, barriers and facilitators to testing; to develop culturally appropriate intervention materials	25 individual interviews, 6 focus groups	immigrant M & F, mean age 53 years	Seattle, WA	Qualitative interviews and focus groups

Study	Purpose/Aim	n	Participants	Setting	Design
Kandula et al., 2006	To examine colorectal, cervical, and breast cancer screening practices and reasons for not obtaining cancer screening	Total n = 41, 598 Vietnamese, n = 857	U.S. born, immigrant M & F, mean age 39.5 years	CA	Descriptive
Ma et al., 2007	To identify beliefs, attitudes, and practices about Hepatitis B Virus infection, its transmission, and liver cancer risks; to examine testing and vaccination history	256	primarily M & F immigrants, mean age 41.8 years	Philadelphia, PA and New Jersey	Descriptive
Maxwell & Crespi, 2009	To compare trends in colorectal cancer screening prevalence from 2001-2005 by ethnic group	total n = 21, 692 in year 2005 Vietnamese, n = 224	U. S.-born & immigrant M & F	CA	Descriptive
Nguyen, et al., 2006	To identify sources and credibility of health information, media utilization, and intervention approaches for promoting colorectal	total n= 34, 4 focus groups	Immigrant M & F	Oakland city of Alameda County and San Jose city of Santa Clara County, CA	Qualitative, focus groups

Study	Purpose/Aim	n	Participants	Setting	Design
	cancer screening				
Nguyen, et al., 2007	To examine elements of provider-patient cancer communication from older Vietnamese immigrants' perspectives on colorectal and breast cancer	20	immigrant M & F, median age 64.5 years	Philadelphia, PA	Qualitative interviews
Nguyen, et al., 2003	To determine the degree of preventive care utilization by Vietnamese and to examine factors that might influence colorectal, breast , and cervical cancer screening practices	952	immigrant M & F, mean age 57 years	Honolulu, Hawaii	Descriptive, chart review (1996-2000)
Nguyen, et al., 2008	To examine colorectal cancer screening rates and identify determinants of colorectal cancer screening recognition, receipt, intention, and being up-to-date	894	U.S.-born, & immigrant M & F	Alameda & Santa Clara Counties, CA, Harris County, TX	Descriptive

Study	Purpose/Aim	n	Participants	Setting	Design
Taylor et al., 2005	To describe hepatitis B awareness, self-reported Hepatitis B Virus testing, and knowledge about hepatitis B transmission; to compare the HBV knowledge and practices of Vietnamese men and women	715	primarily M & F immigrants	southern metropolitan Seattle, WA	Descriptive
Taylor et al., 2000	To examine Hepatitis B knowledge among Seattle's Vietnamese community	75	primarily M & F immigrants, mean age 44 years	metropolitan Seattle, WA	Descriptive
Xu et al., 2005	To identify specific cancer risk factors of Vietnamese Americans for colorectal, hepatitis B, breast, and cervical cancer	284	U.S. born & immigrant M & F	greater Mobile area, rural south Alabama	Descriptive (part of a larger study on cancer risk factors of Southeast Asian Americans)
Walsh et al., 2004	To identify receipt, maintenance, and intentions of colorectal cancer	total n = 775 Vietnamese, n = 239	M & F (nativity status not reported)	San Jose of Santa Clara County, CA	Descriptive

Study	Purpose/Aim	n	Participants	Setting	Design
	screening tests, and barriers and facilitators to colorectal cancer screening				
Wong et al., 2005	To examine colorectal cancer screening rates among different Asian American groups compared with non-Latino Whites and factors related to colorectal cancer screening	total n = 19, 498 Vietnamese, n = 320	immigrant M & F	CA	Descriptive
Walsh, et al., 2009	To examine factors associated with colorectal cancer screening among Vietnamese Americans	total n= 808 n= 285M n= 523F	immigrant M & F mean age 60.84 years	Santa Clara Valley Medical Center in CA	Descriptive
Men					
Taylor et al., 2004b	To examine factors associated with Hepatitis B Virus testing among Vietnamese men	345	immigrants M	Seattle, WA	Descriptive

Note. n, sample size; &, and; F, females; CA, California; Pap, Papanicolaou; WA, Washington; TX, Texas; M, males; PA, Pennsylvania.

Table 4. Cervical, Breast, Colorectal Cancer Screening, and Hepatitis B Screening Rates Among Vietnamese Americans

		Pap Test (%F)			Mammography (%F)		CBE (%F)	Sigmoidoscopy (Sig) Colonoscopy (Col) FOBT (%M & F)		Hep B Test (%M & F)
Study	n	At Least Once	In Past One Year	In Past Three Years	At Least Once	In Past Two Years	At Least Once	At Least Once	In Past Ten Years	At Least Once
Kandula et al., 2006	857	–	–	62.3	–	72.7	–	–	42.2 Sig[c]/ FOBT[a]	–
Nguyen, et al., 2003	952	51.7	–	–	26	–	–	0 Sig/ Col	–	–
Ma et al., 2007	256	–	–	–	–	–	–	–	–	7.5
Taylor et al., 2005	total 715 370 F 345 M	–	–	–	–	–	–	–	–	67 68F 66M

		Pap Test (%F)			Mammography (%F)		CBE (%F)	Sigmoidoscopy (Sig) Colonoscopy (Col) FOBT (%M & F)		Hep B Test (%M & F)
Study	n	At Least Once	In Past One Year	In Past Three Years	At Least Once	In Past Two Years	At Least Once	At Least Once	In Past Ten Years	At Least Once
Taylor et al., 2004b	345	–	–	–	–	–	–	–	–	66M
Xu et al., 2005	284	60.1	–	–	50.7	–	62.7	21.5 Col	–	–
Walsh et al., 2004	239	–	–	–	–	–	–	24.7 Sig	18.4 Sig[c]	–
								23 Col	21.8 Col	
								66.9 FOBT	31.4 FOBT[a]	
Wong et al., 2005	320	–	–	–	–	–	–	36 Sig/ Col	34 Sig/ Col	–
								29 FOBT	18 FOBT[a]	

		Pap Test (%F)			Mammography (%F)		CBE (%F)	Sigmoidoscopy (Sig) Colonoscopy (Col) FOBT (%M & F)		Hep B Test (%M & F)
Study	n	At Least Once	In Past One Year	In Past Three Years	At Least Once	In Past Two Years	At Least Once	At Least Once	In Past Ten Years	At Least Once
Maxwell & Crespi, 2009	Vietnamese 224	–	–	–	–	–	–	50 Sig/ Col 29 FOBT	43 Sig[c]/ Col[c] 10 FOBT[a]	–
Nguyen, et al., 2008	894	–	–	–	–	–	–	20 Sig 26 Col 48 FOBT	16 Sig[c] 23 Col 25 FOBT[a]	–

		Pap Test (%F)			Mammography (%F)		CBE (%F)	Sigmoidoscopy (Sig) Colonoscopy (Col) FOBT (%M & F)		Hep B Test (%M & F)
Study	n	At Least Once	In Past One Year	In Past Three Years	At Least Once	In Past Two Years	At Least Once	At Least Once	In Past Ten Years	At Least Once
Walsh, et al., 2009	Total									
	808	–	–	–	–	–	–	–	19.3 Sig[c]	–
									28.1 Col	
									53.3 FOBT[a]	
	523F								63.8F Sig[c]/ Col	
									55.8F FOBT[a]	
	285M								36.2M Sig[c]/ Col	
									48.8M	
									FOBT[a]	

		Pap Test (%F)			Mammography (%F)		CBE (%F)	Sigmoidoscopy (Sig) Colonoscopy (Col) FOBT (%M & F)		Hep B Test (%M & F)
Study	n	At Least Once	In Past One Year	In Past Three Years	At Least Once	In Past Two Years	At Least Once	At Least Once	In Past Ten Years	At Least Once
Ho et al., 2005	209	68	89	–	45	15[a]	–	–	–	–
Gomez et al., 2007	226	80	–	–	–	69	–	–	–	–
McGarvey et al., 2003	28	–	–	–	47	–	–	–	–	–
Yi & Reyes-Gibby, 2002	345	–	–	–	32.8	–	48.7	–	–	–
Nguyen, et al., 2002	1, 566	76	82.5	–	–	–	–	–	–	–
Schulmeister & Lifsey, 1999	96	46	30	–	–	–	–	–	–	–
Taylor et al., 2004a	352	71	45	68 62[b]	–	–	–	–	–	–
Tung et al., 2008	80	62.5	–	–	–	–	–	–	–	–
Yi, 1998	201	36.8	–	89.1[a & b]	–	–	–	–	–	–

Note. Pap, Papanicolaou test; CBE, clinical breast exam; FOBT, fecal occult blood test; Hep B, hepatitis B test; F, females; M, males; &, and.
[a] performed in past one year.

[b] performed in past two years.
[c] performed in past five years.

Cervical Cancer Screening

Approximately 37-80% of VAW reported having at least one Pap test (Gomez, Tan, Keegan, & Clarke, 2007; Ho et al., 2005; Nguyen, Withy, Nguyen, & Yamada, 2003; Nguyen, McPhee, Nguyen, Lam, & Mock, 2002; Schulmeister & Lifsey, 1999; Taylor et al., 2004a; Tung, Nguyen, & Tran 2008; Xu, Ross, Ryan, & Wang, 2005; Yi, 1998), of which five studies reported screening adherence. Approximately 30-89% of VAW reported having had a Pap test within the past one year (Ho et al., 2005; Nguyen et al., 2002; Schulmeister & Lifsey, 1999; Taylor et al., 2004a; Yi) and Yi reported that 89% of their participants had a Pap test within the past one or two years. Taylor et al. (2004a) reported that 62% of VAW as having had a Pap test within the past two years, and up to 68% of VAW reported having had a Pap test in the past three years (Kandula, Wen, Jacobs, & Lauderdale, 2006).

Breast Cancer Screening

Approximately 26-51% of VAW reported having had at least one mammogram (Ho et al., 2005; McGarvey et al., 2003; Nguyen et al., 2003; Xu et al., 2005; Yi, & Reyes-Gibby, 2002), of which only one study reported screening adherence. Ho et al. (2005) reported that 15% of Vietnamese immigrant women participants had a mammogram within the past one year. Two studies reported that 69% and 73% of VAW had a mammogram within the past two years (Gomez et al., 2007; Kandula et al., 2006). Only two studies reported CBE screening rates: 49% and 63% reported having had at least one CBE (Xu et al.; Yi & Reyes-Gibby).

Colorectal Cancer Screening

Eight studies provided data on colorectal cancer screening for VAW and VAM, of which only six studies reported screening adherence. Approximately 0-67% of Vietnamese

Americans reported having had a least one colorectal cancer screening test (FOBT, sigmoidoscopy, or colonoscopy) (Maxwell & Crespi, 2009; Nguyen, McPhee, Stewart, & Doan, 2008; Nguyen et al., 2003; Xu et al., 2005; Walsh et al., 2004; Wong, Gildengorin, Nguyen, & Mock, 2005). Approximately 10-53% of Vietnamese Americans reported having had a FOBT within the past one year (Maxwell & Crespi; Nguyen et al., 2008; Walsh, Nguyen, Nguyen, Pasick, & McPhee, 2009; Wong et al., 2005). Kandula et al. (2006) reported that 42% of Vietnamese American participants had either a FOBT within the past one year or a sigmoidoscopy within the past five years. Approximately 16-19% of Vietnamese Americans reported having had a sigmoidoscopy within the past five years (Nguyen, et al., 2008; Walsh et al., 2004; Walsh, et al., 2009) and 22-28% had a colonoscopy in the past 10 years (Nguyen, et al., 2008; Walsh et al., 2004; Walsh, et al., 2009). Only one study examined what is different for VAW and VAM. Approximately 64% of VAW and 36% of VAM had a sigmoidoscopy in the past 5 years or a colonoscopy in the past ten years (Walsh, et al., 2009). In addition, 56% of VAW and 49% of VAM had a FOBT in the past one year (Walsh, et al., 2009).

Hepatitis B Screening

Only a few studies examined hepatitis B screening rates for VAM and VAW. One study reported that 8% of Vietnamese American participants had at least one hepatitis B testing (Ma et al., 2007). Two studies reported that 66% of VAM participants in respective studies had at least one hepatitis B testing (Taylor et al., 2004b; Taylor et al., 2005), one of which reported that 68% of VAW had at least one hepatitis B testing (Taylor et al., 2004b).

Contributing Factors to Cancer Screening

Provider-Patient Cancer Communication

Nguyen, Barg, Armstrong, Holmes, and Hornik (2007) conducted a qualitative study that focused on older Vietnamese immigrants' perceptions about provider-patient cancer communication. The three identified themes were attitudes about addressing screening with providers, issues and problems in communicating with physicians about cancer, and language/translation difficulties. Vietnamese immigrants believed that cancer is only a concern when symptoms arise and problems should not be looked for unless there is a strong reason for it. Other issues identified when communicating with physicians about cancer included not knowing what the doctor did, having to rely on the doctor to guide and advise them on what they needed to know and necessary tests or treatments, and feeling that the doctor does not have time. Nguyen et al. (2007) also found that patients who had Vietnamese doctors still did not understand what the doctor said.

Cervical Cancer Screening

Sociodemographic characteristics. Sociodemographic characteristics that have been examined in relationship with Pap testing included age, marital status, educational level, acculturation, primary language use, employment status, income level, health insurance, having a source of care, and having a regular provider. VAW aged 65 and older had the lowest rate of ever having had a Pap test of all age groups, 72% of those aged 18-39, 82% of those aged 40-64, and 65% of those aged 65 and older responded positively to ever having had a Pap test (Nguyen, et al., 2002). VAW who were married were more likely than women who have never been married to have a Pap test (Do et al., 2007; Ho et al., 2005; Yi, 1998; Nguyen, et al., 2002; Schulmeister & Lifsey, 1999; Taylor et al., 2004b). Married women

were more likely than non-married women to have reported having a Pap test in the past three years (Do et al., 2007). In contrast, Gomez et al. (2007) found VAW who have never been married were more likely than women who have been married to have had a Pap test. Gomez et al. found that VAW who have never been married versus those who have been married did not differ with regards to sociodemographic characteristics including employment and having received public assistance. This suggested that these characteristics were not confounders for the difference in marital status regarding having ever received a Pap test. Higher educational attainment was more likely to have had a Pap test (Ho et al., 2005; Nguyen et al., 2002). English language acculturation (frequent use and a preference for English) and perceived ethnic identity (i.e., Vietnamese, Vietnamese American, or American) with higher scores indicating greater acculturation was more likely to have ever had a Pap test (Yi). Ponce et al. (2006) examined the relationship between Vietnamese as a primary language with having had at least one Pap test or within the past 3 years, and was not found to be significantly related. Being employed was positively associated with Pap testing (Schulmeister & Lifsey). Approximately 70% of women who reported never having had a Pap test also had annual family incomes less than $18,000. Schulmeister and Lifsey reported that approximately 48% of Vietnamese immigrant women did not have health insurance. In addition, 67% of women who reported never having had a Pap test also did not have health insurance (Schulmeister & Lifsey). Having a regular source of care was more likely in having had a Pap test within the past one year; having both a regular source of care and a regular provider were more likely in having had a Pap test within the past three years (Taylor et al., 2004b).

Knowledge. Taylor et al. (2004b) found that VAW who knew that Pap testing was necessary for women who are asymptomatic were more likely to have had a Pap test within the past one and three years. In addition, VAW who knew that Pap tests are necessary for women who are sexually inactive and postmenopausal were more likely to have had a Pap test within the past three years (Taylor et al., 2004b). Approximately 30% of Vietnamese Americans reported not knowing that a Pap test could detect cervical cancer (Xu et al., 2005). However, Do et al. (2007) found that VAW who had knowledge that not getting regular Pap tests increases cervical cancer risk were more likely to have had a Pap test in the past three years. In addition, VAW who had knowledge that having multiple sexual partners, having sexual activity with a man who has had multiple sexual partners, having a sexually transmitted disease, and not getting regular Pap tests were more likely to have had a Pap test within the past three years (Do et al., 2007).

Beliefs. Health care providers perceived that Vietnamese Americans have a traditional mindset in that preventive care is not a health care option (Chilton, Gor, Hajek, & Jones, 2005). Healthcare providers perceived this to be a factor in affecting preventive health practices as preventative medicine is considered to be a Western concept by Vietnamese Americans (Chilton et al., 2005). Burke et al. (2004b) found that Vietnamese immigrant women performed practices of vaginal washing and this was done as a preventive for illness and general women's health; women believed that huyết trắng or huyết bạch, translated as white blood, was an unclean substance caused by a virus, poor hygiene, or internal heat imbalance. In addition, Vietnamese immigrant women believed that having persistent white blood that changes from a yellow to pink color and had a foul smell is a sign of cervical cancer and indicates a need to seek a doctor's care, and if left untreated would build up in the

body and block circulation and develop into cancer. Beliefs that have been examined in relationship to Pap testing included perception about marital status, developing cervical cancer, poor women's hygiene, perceived and identified barriers, and perceived benefits. Vietnamese immigrant women believed that unmarried women do not need to get Pap tests (Burke et al. 2004b) and VAW who believed that only married women should have a Pap test were more likely to have a Pap test than those who did not hold this belief (Yi, 1998). Nguyen et al. (2002) found that when VAW were asked if they thought they were almost certain or very likely to develop cervical cancer, 27% of those between ages 18-39, 30% of those between ages 40-64, and 16% of those ages 65 and older responded positively. However, approximately 81% of Vietnamese immigrant women felt they were unlikely to ever be diagnosed with cervical cancer and reported that having no history of cancer in one's family, feeling healthy, and never thinking about cancer were reasons for believing their cervical cancer risk was low (Schulmeister & Lifsey, 1999). VAW who believed that poor women's hygiene increases cervical cancer were more likely have had a Pap test in the past three years (Do et al., 2007).

Shyness or embarrassment was identified as a barrier or avoidance in not getting a Pap test (Burke et al., 2004b; Chilton et al., 2005; Schulmeister & Lifsey, 1999). Vietnamese immigrant women believed that women in a monogamous relationship, older women, women who are sexually inactive do not need to get Pap tests (Burke et al., 2004b). Also Vietnamese immigrant women identified other reasons for never had a Pap test or avoiding getting Pap tests including that they felt strong and healthy, cancer was perceived as death and preferred not to know about something that could not be changed, fear of the Pap test and surgery, lack of a doctor's recommendation, lack of a gynecologist, reluctance to request a

female doctor to perform a Pap test, experienced pain from a past Pap test, language barrier, and cost (Burke et al., 2004b; Chilton et al.). Tung et al. (2008) found that VAW in the maintenance stage (had regular Pap rests in the past and intended to continue to do so) scored lower in overall perceived barriers to obtaining Pap tests than women in the pre-contemplation stage (never had a Pap test and did not intend to have one within the next six months) and higher in overall perceived benefits compared to women in the pre-contemplation stage.

Influences. VAW who have a female doctor, perceived their doctor as treating them respectfully, and have a doctor recommend Pap testing were more likely to have had a Pap test (Nguyen et al., 2002). In addition, VAW aged 65 and older were less likely than women of age groups, 18-39 and 40-64, to report that their doctors had recommended it. Also, VAW aged 65 and older were more likely to prefer a Vietnamese doctor but not a female doctor or a female standby if a male doctor performs the Pap test (Nguyen et al., 2002). Taylor et al. (2004a) found that VAW who had a doctor recommended Pap testing were more likely to have had a Pap test within the past one year. In addition, VAW who had a doctor recommend Pap testing, or had a family member(s) and friend(s) suggest Pap testing, were more likely to have had a Pap test within the past three years (Taylor et al., 2004a).

Breast Cancer Screening

Sociodemographic characteristics. Sociodemographic characteristic variables that have been examined in relationship with mammography and CBE included age, marital status, educational level, English language proficiency and having a regular place of care. Older women were more likely to have had a mammogram (Ho et al., 2005). In addition, married women were more likely to have had a CBE (Ho et al., 2005). Gomez et al. (2007)

found that approximately 67% of VAW who have never been married did not have a mammogram within the past two years. Those with a higher educational level were more likely to have had a CBE but less likely to have had a mammogram (Xu et al., 2005). Gomez et al. also found that having a mammogram was not related to education level. Those having a regular place for care and speaking English were more likely to having had a CBE; however, only having a regular place of care was found to be more likely to have had a mammogram (Yi & Reyes-Gibby, 2002).

Knowledge and beliefs. Approximately 22% of VAW reported not knowing that their physicians could perform a CBE to detect cancer and 34% were unaware that a mammography could be done to screen for breast cancer (Xu et al., 2005). Beliefs that have been examined in relationship to mammography and CBE included perception of risk and perceived barriers. VAW who had a self-perceived risk of developing breast cancer were more likely to have had a mammogram (Yi & Reyes-Gibby, 2002). VAW who had a lack of perceived barriers were more likely to have had a mammogram and regular CBEs (Ho et al., 2005).

Colorectal Cancer Screening

Sociodemographic characteristics. Sociodemographic characteristic variables that have been examined in relationship with colorectal cancer screening are marital status, having insurance, regular place of care, and gender. Interestingly, Gomez et al. (2007) found VAW who have never been married were more likely than women who have been married to have had a colorectal screening. Gomez et al. found that VAW who have never been married versus those who have been married did not differ with regards to sociodemographic characteristics including employment and having received public assistance. This suggested

that these characteristics were not confounders for the difference in marital status in having had a colorectal screening. Vietnamese Americans who reported being married were more likely to have had a sigmoidoscopy in the past five years (Nguyen, McPhee, Stewart, & Doan, 2008). However, having insurance (public or private) indicated that Vietnamese Americans were more likely to have had a colonoscopy within the past ten years (Nguyen et al., 2008). In addition, Vietnamese Americans who reported having a regular place of care were more likely to have had a sigmoidoscopy in the past five years and a colonoscopy in the past ten years (Nguyen et al., 2008). Reported reasons for not getting a colorectal cancer screening among Vietnamese Americans included cost, lack of insurance, difficulty with language, finding a doctor, transportation, fear or anxiety of procedure, and lack of time (Xu et al., 2005). VAW were more likely than VAM to have had a FOBT in the past one year (Walsh et al., 2009).

Knowledge and influences. Vietnamese Americans who had knowledge of a FOBT or colonoscopy were found to be more likely to have had colorectal cancer screening (Xu et al., 2005). Vietnamese Americans who disagree with the statement, that one no longer needs to have additional tests if a colorectal cancer screening test is normal, were more likely to be up-to-date with colorectal cancer screening (having had a FOBT in the past one year, a sigmoidoscopy in the past five years, or a colonoscopy in the past ten years) when compared to those who agreed with this statement (Walsh et al., 2009). Vietnamese Americans who had a female physician were more likely than those who had a male physician to have had a sigmoidoscopy in the past five years or a colonoscopy in the past ten years (Walsh et al., 2009).

Hepatitis B Screening

Sociodemographic characteristics. Sociodemographic characteristic variables that have been examined in relationship with hepatitis B screening included age, educational level, English language proficiency, regular source of care, and having a regular provider. Approximately 62% of Vietnamese Americans aged 18-34, 64% of those aged 35-49, and 75% of those aged 50 and older differed in hepatitis B screening (Taylor et al., 2005). Vietnamese Americans aged 18-34 years had the lowest screening rate of all age groups (Taylor et al., 2005). A study that focused only on VAM, found that older men were more likely to have had a hepatitis B test (Taylor et al., 2004b). Ma et al. (2007) found that VAM were more likely to have been screened compared to VAW. Vietnamese Americans who reported higher educational level and read English fluently were more likely to have been screened than those who had a lower educational level and read English fairly, poorly, or not at all (Ma et al., 2007). Taylor et al. (2004b) found that those having a regular source of care and a regular provider were more likely to have had hepatitis B screening for VAM.

Knowledge. Ma et al. (2007) found that approximately 46% of Vietnamese Americans had no knowledge about the hepatitis B virus (HBV). In addition, approximately 61% of Vietnamese Americans thought that cancer was beyond their control and did not know that cancer could be prevented or cured (Ma et al., 2007); however, about 71% thought that getting vaccinated would prevent HBV. However, Taylor et al. (2000) found that 41% of Vietnamese American participants did not think that there was anything they could do to protect themselves and their families against infection. Vietnamese Americans who had knowledge that cancer was preventable, had knowledge of HBV, a screening test for HBV, a vaccine against HBV, and that the vaccine would be protective, were more likely to get

screened than those who did not have this knowledge (Ma et al., 2007). Approximately 80% of Vietnamese Americans knew that someone could die from being infected with HBV while 63% knew that hepatitis B can cause liver cancer (Taylor et al., 2000). In addition, approximately 58% of Vietnamese Americans knew that asymptomatic individuals infected with HBV can transmit the disease to others (Taylor et al., 2000.). In a different study, Taylor et al. (2005) found that some VAW and VAM did not know that hepatitis B can be spread during sexual intercourse (32% vs. 29% respectively), childbirth (15% vs. 19% respectively), by someone who looks and feels healthy (25% vs. 19% respectively), and by eating food that has been pre-chewed by an infected person (24% vs. 35% respectively). VAM who know that hepatitis B can be spread during childbirth were more likely to have had a hepatitis B test (Taylor et al., 2004b).

Beliefs and influences. Vietnamese Americans believed that there are visible signs and symptoms of hepatitis B including skin color appearance, bloating, and tiredness (Burke, Jackson, Thai, 2004a). In the early stages of infection with hepatitis B, Vietnamese Americans believed that it could be cured with cooling herbs and teas. Ma et al. (2007) found Vietnamese Americans who believed that cancer was curable were more likely to have had a hepatitis B test than those who did not believe this. VAM who had a doctor(s) recommend Hep B screening were more likely to have been screened (Taylor et al., 2004b).

Intervention Studies

The only cervical and breast cancer screening intervention studies of VAW focused on a neighborhood-based educational activities model, a lay health outreach worker model, a media-based education model, a combination of both, a multilingual breast cancer education intervention in Asian grocery stores, and an apartment-based education program (Bird et al.,

1998; Jenkins et al., 1999; Lam et al., 2003; Mock et al., 2007; Nguyen, Vo, McPhee, & Jenkins, 2001; Sadler, Dong, Ko, Luu & Nguyen, 2001; Yi & Luong, 2005). An earlier systematic integrative descriptive review of these studies have been reported (Lee-Lin & Menon, 2005) and since then only two additional intervention studies have been published (Mock et al., 2007; Yi & Luong).

A lay health outreach worker model combined with a media-based education model was more effective at increasing cervical cancer screening awareness than a media-based education model alone (Lam et al., 2003; Mock et al., 2007). In the Mock et al. (2007) study, the effect of having a combination of both models increased Pap test receipt (having ever had a Pap test). Lam et al. also examined Pap test intention, and found both models increased Pap test intention (planning to have a Pap test), but not Pap test receipt. Yi and Luong (2005) conducted an apartment-based education program to reach low-income VAW and found the intervention group had significant increases in knowledge that a woman after the age of 40 should have a yearly CBE and mammogram as well as intention to ask a doctor about early detection of breast cancer, than the control group at the five month follow-up.

Validity and Reliability of Screening Measures

Most of the research studies reviewed did not report on the reliability or validity of the measurements used. Of those reviewed, ten studies reported some form of psychometric statistics. Bird et al. (1998) referenced a previous publication for psychometric information on scales used in their study but failed to report it in their article. In regards to validity, Ma et al. (2007) described having face validity and Schulmeister and Lifsey (1999), Xu et al. (2005), Yi and Luong (2005), Yi and Reyes-Gibby (2002) described content validity testing. Yi (1998) discussed support for structural validity using an exploratory factor analysis (factor

loading of scores higher than .50 as the inclusion criteria for items in the scale). Schulmeister and Lifsey described interrater reliability (90%) in recording participants' responses. Ma et al. (2007) demonstrated strong internal consistency for their screening behavior scale (Cronbach's alpha = .94). Ho et al. (2005) and McGarvey et al. (2003) adapted the health belief model scales related to breast cancer developed from Champion (1993). Ho et al. (2005) demonstrated moderate internal consistency for perceived susceptibility, seriousness, benefits, barriers, and health subscales (Cronbach's alpha = .73, .83, .79, .86, .67, respectively). McGarvey et al. (2003) demonstrated moderate to strong internal consistency for confidence, perceived seriousness, motivation, perceived susceptibility, benefits and barriers subscales (Cronbach's alpha= .75-.93) and moderate test-retest reliability (r = .45 to .70). Tung et al. (2008) demonstrated moderate internal consistency for a previously developed benefits and barriers scales (Cronbach's alpha = .71, .88, respectively) and demonstrated strong internal consistency for the self-efficacy scale (Cronbach's alpha = .93).

Most studies used study-specific instruments and appeared to use some formal assessment for instrument development which included focus groups, working with established Vietnamese coalition or advisory board, or pilot testing. Some reported on actual psychometric properties of the instruments. Most of these measured different defined variables of interest which make them challenging to compare or evaluate for effectiveness.

Discussion

Cervical, breast, colorectal, and liver and bile duct cancers are four of the leading cause of cancers among Vietnamese Americans. Several studies showed that cancer screening is underused. Gender, held cultural beliefs, and education appear to influence use

of screening opportunities. There may be shared and different contributing factors to cancer screening among VAW and VAM that needs to be considered with regards to gender differences as this may inform gender-specific interventions. Educational level can influence cancer screening use or not at all as indicated from study findings for VAW. This can depend on the cancer screening type and may indicate that there are other contributing factors to consider besides educational level. Held cultural beliefs regarding cancer screening and cervical cancer signs may delay detection of cancer and treatment.

Pap testing rates among VAW were low compared to the Healthy People 2010 objectives which specifies 97% of women aged 18 and older to have received at least one Pap test and for 90% to have one in the past three years (CDC, 2003; Ho et al., 2005; Kandula et al., 2006; Nguyen et al., 2003; Nguyen et al., 2002; Schulmeister & Lifsey, 1999; Taylor et al., 2004a; Tung et al., 2008; Xu et al., 2005; Yi, 1998). Further education and promotion about cervical cancer screening is needed for VAW. VAW appeared to have met the Healthy People 2010 objective which was for 70% of women aged 40 years and older to have received a mammogram within the past two years (CDC, 2003; Gomez et al., 2007; Kandula et al., 2006). Further studies are needed to ensure VAW continue to meet the goals of the Healthy People 2010 as breast cancer is the leading cause of cancer and one of the top five leading cause of death among VAW (Miller et al., 2008). Colorectal cancer screening rates for Vietnamese Americans in this review were low compared to the Healthy People 2010 objective which was for 50% of adults aged 50 and older to have received a sigmoidoscopy (CDC, 2003; Nguyen et al., 2003; Walsh et al., 2004; Walsh et al., 2009; Wong et al., 2005). Despite the high liver and bile duct cancer incidence and mortality rates among VAW and VAM compared to all racial-ethnic and larger Asian ethnic subgroups,

there were scarce research that examined hepatitis B screening among Vietnamese Americans. Having a chronic infection of the HBV can be a risk factor for liver cancer (ACS, 2010). VAM were more likely to have had hepatitis B screening than VAW (Ma et al., 2007).

Interestingly, VAW appeared to utilize colorectal cancer screening higher than that of VAM (Walsh et al., 2009). This may indicate that there are differences between men and women regarding contributing factors to cancer screening. Future research can examine for gender differences among Vietnamese Americans in cancer screening and this may inform gender-specific interventions. Further education and promotion about colorectal cancer and hepatitis B screening is urgently needed for this group.

Cancer appeared to be a taboo topic. Vietnamese immigrants believed in not looking for problems unless there was a strong reason for it, preferred to not know about something that could not be changed, and perceived cancer as death (Burke et al., 2004b; Nguyen et al., 2007). Qualitative studies revealed that cancer was a concern when symptoms arose (Burke et al., 2004a; Burke et al., 2004b). These beliefs regarding prevention and cancer can become barriers or contributing factors to obtaining cancer screening for early detection of cancer when cure is achievable. Vietnamese immigrant women believed that performing vaginal washing was preventive for illness and general women's health and would only seek a doctor if there was a sign of cervical cancer suggesting having to be symptomatic prior to seeking care (Burke et al., 2004b). The contributing factor of marital status with that of cancer screening differs in relation to cervical, breast, and colorectal cancer screening. Most studies found that VAW who were married were found to be positively associated with ever having had a Pap test (Ho et al., 2005; Nguyen et al., 2002; Schulmeister & Lifsey, 1999) and

were more likely than women who have never been married to have a Pap test (Yi, 1998). In addition, being married was a predictor for having had a CBE (Ho et al., 2005). Contrary, VAW who have never been married were significantly more likely than women who have been married to have had a colorectal screening (Gomez et al, 2007). Pap testing and CBE are screening for cancers that primarily affect women, while colorectal cancer screening can affect both women and men. VAW can hold cultural beliefs surrounding who should be receiving these types of cancer screening and who would not need them. Vietnamese immigrant women believed that unmarried women and women in a monogamous relationship do not need to get Pap tests (Burke et al., 2004b). Vietnamese Americans also believed that there were visible signs and symptoms of hepatitis B (Burke et al., 2004a). Findings suggested that VAM who had knowledge that hepatitis B could be spread during childbirth was positively related with having a hepatitis B test (Taylor et al., 2004b). Hepatitis B screening education could be included with childbirth education. In addition, Vietnamese Americans believed that hepatitis B could be cured with cooling herbs and teas in its early stages (Ma et al., 2007). These held beliefs about traditional means of curing can be harmful because it delays treatment and the person infected with HBV will continue to be a chronic HBV carrier; this can be spread during childbirth and/or result in liver cancer and eventually lead to death.

Strengths of the studies. There are several contributing factors to cervical, breast, and colorectal cancer and hepatitis B screening to consider in regards to whether Vietnamese Americans do or do not get screened for respective cancer types. These contributing factors can be differentiated into individual and external contributing factors. Most study findings suggest that individual contributing factors including the influence of age, knowledge or lack

of knowledge of the particular screening test, held and perceived beliefs regarding the screening test and the respective cancer type, marital status (non-married or currently married), and higher education were related to screening receipt. Results were inconsistent in that Xu et al. (2005) found higher educational level to be related to lower receipt of having had a mammogram, and Gomez et al. (2007) found that screening was not related to education level at all. This may indicate that there are other contributing factors to consider including having a busy schedule, or external factors including whether these women received a recommendation from a doctor to have a mammogram. A qualitative study is needed to understand the underlying meaning of why highly educated VAW were engaging in little mammogram use. Findings also suggest considering external contributing factors such as having received a recommendation from a doctor (provider), a family member(s), or friend(s). Several studies identified the under- provider area with regards to not obtaining screening tests due to lack of a doctor's recommendation or lack of having a doctor. Most studies appeared to use some formal assessment for instrument development including the use of focus groups, working with a Vietnamese coalition or an advisory board, or pilot testing. Most studies provided participants with the choice of taking the questionnaire in English or a Vietnamese translated version, or had interviews conducted in Vietnamese by a trained Vietnamese bilingual worker. One study demonstrated that known instruments could be adapted to identify the prevalence and cancer screening practices, and the reasons for not obtaining cancer screening (Kandula et al., 2006). Community-based and culturally relevant methods were adopted for teaching cervical and breast cancer screening and showed promise for improving screening. The lay health outreach worker model was designed to train Vietnamese women to lead educational sessions on general prevention, was effective at

increasing cervical and breast cancer screening receipt (Bird et al., 1999). This model combined with the media-based education model was effective for increasing Pap test receipt (Mock et al., 2007). A model that includes training lay health workers can be used to help with colorectal cancer and hepatitis B screening and education.

Limitations of the studies. A description of limitations included self-reported data, lack of a conceptual or theoretical framework, not differentiating between U.S.-born and immigrant data or VAW and VAM data, inconsistent operational definitions, not reporting on the reliability or validity of the instruments, mixture of sampling, and not differentiating among the total annual household income levels and their relation to screening, not examining the difference between public, private hospitals, and clinics, and not reporting on how sample size was determined.

All studies were self-reported data and can reflect over reporting. The actual cancer screening rates may be lower than what have been reported across studies (Ho et al., 2005; Kandula et al., 2006; Maxwell & Crespi, 2009; Mock et al., 2007; Taylor et al., 2004a; Tung et al., 2008; Walsh et al., 2009; Wong et al., 2005; Yi & Luong, 2005; Yi & Reyes-Gibby, 2002). Most studies lacked a conceptual or theoretical framework. Variations in theoretical perspectives have been used across studies which focused on either the individual behavior, or the individual behavior and external contributing factors to screening. Most studies were primarily descriptive and there were few intervention studies which only targeted cervical and breast cancer screening. Most studies did not differentiate between U.S.-born and immigrant data or VAW and VAM data, which makes it challenging to determine whether there are any differences between these respective groups (U.S.-born versus immigrant; VAW versus VAM) and whether these differences contribute to screening practices. Also

most studies did not find acculturation to be a contributing factor to screening and this might be explained by the non-differentiation of U.S.-born and immigrant data. The operational definitions across studies were inconsistent in their examination of contributing factors to colorectal, hepatitis B, breast, and cervical cancer screening, making comparisons very difficult. Most of the studies did not report on validity or reliability of the instruments making it challenging to evaluate whether variables of interest were being measured as intended, and whether items were internally consistent and stable across time.

There is a location mixture of sampling from Western states (California (CA), Washington (WA), Hawaii) versus Eastern and Southern states (Texas, Pennsylvania, Alabama, Virginia, and Louisiana); most studies were conducted primarily in CA and WA. Studies conducted in CA and WA were population-based, which consisted of large sample sizes compared to most of the studies conducted in Eastern and Southern states. The wide variation in sampling sizes could be an explanation for the significance in findings from the population-based studies.

The total annual household income was less than, equal to, or greater than $20,000 across most studies (Ho et al., 2005; Kandula et al., 2006; Ma et al., 2007; McGarvey, et al., 2003; Nguyen et al., 2006; Schulmeister & Lifsey, 1999; Taylor et al., 2004a; Walsh et al., 2009; Yi & Luong, 2005). Most of the studies did not examine whether there were differences between those who have been screened or have not been screened in relation to total annual household income. Also none of the studies sampled systematically to address diverse income and education levels. Vietnamese American participants who were patients at a public hospital mostly had a total annual household income less than $20,000 and all had access to care. Despite having access to care, many were not receiving colorectal cancer

screening (Walsh et al., 2009). A possible explanation for why Vietnamese Americans were not getting screened may be attributed to having a female or male health care provider. Walsh et al. (2009) found Vietnamese Americans who had a female health care provider to be a predictor for having had colorectal cancer screening. More research is needed to understand the underlying context for why there were differences in screening based on the gender of the health care provider. None of the studies examined the differences between public and private hospitals or clinics.

Most studies did not report on how sample size was determined or the power of the study. The larger sample sizes from population-based studies in CA and WA appeared to be appropriate for the statistical analyses. One study appeared to have a small sample size, which limited examination among different groups across stages of health behavior change to Pap test screening (Tung et al., 2008). Approximately 8% versus 66% and 67% of Vietnamese Americans reported having had at least one hepatitis B screening (Ma et al., 2007; Taylor et al., 2004b; Taylor et al., 2005, respectively). The difference in screening rates can be attributed to sampling from community-based organizations that served low-income, low educational level Vietnamese Americans (Ma et al., 2007) versus samples from population-based studies (Taylor et al., 2004b; Taylor et al., 2005). However, across studies, there was variation in geographical locations. More studies need to be conducted in other geographical areas in the U.S. to support generalizability of findings.

Conclusions

This review suggests that cervical, colorectal, and liver cancer screening is consistently low among Vietnamese Americans; although breast cancer screening appears to be adequate among VAW. The low cancer screening rates reduce the likelihood of early

detection of pre-cancerous and cancerous growths, and treatment of cervical and colorectal cancers. There is minimal research on colorectal cancer and hepatitis B screening. Hepatitis B screening serves as a parallel model for liver cancer screening because it detects individuals infected with the HBV, which is a common risk factor for liver cancer (ACS, 2010). There is a need for aggressive colorectal cancer and hepatitis B screening among Vietnamese Americans. Further education and promotion about cervical cancer screening is needed for VAW and to examine HPV as a risk factor for cervical cancer. Research is needed to also understand VAW's awareness and knowledge of the HPV vaccine and examine the relationship between having received the HPV vaccine with cervical cancer screening. Further studies are also needed to ensure VAW continue to meet the goals of Healthy People 2010 as breast cancer is currently the leading cause of cancer among VAW (Miller et al., 2008). Development is needed for culturally sensitive and language appropriate cancer education materials in the Vietnamese language.

Community-based and culturally relevant methods have been adopted for teaching cervical and breast cancer screening and showed promise in improving screening rates. More intervention studies need to examine other avenues in approaching VAW. Introducing the topic of cervical cancer screening to men may be an avenue to approaching VAW (Scarinci, Beech, Kovach, & Bailey, 2003). Spouses can be positive nurturers in that they can enable women to engage in cervical cancer screening (Scarinci et al., 2003). Also intervention studies need to target colorectal and hepatitis B screening. Having a physician recommendation or a regular place of care were contributing factors to having had cervical, breast, and hepatitis B screening (Taylor et al., 2004a; Taylor et al., 2004b; Yi & Reyes-Gibby, 2002). Though several studies identified the under-provider area (i.e., lack of a

doctor or lack of a doctor's recommendation) and these were found to be crucial factors in the use of cervical, breast, and colorectal cancer screening (Burke et al., 2004b; Nguyen et al., 2007; Schulmeister & Lifsey, 1999; Xu et al., 2005). Further research should be conducted to examine nurses' role in the cancer screening process. Culturally sensitive and relevant interventions and continuing cancer screening education efforts will promote cancer awareness among Vietnamese Americans and may improve cancer screening rates.

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CHAPTER 3 INSTRUMENT DEVELOPMENT AND TRANSLATION MANUSCRIPT

Adaptation and Testing of Instruments to Measure Vietnamese Immigrant Women of Held Pap Testing Health Beliefs, Perceived Cultural Barriers, Confidentiality Issues, and Quality of Care from the Health Care System

Adaptation and Testing of Instruments to Measure Vietnamese Immigrant Women of Held Pap Testing Health Beliefs, Perceived Cultural Barriers, Confidentiality Issues, and Quality of Care from the Health Care System

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Abstract

Purpose: Vietnamese American women are diagnosed with later stage cervical cancer than White non-Hispanic women. The aims were to develop a culturally sensitive/meaningful Vietnamese translation of the *Revised Susceptibility, Benefits, and Barriers Scale* (SBBS), *Cultural Barriers to Screening Inventory* (CBSI), *Confidentiality Issues Scale*, and *Quality of Care from the Health Care System Scale*, and examine their psychometric properties. **Design:** This was a cross-sectional study. **Method:** A community based participatory research and the U.S. Census Bureau's team approaches to translation were used. Vietnamese women (n = 201) from the U.S. Northwest metropolitan area took the Vietnamese survey. **Results:** The Cronbach's alpha varied (.69-.86, .69-.91, .89, .57). The modified SBBS incremental fit index was .83 and CBSI was .88. **Discussion/Conclusion:** The instruments demonstrated moderate to strong subscale internal consistency and further support for structural validity is needed. **Implications:** The combined approaches to translation and the psychometric examination provided support for the instruments.

Keywords: instruments, translation, cervical cancer, Pap testing, Vietnamese immigrants

Adaptation and Testing of Instruments to Measure Vietnamese Immigrant Women of Held Pap Testing Health Beliefs, Perceived Cultural Barriers, Confidentiality Issues, and Quality of Care from the Health Care System

Background

Vietnamese American women (VAW, U.S.-born and immigrants) were more often diagnosed with late stage (regional spread or metastases to the regional lymph node) cervical cancer diagnosis compared to White non-Hispanic women (36% vs. 28% respectively) and Korean and Japanese Asian women subgroups (Miller, Chu, Hankey, & Ries, 2008). VAW continue to have low Papanicolaou (Pap) testing (cervical cancer screening) rates (Gomez, Tan, Keegan, & Clarke, 2007; Ho et al., 2005; Nguyen, Withy, Nguyen, & Yamada, 2003; Nguyen, McPhee, Nguyen, Lam, & Mock, 2002; Schulmeister & Lifsey, 1999; Taylor et al., 2004; Tung, Nguyen, & Tran, 2008; Xu, Ross, Ryan, & Wang, 2005; Yi, 1998) compared to the national Healthy People 2010 objectives set forth by the Centers for Disease Control and Prevention (2003).

Little is known about Vietnamese immigrant women (VIW, non-United States [U.S.]-born) and engagement in cervical cancer screening. VIW may hold different health beliefs about Pap testing than women with other backgrounds and may encounter cultural barriers to engaging in cancer screening. Also their view of the quality of care being delivered in the U.S. can influence participation. There are limited existing instruments to measuring Pap testing health beliefs (Champion, 1999), cultural barriers to cancer screening (Tang, Solomon, & McCracken, 2000), and view of the quality of care being delivered in the U.S (Nguyen et al., 2006). Therefore, this study looked at developing a culturally sensitive and linguistically appropriate questionnaire.

As such, the aims of this study were to adapt and develop a culturally sensitive, linguistically appropriate, and meaningful Vietnamese translation of the Revised Susceptibility, Benefits, and Barriers Scale (SBBS) (Champion, 1999), Cultural Barriers to Screening Inventory (CBSI) (Tang et al., 2000), Quality of Care from the Health Care System Scale (QoC) (Nguyen et al., 2006), and Confidentiality Issues Scale (CIS) (developed with Community Experts) for VIW using a community based participatory research (CBPR) approach. These instruments were examined for their psychometric properties. Validity enhancement in cross cultural research is important in the areas of translation of instruments and measurement procedures so as to determine construct equivalence of the original and adapted instrument; and the use of literal translation can lead to construct bias (Vijver & Leuong, 1997).

The findings for primary study aims 1-3 and secondary aims 4 and 5 of the survey study were reported in chapter four (Nguyen-Truong, Lee-Lin, Leo, Gedaly-Duff, & Nail, manuscript in process), and included the methodology for addressing these aims: (1) to examine the association between awareness, knowledge, confidentiality issues, and beliefs regarding cervical cancer and Pap testing, individual and external influencing factors, and quality of care from the health care system with Pap test receipt and Pap test adherence; (2) to examine the association between knowledge of the human papilloma vaccine with Pap test receipt and Pap test adherence; and (3) to describe community resources. The secondary aims were (4) to explore exposure to the media regarding cervical cancer and Pap testing with Pap test receipt and Pap test adherence, and (5) to explore the intention of Vietnamese immigrant women ages 21 to 99 years living in the United States who had never had a Pap test to obtain a Pap test within the next three years.

Little is known in that Vietnamese immigrants believed that problems should not be looked for unless there was a strong reason for it, preferred to not know about something that could not be changed, and perceived cancer as death (Burke et al., 2004; Nguyen, Barg, Armstrong, Holmes, & Hornik, 2007). VIW sought a doctor if there was a sign of cervical cancer, suggesting that VIW will be symptomatic prior to seeking care (Burke et al., 2004). Approximately 81% of VIW felt they were unlikely to ever be diagnosed with cervical cancer and reported that having no history of cancer in one's family, feeling healthy, and never thinking about cancer were reasons for believing their cervical cancer risk were low (Schulmeister & Lifsey, 1999). Shyness or embarrassment was identified as a barrier or avoidance in getting a Pap test (Burke et al., 2004; Schulmeister & Lifsey). These beliefs regarding cancer can contribute to the delay in obtaining cancer screening for early detection of cancer when cure is achievable. Nguyen et al. (2007) also found that one of the problems Vietnamese immigrants identified regarding communicating with doctors about cancer was having felt that the doctor did not have time to talk.

Based on what little is understood about VIW's held beliefs, cultural barriers, and perceptions on the care being received, the Revised Susceptibility, Benefits, and Barriers Scale (SBBS) (Champion, 1999), Cultural Barriers to Screening Inventory (CBSI) (Tang et al., 2000), and Quality of Care from the Health Care System Scale (QoC) (Nguyen et al., 2006) were chosen because they appear to measure Pap testing health beliefs, cultural barriers to cancer screening, and view of the quality of care being delivered in the U.S that are relevant to VIW's likelihood to obtain a Pap test.

The Revised Susceptibility, Benefits, and Barriers Scale (SBBS) has been tested with other racial and ethnic groups including White non-Hispanic and African American women

(Champion, 1999), and Chinese American (immigrant) women (Lee-Lin et al., 2008) to measure mammography screening beliefs. The SBBS has demonstrated high internal consistency reliability for perceived susceptibility, perceived benefits, and perceived barriers subscales with these racial and ethnic women groups (Champion; Lee-Lin et al., 2008), and high test-retest reliability among White non-Hispanic and African American women groups (Champion). The SBBS also has supported content and structural validity (Champion); however, the fit of the three-factor structure has only been examined with a single index presentation (Goodness of Fit Index) (Champion). Earlier versions of the SBBS have been tested with White non-Hispanic, VIW, Korean (native), and Jordan (native) women and have demonstrated to be a moderate to highly reliable instrument that has been used to measure beliefs about breast cancer screening (Champion, 1984; Champion, 1993; Ho et al., 2005; Lee, Kim, & Song, 2002; Mikhail & Petro-Nustas, 2001). Ho et al. (2005) has also adapted and modified an earlier version of the SBBS to measure cervical cancer screening beliefs in VIW.

The Cultural Barriers to Screening Inventory (CBSI) (Tang et al., 2000; Lee-Lin et al., 2008) has been tested with Chinese American and Chinese American immigrant women to measure breast and colorectal cancer screening. The perceived cultural barrier components include utilization of Eastern/Asian medicine for illness, modesty about one's body, crisis orientation regarding efficacy of Pap testing, and lack of family support as obstacles to a preventative health action. The CBSI has demonstrated moderate internal consistency reliability for the subscales. There is some evidence to support structural validity, and this was demonstrated with an exploratory factor analysis (Tang et al.). However, a confirmatory factor analysis has not been conducted to examine the fit of the

four-factor structure. An earlier version of the CBSI has been tested with young Asian American women on cervical and breast cancer screening (Tang, Solomon, Yeh, & Worden, 1999).

The Health is Gold Survey is a study-specific instrument that was theoretically based on the Pathways Model, and guided by an earlier qualitative study (Nguyen et al., 2006). Nguyen et al. (2006) used a CBPR approach that oriented the study to be collaborative and community-based. The survey was developed with the Vietnamese Reach for Health Initiative, a community coalition. A section of this researcher developed survey was about attitudes towards the health care system. The survey items have not been formally examined for its psychometric properties.

Methods

Prolonged Engagement and Community Based Participatory Research Approach

Prolonged engagement with the Vietnamese community was carried out to build a relationship of trust and understanding between the investigators and the Vietnamese community's needs, and also involved obtaining support from community organizations' leaders and members for the study (Knobf, Juarez, Lee, Sun, Sun, & Haozous, 2007). Prolonged engagement was also demonstrated with the Vietnamese community with the primary author's involvement with community outreach activities for over two years prior to conducting the study and continued during the study. There was active participation in health fairs and forums through several volunteering roles (nurse Consultant, Vietnamese bilingual, bicultural interpreter, nurse immunizer, mentored community members on research, nursing, and health disparities). This helped to establish trust and community networking (Knobf et al., 2001).

The approach to this study was collaborative and community-based rather than community-placed and addressed a local relevance of a public health issue (Minkler & Wallerstein, 2003) in the Vietnamese immigrant community in the northwest metropolitan area of the U.S. This partnership approach in conducting research strived to equitably and actively involve investigators, organizational representatives, and community members in all aspects of the research process (Israel, Eng, Schulz, & Parker, 2005), including the instrument development and translation process. Community members (i.e., consultant, advisors, liaisons, and experts) collaborated with the investigators to define conceptual and operational definitions of study variables of interest. Instruments were located as a result of a systematic literature review on breast and cervical cancer screening among Asian Americans. These instruments were adapted because they measured variables similar to the identified definitions of variables of interest in this study.

Use of a CBPR approach in adapting and developing a questionnaire for a Vietnamese community was appropriate for this study's sensitive topic, cervical cancer screening, and led to improved internal consistency reliability and support for structural validity. Internal consistency reliability is concerned with the homogeneity of the items within the scales/subscales and suggests that the relationships among items are logically connected to the relationships of the items to the concept (DeVellis, 2003). Structural validity is concerned with the theoretical relationships of the items (predictability) to the factor (concepts) and the relationships of this factor (correlation) to other factors (if any) within the structure (DeVellis). The information obtained helps to provide support for construct validity (extent to which an instrument behaves the way that the construct it purports to measure) (DeVellis).

The investigators were attentive to the knowledge and expertise of community members who were involved in the review of the instruments (Israel et al., 2003). This helped in determining the adequacy of scales/subscales as a measure of the study concepts of interest for the targeted VIW population within the Vietnamese community. Also review by community experts who have engaged extensively with the Vietnamese community helped to maximize item appropriateness to the VIW population while maintaining integrity of the item tapping into the concept. Review by community experts also helped in the identification of a relevant concept, confidentiality issues in obtaining a Pap test, that needed to be included and would have been otherwise omitted (DeVellis, 2003) if a CBPR approach was not implemented (detailed description of the Confidentiality Issues Scale provided later). Use of a CBPR and the U.S. Census Bureau's team approaches to translation (2004) (detailed description of translation procedures provided later) helped to address meaningful translation. In-depth discussions with selected Vietnamese community members prior to translation of the instruments helped in understanding the cultural values surrounding formal and informal communication styles. This was important because of the impact it has on the comprehension of translated items. The meaning of the translated items needed to be maintained so that the underlying intent of each item would be able to be understood by VIW. The general principles for designing good survey instruments were applicable when thinking about wording and comprehension of translated items: ask one item at a time, wording of item in a way so that every participant is answering the same item, and clearly communicating to all participants the kind of answer that constitutes an adequate answer to an item (Fowler, 1995).

The combined translation approaches helped to minimize construct bias because efforts were made to translate in a meaningful way rather than literal translation. The translation team consisted of a translation committee and an independent translation reviewer. An item-by-item review was done after having independently translated a portion of the instruments. The in-depth review of each translated item provided an opportunity for the translation committee to discuss, resolve ambiguities, and determine whether the intent of the original item was maintained in the translated item. This was important in improving structural validity because it helped to provide support that the instruments measured what it was intended to measure. This was also important in improving internal consistency because discussions surrounding the comprehension of the wording of the translated items were done with the understanding that this can impact how participants answered items within a scale/subscale. The latent variable (concept) should be causing the participants to answer in a certain way and individual differences that were observed should be attributed to true score variance and not due to random (systematic) error (e.g., an issue concerning the wording of the translated items) (DeVellis, 2003).

The Ecological Model of health behavior provided a theoretical framework for understanding multiple influences including intrapersonal and organizational influencing factors in obtaining a cervical Pap test (Sallis, Owen, & Fisher, 2008). Intrapersonal influences included Pap testing health beliefs (perceived susceptibility to developing cervical cancer, perceived benefits of Pap testing, perceived common barriers to Pap testing); perceived cultural barriers to Pap testing; confidentiality issues regarding being worried that a doctor, or nurse practitioner, or Vietnamese interpreter will let others know about obtaining a Pap test; and organizational influences included view of the quality of care from the health

care system. Table 1 provided information on the intrapersonal and organizational influencing factors and instruments adapted and modified to measure Pap testing health beliefs, perceived cultural barriers, confidentiality issues, and quality of care from the health care system. A detailed description of survey items used to examine other influencing variables in Pap testing at the intrapersonal, interpersonal, other organizational, community, and health insurance mandate influencing levels are reported elsewhere (Nguyen-Truong, Lee-Lin, Leo, Gedaly-Duff, & Lillian, manuscript in process). These survey items were not examined because they were one-item measures.

Instrument development spanned five stages. Stage one was focused on making initial modifications with the original instruments to accommodate cultural sensitivity and language appropriateness. Stage two was focused on having community members and two Ph.D. prepared community experts review the initial modified instruments. Stage three was the translation process using a CBPR approach and the U.S. Census Bureau's team approach to translation. Stage four was the simultaneous pre-testing of the Vietnamese and English version questionnaires with ten VIW participants who resembled the survey study participants. Stage five was focused on describing the internal consistency and factor structures of the Vietnamese version instruments on a sample of 201 VIW. Figure 1 provided an overview of the five stages of instrument development.

Stage 1: Initial Instrument Modifications

Revised Susceptibility, Benefits, and Barriers Scale (SBBS). The Pap testing health beliefs that this study examined included perceived susceptibility, perceived benefits, and perceived common barriers. Perceived susceptibility was defined as an individual's beliefs about risk of threat or harm related to developing cervical cancer. Perceived benefits

was defined as an individual's belief about positive benefits of Pap testing. Perceived common barriers was defined as an individual's personal obstacles that prevents Pap testing. Pap testing health beliefs were measured using the SBBS (Champion, 1999). This scale originally consisted of 19 items and has three subscales: perceived susceptibility to developing breast cancer (three items, range = 3-15), perceived benefits of mammography screening (five items, range = 5-25), and perceived barriers to mammography screening (11 items, range = 11-55). Content validity was supported by both expert and focus groups of women (Champion). Evidence to support structural validity was demonstrated by both an exploratory factor analysis, which accounted for 54% of the variance for three extracted factors (perceived susceptibility, perceived benefits, and perceived barriers) and a confirmatory factor analysis with a Goodness of Fit Index of .87 (Champion). Cronbach's alpha values demonstrated high internal consistency reliability for perceived susceptibility, perceived benefits, and perceived barriers (.87, .75, .88, respectively). Test-retest reliability was conducted with 804 women for mammography screening who completed the questionnaire again at approximately six weeks with moderate test-retest reliability for perceived susceptibility, perceived benefits, and perceived barriers (r = .62, .61, .71, respectively) (Champion).

Permission was granted by the instrument developer (Champion, 1999) to use and modify the instrument for Pap testing. An item was removed from the perceived barriers subscale, "Having a mammogram exposes me to unnecessary radiation" because having a Pap test would not expose a woman to radiation. The modified Perceived Susceptibility, Benefits, and Barriers Scale (SBBS) version for this study consisted of a remaining 18 items with three subscales: perceived susceptibility to developing cervical cancer (three items),

perceived benefits of Pap testing (five items), and perceived common barriers to Pap testing (ten items). The conceptual term perceived common barriers was used in this study instead of perceived barriers in order to differentiate perceived common barriers from perceived cultural barriers. A 5-point Likert scale was used for each item ranging from 1 to 5, with 1 being strongly disagree to 5 being strongly agree. Scores were summed for each subscale and higher scores indicated greater perceived susceptibility, perceived benefits, and perceived common barriers.

Cultural Barriers to Screening Inventory (CBSI). The components of perceived cultural barriers that this study examined was defined as an individual's beliefs about utilization of Eastern/Asian medicine for illness, modesty about one's body, crisis orientation regarding efficacy of Pap testing, and lack of family support as obstacles to Pap testing. Perceived cultural barriers was measured using the CBSI from Tang et al. (2000). Tang et al.'s inventory consisted of 17 items and has four subscales: utilization of Eastern medicine (three items, range = 3-15), modesty (six items, range = 6-30), crisis orientation (four items, range = 4-20), and lack of family support (four items, range = 4-20) (Tang et al.). This instrument was originally developed for breast and colorectal cancer screening (Tang et al.). Some evidence to support structural validity was demonstrated with an exploratory factor analysis, which accounted for 53.9% of the variance for four extracted factors (utilization of Eastern medicine, modesty, crisis orientation, and lack of family support) (Tang et al.). The inventory also demonstrated moderate internal consistency reliability for utilization of Eastern medicine, modesty, crisis orientation, and lack of family support subscales (Cronbach's alpha = .72, .72, .61, .54, respectively) (Tang et al).

Permission was granted by the instrument developer (Tang et al., 2000) to use and modify the instrument for Pap testing. The term health care provider was changed to doctor and nurse practitioner to clearly define what was meant by health care provider. One item was removed from the modesty subscale, "I would feel embarrassed examining my own breasts for lumps" because self-examination of the cervix does not currently exist in the Pap testing guidelines (American Cancer Society, 2010a; National Cancer Institute 2006b; U.S. Preventative Services Task Force, n.d.). An item was added to the lack of family support subscale, "My spouse or partner has recommended that I get checked for cancer" because there was an item referring to adult children but not an item on spouse or partner. The term "friends" was removed from three items that contained either the term "family friends" or "family and friends" because the focus is on lack of family support, and for this study family was defined as blood kin. The modified Cultural Barriers to Screening Inventory (CBSI) version for this study consisted of 17 items with four subscales: utilization of Eastern medicine (three items), modesty (five items), crisis orientation (four items), and lack of family support (five items). Each item was measured on a 5-point Likert scale with 1 being strongly disagree to 5 being strongly agree. Scores were summed for each subscale. The summed scores were reverse coded for crisis orientation and lack of family support to reflect the same interpretability in scores. Higher scores indicated greater endorsement of the cultural barrier components: utilization of Eastern medicine, modesty, crisis orientation, and lack of family support.

Quality of Care from the Health Care System Scale (QoC). This study examined quality of care from the health care system by adapting five items from the Health is Gold Survey (Nguyen et al., 2006) and was defined as an individual's thoughts on the quality of

care from the health care system. The original five items measured attitudes towards the health care system.

Permission was granted by the instrument developer (Nguyen et al., 2006) to use and modify the instrument. Of the five original items, one item was not adapted because the question pertained to trust in the doctors and other health care providers to do what is best for patients which was not relevant to the conceptual definition in this study that focused on the thoughts of the quality of care being delivered in the U.S (e.g., an item, "Generally speaking, the health care system in the United States treats people unfairly based on their race or ethnic background."). One other item was adapted from the Health is Gold survey (Nguyen et al., 2006) and modified to, "When going to a doctor or nurse practitioner for health care services, Vietnamese receive the same quality of health care as Caucasian/non-Hispanic Whites" because this pertained to thoughts on the quality of care from the health care system. This item and the original four items were developed into a scale. A 5-point Likert scale was used for each item ranging from 1 to 5, with 1 being strongly disagree to 5 being strongly agree. The responses were summed (range = 5-25) with a higher score indicating a greater view of the quality of care from the health care system.

Stage 2: Community Review

Next community members involved in the research had an opportunity to review the initial modified instruments and most suggestions focused on minor edits such as logical flow and clarity. Two community experts (both Ph.D. prepared, one is a medical doctor and anthropologist; the other has a background in adult education and works in community health) had suggested including items pertaining to confidentiality issues in obtaining a Pap test. This suggestion was based on their work with a northwest metropolitan community-

based Vietnamese Women's Health Project regarding beliefs about the Pap test. The investigators worked with the community experts and developed two items to measure confidentiality issues, "One reason for not getting a Pap test would be because I am worried that my doctor or nurse practitioner will let other people know", and "One reason for not getting a Pap test would be because I am worried that the Vietnamese interpreter will let other people know". The items were measured using a 5-point Likert scale with 1 being strongly disagree to 5 being strongly agree. The responses for the Confidentiality Issues Scale (CIS) were summed (range = 2-10) with a higher score indicating greater worry about confidentiality in getting a Pap test.

Stage 3: Instrument Translation

Critical discussions about cultural perspectives and values surrounding informal and formal communication styles were discussed with selected Vietnamese community members. VIW's comprehension of the wording of the items was more important than the literal translation of the words. The consensus was that the blending of the communication styles when translating items would achieve the goal of creating culturally meaningful questions.

The translation team consisted of a translation committee and a translation reviewer, and this is consistent with the U.S. Census Bureau's approach (2004). This process involved orienting community members; needing a commitment of their time; maintaining a log of translation decisions and questions; and using a qualitative analysis to identify and resolve ambiguities.

The translation committee consisted of three members: the first author (Vietnamese, U.S.-born, bilingual, bicultural, nurse), the community consultant (Vietnamese immigrant woman, bilingual, bicultural, Vietnamese language teacher, community health education

background), and a community advisor (Vietnamese-Chinese immigrant woman, multilingual, multicultural, nurse). A modified translation committee approach was used (Schoua-Glusberg, 2004) where each committee member translated a portion of the items independently and documented translation decisions and questions in a log format. The combined translation time needed for the translation committee members to complete their independent translation of their assigned instrument items was 24 hours. Then the members met as a committee to conduct an item-by-item review. Most of the ambiguities surrounded minor grammar, logical flow, and reading comprehension. Also, there currently was not a commonly understood translated term for 'nurse practitioner'. The translation committee arrived at meaningful translation, 'chuyên viên y tá [quyền chẩn đoán bệnh và được viết toa thuốc]' (nursing health care professional [diagnosing and prescribing privileges]). Then the initial Vietnamese translated version arrived at committee consensus which was defined as 100% consensus. Meeting as a committee to conduct an item-by-item review, discuss, and resolve ambiguities took eight hours.

Prior to the translation reviewer (Vietnamese immigrant woman bilingual, bicultural, public health administration background) receiving the initial Vietnamese translation version, an independent review of the English version instruments was done. Then the agreed initial Vietnamese translated version was reviewed independently by the translation reviewer, and translation decisions and questions were also documented in a log format. The translation reviewer's suggestions focused primarily on minor grammar edits, logical flow, and clarity. The translation reviewer required nearly one and a half weeks (12 hours total) to complete her review. The translation committee reviewed these suggestions and resolved ambiguities and also decided to keep the original agreed translated term for 'nurse practitioner'. The

final Vietnamese translation version was determined by 100% committee consensus. This part took three hours.

The investigators decided not to use back-translation procedures because how a translator arrives at translation decisions are not made explicit. Back-translation procedures involves having a person translate the document from the source language to the target language, having another person translate the document from the target language to the source language, and then comparing both documents for accuracy (Schoua-Glusberg, 2004; U. S. Census Bureau, 2004). A team approach to translation allowed for resolution of ambiguities and provided a way of capturing the team's decisions about what items meant rather than only happening in a translator's mind (Schoua-Glusberg; U. S. Census Bureau). Lee-Lin et al. (2007) conducted a study that used a modified committee approach to translation and found it to produce accurate text translation.

Stage 4: Pre-testing

Sample. The questionnaire was pre-tested with ten VIW who resembled the participants in the survey study (self-identified as a Vietnamese immigrant woman who have immigrated to the U.S., between ages 21 to 99 years, had never been diagnosed with cervical cancer, and was able to read and speak English or Vietnamese) to examine clarity and utility. The Vietnamese version had seven participants, and the English version had three participants.

Procedures. The study protocol was approved by the Internal Review Board of the Oregon Health & Science University (OHSU) and the OHSU Knight Cancer Institute. The consenting process included the investigator explaining the purpose of the study to each potential participant. If she expressed interest to be in the study, then her eligibility was

determined. If the participant was eligible, then an information study sheet was provided as the study protocol was determined to be minimal risk and a waiver of signed consent. Each participant received a $20 grocery gift card at the completion of the questionnaire and cognitive interview as an appreciation for her time. Consent was provided when the completed questionnaire was returned and having completed a cognitive interview. If a participant had marked on the questionnaire that she had never had a Pap test, then a Vietnamese-English bilingual Cervical Cancer and Pap Testing informational brochure (brochure available from the National Cancer Institute, 2006a) and a referral regarding Pap testing was provided. These were also provided to participants who requested Pap testing information.

Pre-testing of the Vietnamese and English version questionnaire was done simultaneously. This allowed for advice and opinions about modifying items culturally and linguistically from participants. Each participant was asked to complete a one-time, self-administered pen and paper questionnaire. AVietnamese bilingual, bicultural investigator was present. The questionnaire took an average of 23 minutes to complete (range = 13-35 minutes) followed by an independent cognitive interview of about one hour duration.

Modifications based on participants' comments. Most of the suggestions were about minor logical flow (e.g., consistent instructions for all instrument sections) and clarity, and the investigators addressed these issues. Some participants did not understand what was meant by responding "Neutral" on the 5-point Likert response scale and suggested that this response option be changed to be clearer. Some participants suggested changing the response to "Neither Disagree or Agree" and the change was made. None of the participants felt that the items irritated them or made them feel uncomfortable.

Stage 5: Psychometric Testing

The modified instruments were then examined to see how well items of the instruments held when compared to the original instruments by examining the internal consistency and structural validity. This was done on the same sample of VIW who participated in the survey study (Nguyen-Truong, Lee-Lin, Leo, Gedaly-Duff, & Lillian, manuscript in process).

Sample. A sample of 201 VIW who self-identified as a Vietnamese immigrant woman, were between ages 21 to 99 years, had never been diagnosed with cervical cancer, and were able to read and speak Vietnamese participated in taking the Vietnamese version self-administered pen and paper questionnaire. These VIW were recruited from 12 Asian community organizations in the northwest metropolitan area of Oregon in the U.S. The data collection sites were (listed in order by date of data collection): (1) Vietnamese Senior's Association of Oregon, (2) Vietnamese Senior Citizens of Washington County, (3) Ngoc Son Tinh Xa Buddhist Association, (4) Immaculate Heart Parish, (5) Asian Pacific Islander Parent and Child Development Services Program of the Asian Family Center a Program of the Immigrant & Refugee Community Organization (IRCO), (6) Tinh Xa Ngoc Chau Temple, (7) Hepatitis B Screening Clinic of the Hepatitis B/HIV Prevention & Education Project of IRCO/Asian Family Center, (8) IRCO, (9) Child Care Class, (10) Minh Quang Tinh Xa Temple, (11) Linh Son Tinh Xa Temple, and (12) Holy Mass Celebration of the Lovers of the Holy Cross of Thu Thiem Convent. An investigator was present at the data collection sites and available for questions. The community consultant strongly recommended how providing light refreshments (e.g., snacks, bottled water) at the data collection sites would demonstrate hospitality. A detailed description of the purposive

sampling method and data collection procedures have been reported elsewhere (Nguyen-Truong, Lee-Lin, Leo, Gedaly-Duff, & Lillian, manuscript in process). The consenting process was the same as for the pre-testing (excluding a cognitive interviewing portion).

Data Analysis. SPSS (version 17.0.2, Chicago, Illinois) and Amos (version 17.0 Chicago, Illinois) softwares were used to conduct data analysis. Descriptive statistics were used to describe the sample characteristics, and a Cronbach's alpha was used to evaluate the internal consistency reliability of the items within specific instruments. An exploratory factor analysis (EFA) was conducted for the modified Revised Susceptibility, Benefits, and Barriers Scale (SBBS) and the Cultural Barriers to Screening Inventory (CBSI) for comparison purposes to determine if the EFA led to the same dimensionality as the respective original factor structures. Confirmatory factor analysis was used to evaluate the fit of the three-factor structure of the modified SBBS and the four-factor structure of the modified CBSI. Hu and Bentler (1999) recommended using a two-index presentation strategy (combinational rules) to evaluate the goodness of fit for sample sizes ≤ 250. The incremental fit index (IFI, Bollen's 89) and the root mean square error of approximation (RMSEA) was used to evaluate the fit of the factor structures to the data. The IFI is a comparative index and was used to measure the proportionate improvement in fit by comparing a chi-square to the most restrictive model, a null model defined as having no common factors (Bryant & Yarnold, 1995; Hu & Bentler, 1998). RMSEA is a measure of approximate fit in the population and examines the lack of fit (discrepancy) due to approximation (Schermelleh-Engel, Mossbrugger, & Muller, 2003). An IFI $\geq .95$ and RMSEA $\leq .06$ were used as the cutoff value criteria (Hu & Bentler, 1999).

Handling missing data. Missingness across cases per variable were minimal (across three subscales of the modified Revised Susceptibility, Benefits, and Barriers Scale [SBBS] [2.8% missingness]; four subscales of the modified Cultural Barriers to Screening Inventory [CBSI] [range = 1.9% to 4.3% missingness]; Confidentiality Issues Scale [CIS] [1.9% missingness]; Quality of Care from the Health Care System Scale [QoC] [3.3% missingness]). Data were determined to be missing at random. Case mean substitution was used in which the participant's mean score was based upon the available items, and then used to impute the missing score for that participant (Fox-Wasylyshyn & El-Masri, 2005). This was based on the assumption that the score on any data point was closely related to the scores of the available data points. Differences were acknowledged across cases by using data provided within a case. For perceived benefits, perceived common barriers, modesty, lack of family support, quality of care from the health care system, case mean substation was only used if at least four of the five items (80%) were not missing. For crisis orientation, three of four items (75%) were required to be non missing and for perceived susceptibility and utilization of eastern medicine, the two of three non missing items (67%) were required. For confidentiality issues, at least one of the two items (50%) needed to have a valid value.

Results. Participants were middle aged with an average age of 50 years (SD ± 13.96 years), were an average age of 35 years when immigrated to the U.S. (SD ±14.63 years), had lived an average of 15 years in the U.S. (SD ± 9.15 years), and about 40% spoke English poorly or not at all. Approximately 66% of participants were currently married or living with a partner, 39% had less than high school education, 36% had some college or a graduate degree, and 94% identified with a religion. Forty-eight percent were employed full-time. Of the 79% that responded to the income item, 33% had less than $15,000 total annual

household income before taxes. A detailed description of the sample characteristics for the study has been reported elsewhere (Nguyen-Truong, Lee-Lin, Leo, Gedaly-Duff, & Lillian, manuscript in process).

Internal consistency reliability. The Cronbach's alpha values for the subscales of the modified Revised Susceptibility, Benefits, and Barriers Scale (SBBS) ranged from .69 to .86. The CBSI subscales yielded Cronbach's alpha values that ranged from .69 to .91. The CIS had a Cronbach's alpha of .89, and the Cronbach's alpha for the QoC was at .57. Table 2 compared the internal consistency scores for the available original instruments and VIW participants' scores on the instruments.

Structural validity. The factor structures in this study reflect the adapted, modified, translated, and pre-tested Revised Susceptibility, Benefits, and Barriers Scale (SBBS) and the Cultural Barriers to Screening Inventory (CBSI).

Table 3 is a comparison of factor loadings for the original SBBS and VIW participants (n = 201). A principal axis factoring extraction method with a varimax rotation was used in which a three-factor solution was forced for items of the SBBS a priori. This allowed for comparison with the original SBBS as Champion (1999) used a varimax rotation and had forced a three-factor solution a priori. The three factors together accounted for 44.22% of the variance (perceived susceptibility = 13.01%; perceived benefits = 9.47%; perceived common barriers = 21.74%). The factor loadings ranged from .76 to .82 for perceived susceptibility, .47 to .70 for perceived benefits, and .33 to .80 for perceived common barriers.

The three-factor structure of the modified SBBS yielded an IFI at .83 and an RMSEA at .094. See figure 2 for the three-factor structure of the modified SBBS. The standardized

regression weights ranged from .72 to .87 for perceived susceptibility, .07 to .98 for perceived benefits, and .29 to .79 for perceived common barriers. Perceived susceptibility was positively associated with perceived benefits and perceived common barriers (r = .22 and r = .11, respectively). Perceived benefits was negatively associated with perceived common barriers (r = -.25).

Table 4 is a comparison of factor loadings for the original CBSI and VIW participants (n = 201). A principal axis factoring extraction method with an oblimin rotation was used for items of the modified CBSI. This allowed for comparison with the original CBSI as Tang et al. (2000) used an oblique rotation. Four factors were extracted and together accounted for 56.94% of the variance (utilization of eastern medicine = 5.22%; modesty = 19.49%; crisis orientation = 7.78%; lack of family support = 24.45%). The factor loadings ranged from .54 to .73 for utilization of eastern medicine, .38 to .94 for modesty, .30 to .89 for crisis orientation, and .60 to .92 for lack of family support.

The four-factor structure of the modified CBSI yielded an IFI at .88 and an RMSEA at .098. See figure 3 for the four-factor structure of the modified CBSI. The standardized regression weights ranged from .54 to .80 for utilization of eastern medicine, .49 to .87 for modesty, .28 to .91 for crisis orientation, and .63 to .95 for lack of family support. Utilization of eastern medicine was positively associated to modesty (r = .51). Whereas utilization of eastern medicine was negatively associated to lack of family support (r = -.14) and demonstrated a low negative association with crisis orientation (r = -.03). Crisis orientation was positively associated to modesty and lack of family support (r = .19 and r = .45, respectively). Modesty demonstrated a low negative association to lack of family support (r = -.05).

Discussion. The results of the psychometric testing for the Vietnamese version instruments are promising. Using a combination of CBPR and the U.S. Census Bureau's team approach to translation produced Vietnamese language instruments with moderate to strong subscale internal consistency. Based on comments and suggestions from community members, community experts, and VIW who participated in the pre-testing of the questionnaire, items were modified to mostly address grammar, logical flow, reading comprehension, and clarity. Also, the two-item Confidentiality Issues Scale (CIS) was developed with the community experts. Having community members and community experts review the questionnaire and pretested with VIW helped make the instruments culturally sensitive and linguistically appropriate.

Cronbach's alphas of the perceived susceptibility, perceived benefits, and perceived common barriers subscales of the modified Revised Susceptibility, Benefits, and Barriers Scale (SBBS) demonstrated moderate to high internal consistency reliability in the sample of VIW in this study. The results of the perceived susceptibility and perceived common barriers were consistent with the results reported by Champion (1999). The result of perceived benefits was slightly lower than reported by Champion (.69 vs. .75).

Cronbach's alphas of the modified Cultural Barriers to Screening Inventory (CBSI) subscales, utilization of eastern medicine, modesty, crisis orientation, and lack of family support demonstrated moderate to high internal consistency reliability. The result of utilization of eastern medicine in this study was consistent with the result reported by Tang et al. (2000). The results for the other remaining three subscales were higher than reported by Tang et al.

The Confidentiality Issues Scale (CIS) demonstrated high internal consistency reliability, and the modified Quality of Care from the Health Care System Scale (QoC) demonstrated moderately low internal consistency reliability.

An existing factor structure theoretically exists for the modified Revised Susceptibility, Benefits, and Barriers Scale (SBBS) and the Cultural Barriers to Screening Inventory (CBSI). The original SBBS had been tested with White non-Hispanic, African American, and Chinese American immigrant women and yielded three distinct factors which were perceived susceptibility, perceived benefits, and perceived common barriers (Champion, 1999; Lee-Lin et al., 2008). None of the items had cross loadings (Champion; Lee-Lin et al., 2008). For this study, the PAF with a varimax rotation for the modified SBBS was conducted and confirmed similar factors to Champion's original instrument and Lee-Lin's et al. (2008) study. However, one item, "Having a Pap test will help me find abnormal cells early", was found to cross load onto the perceived benefits and perceived susceptibility subscales. An important note is that this item was found to load higher onto perceived benefits than the perceived susceptibility subscale. The original CBSI has four factors — utilization of eastern medicine, modesty, crisis orientation, and lack of family support and had been tested with Chinese American women from Asian community centers and churches in the metropolitan areas of Oregon of the U.S. and from senior centers in two large cities on the east coast of the U.S. (Lee-Lin et al., 2008; Tang et al., 2000). None of the items had cross loadings (Lee-Lin et al., 2008; Tang et al.). Lee-Lin et al. (2008) renamed the lack of family support subscale to rely on others. The PAF with an oblimin rotation was used for items of the modified CBSI. The factors were similar to Tang and colleagues' original

instrument and similar to those identified in Lee-Lin and colleague's study. None of the items had cross loadings.

A confirmatory factor analysis was conducted on the VIW in this study to examine the fit of the factors as a structure for the respective modified Revised Susceptibility, Benefits, and Barriers Scale (SBBS) and Cultural Barriers to Screening Inventory (CBSI). The three-factor structure of the modified SBBS and the four-factor structure of the modified CBSI did not yield a proportionate improvement in the fit of the respective structure. An examination of the approximate fit yielded a relative lack of fit for both of the structures.

A possible explanation regarding the relative lack of fit of the factors within the respective structure may be due to having items that presented with lower standardized regression weights. A standardized regression weight less than .50 might indicate that an item was not related (not aligned) to the respective factor (Moss, 2008). Therefore, the items were being examined for their predictability for the respective factor.

The standardized regression weights for the items of the perceived susceptibility subscale were all greater than .50. Though three of the five items of the perceived benefits subscale and two of the ten items of the perceived common barriers subscale had standardized regression weights that were less than .50. The following items, "If I get a Pap test and nothing is found, I do not worry as much about cervical cancer", "If I find abnormal cells through a Pap test, my treatment for cervical cancer may not be as bad", and "Having a Pap test will decrease my chances of dying from cervical cancer" did not appear to be related or aligned well with the perceived benefits subscale. The following item of the perceived common barriers subscale, "I don't know how to go about getting a Pap test" presented with a standardized regression weight slightly less than .50, and the other item "I cannot remember

to schedule a Pap test" presented with a standardized regression weight less than .50. This may indicate that these items were not related or aligned with the respective factor.

The standardized regression weights for the items of the utilization of eastern medicine and lack of family support medicine subscales were all greater than .50. However, the standardized regression weights for two of the five items of the modesty subscale were slightly less than .50. The following items, "I only see a doctor or nurse practitioner when I am having a health problem", and "If I follow a healthy diet and exercise, I probably don't need to use other prevention methods like cancer screening tests" may not be related or aligned with the modesty subscale. The standardized regression weight for one of the four items of the crisis orientation subscale, "When I get sick I usually take Western/American medicine", was also less than .50.

The exploratory factor analysis suggested that there was an association between all of the items with the respective factor. Overall, eight items demonstrated low standardized regression weights in a confirmatory factor analysis, of which four of these items were found to have a factor loading greater than .40 in an exploratory factor analysis. Although the three items of the perceived benefits subscale had factor loadings greater than .40, the predictability of these items for perceived benefits were very low. It is also important to note that the one item of the perceived common barriers subscale, two items of the modesty subscale, and the one item of the crisis orientation subscale presented had low regression weights (less than .50) and factor loadings (less than .40).

A sensitivity testing could be conducted in which items, starting with the lowest regression weight, can be removed one by one to examine the improvement in the fit of the respective factor structure. Based on the findings from the sensitivity testing for the

modified SBBS, if there was an improvement in the fit of the structure, then this might suggest that perceived benefits may be an underlying contributor to the relative poor fit. A possible explanation for this is that perceived benefits may not be a good fit culturally related to VIW's beliefs about benefits to Pap testing. In addition to sensitivity testing, the items could undergo further refinement with the use of focus group discussions, which could be used to evaluate assumptions about the reality as understood by VIW (Fowler, 1995). This might also provide information about why perceived benefits might not have been a good fit when examining Pap testing health beliefs. Also, focus groups discussions could help to provide information on the assumptions about the way VIW understand other items, terminology, or concepts (Fowler).

Earlier versions of the Revised Susceptibility, Benefits, and Barriers Scale (SBBS) had been tested with White non-Hispanic, VIW, Korean (native), and Jordan (native) women and demonstrated to be a moderate to highly reliable instrument that has been used to measure beliefs about breast cancer screening (Champion, 1984; Champion, 1993; Ho et al., 2005; Lee, Kim, & Song, 2002; Mikhail & Petro-Nustas, 2001) and cervical cancer screening in VIW (Ho et al., 2005). This study suggested that it could be used to measure Pap testing beliefs in VIW with the consideration of not including perceived benefits to Pap testing. The modified Cultural Barriers to Screening Inventory (CBSI) had been tested with middle-aged to older Chinese Americans. This study suggested that the modified CBSI could be used with younger to older VIW and could also be used to measure perceived cultural barriers to Pap testing.

This questionnaire was created that had adapted and modified these instruments and then had to be translated. Use of a combination of CBPR and the U.S. Census Bureau's team

approach was a time intensive process. The translation team was committed to completing the translation of the instruments within a one month timeline.

Limitations and Strengths

One limitation is that the sample of VIW were self-selected. These participants might have a tendency to like to participate in activities such as studies, and this can limit the diversity in the sample. Self-report measures can be susceptible to socially desirable biases (Sadish, Cook, & Campbell, 2002). These participants may have had a tendency to answer items in a positive manner. Efforts were made to be clear about the study purpose. The questionnaire had embedded reminders in the instruction statements regarding how the information would be kept confidential, the importance of accurate information, interests in the participants' views, and to answer each question honestly. The setting is limited to Asian community organizations in the northwest metropolitan area of the U.S. However, the investigators collected data from twelve sites as a way to address having heterogeneous settings versus only collecting data from a single or a few settings.

Prolonged engagement with the Vietnamese community for over two years prior to conducting the study was a strength because it allowed the investigators to build a relationship of trust with community members in the Vietnamese community. Another strength was in the community-based oriented design. This study used an innovative approach to conducting research. Use of a CBPR approach addressed a local relevant public health issue in the Vietnamese community, and this approach led to the adaptation and development of a questionnaire that resulted in improved internal consistency reliability and support for structural validity.

Working with community members and community experts helped in determining the adequacy of scales/subscales as a measure of the study concepts of interest for the targeted VIW population within the Vietnamese community and maximized item appropriateness to the VIW population while maintaining integrity of the item tapping into the concept. This helped in the identification of a relevant concept (confidentiality issues in obtaining a Pap test) that would have been otherwise omitted if a CBPR approach was not implemented. The combined CBPR and the U.S. Census Bureau translation team approaches helped to minimize construct bias because efforts were made to translate in a meaningful way rather than literal translation. As a result, the underlying meaning of the translated items was maintained. This improved structural validity because it helped to provide support that the instruments measured what it was intended to measure. This also improved internal consistency reliability because discussions surrounding the comprehension of the wording of the translated items were done with the understanding that this could impact how participants answered items within a scale/subscale.

Conclusions and Implications for Research and Practice

This study provided information on the fit of the three-factor structure of the modified SBBS and the four-factor structure of the modified CBSI. This is important when determining how well items relate or align with the respective factors. Eight items demonstrated low predictability for the respective factor, and all items presented with a factor loading greater than or equal to .30 of which four items had a factor loading greater than .40 in an exploratory factor analysis. Sensitivity testing is needed to provide additional validity support for these instruments, and the respective factor structure could be re-examined to see if this improves the proportionate improvement in fit and the approximate fit.

Further testing is needed to examine whether the modified Revised Susceptibility, Benefits, and Barriers Scale (SBBS), modified Cultural Barriers to Screening Inventory (CBSI), Confidentiality Issues Scale (CIS), and modified Quality of Care from the Health Care System Scale (QoC) could be used for other racial-ethnic groups and ethnic subgroups. Prior studies have explored the dimensionality of the factors for the SBBS and the CBSI in English and languages other than Vietnamese (Chinese, Arabic, Korean; Chinese, respectively).

Further research is needed to adapt and develop culturally appropriate instruments for measuring external influencing variables to engaging in cervical cancer screening including interpersonal, other organizational, community, and health insurance mandate level influences.

Using a combination of CBPR and the U.S. Census Bureau's team approach can advance cross cultural measurements nursing science. In order to achieve a culturally appropriate and sensitive study topic with VIW and Pap testing, working with community members in this study's instrument development process was essential so as to address cross-cultural validity of these instruments. This resulted in a better understanding of cultural perspectives and values surrounding formal and informal communication styles and how these would influence VIW's comprehension of the instrument items. Use of an innovative approach to translation allowed decisions to be made as a team in resolving ambiguities, and provided a way of capturing the team's decisions about what items meant in an explicit manner rather than only happening in a translator's mind like in back-translation. This is an undervalued approach to translation, and using such approaches to minimize construct bias because efforts are being made to translate in a meaningful way rather than literal translation.

This process should maximize the cross-cultural validity of these instruments. Funding for studies that use such translation approaches needs to be a priority as well as recognizing the time and commitment required of the translation team members.

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Table 1. Intrapersonal and Organizational Influencing Factors, Instruments Adapted and Modified to Measure Pap Testing Health Beliefs, Perceived Cultural Barriers, Confidentiality Issues, and Quality of Care from the Health Care System

Influencing Level	Variables	Instruments
Intrapersonal	Pap testing health beliefs	Revised Susceptibility, Benefits, and Barriers Scale (SBBS)
		(Champion, 1999)
	Perceived susceptibility	Perceived susceptibility subscale
	Perceived benefits	Perceived benefits subscale
	Perceived common barriers	Perceived common barriers subscale
	Perceived cultural barriers	Cultural Barriers to Screening Inventory (CBSI)
		(Tang, Solomon, & McCracken, 2000)
		Utilization of eastern medicine subscale
		Modesty subscale
		Crisis orientation subscale
		Lack of family Support subscale
	Confidentiality issues	Confidentiality Issues Scale[a] (CIS)
Organizational		Health is Gold survey (Nguyen, et al., 2006)
	Quality of care from the health care system	Attitudes towards the health care system items

Note. Pap, Papanicolaou test.
[a] Developed with Community Experts.

Table 2. Comparison of Cronbach's Alphas for the Original Instruments and Vietnamese Immigrant Women Participants (n = 201)

	Internal Consistency for the Original Instruments		Internal Consistency for the Vietnamese Version Instruments	
Instrument	**Number of Items**	**Cronbach's Alpha**	**Number of Items**	**Cronbach's Alpha**
Revised Susceptibility, Benefits, and Barriers Scale (SBBS)				
Perceived susceptibility subscale	3	.87	3	.86
Perceived benefits subscale	5	.75	5	.69
Perceived common barriers subscale	11	.88	10	.86
Cultural Barriers to Screening Inventory (CBSI)				
Utilization of eastern medicine subscale	3	.72	3	.69
Modesty subscale	6	.72	5	.83
Crisis orientation subscale	4	.61	4	.77
Lack of family Support subscale	4	.54	5	.91
Confidentiality Issues Scale (CIS)	2	n/a	2	.89
Quality of Care from the Health Care System Scale (QoC)	5	n/a	5	.57

Note. n/a, not available.

Table 3. Comparison of Principal Axis Factoring with Varimax Rotated Factor Loadings for the Original Revised Susceptibility, Benefits, and Barriers Scale (SBBS) and Vietnamese Immigrant Women Participants (n = 201)

	Original SBBS		Vietnamese Version	
Items of the modified Revised Susceptibility, Benefits, and Barriers Scale (SBBS)	**Number of Items**	**Factor Loadings**	**Number of Items**	**Factor Loadings**
Pap Testing Health Beliefs				
Perceived Susceptibility Subscale	3		3	
It is likely that I will get cervical cancer. [a]		.91		.82
My chances of getting cervical cancer in the next few years are great. [a]		.89		.82
I feel I will get cervical cancer sometime during my life. [a]		.87		.76
Perceived Benefits Subscale	5		5	
Having a Pap test will help me find abnormal cells early. [a]		.71		.47[b]
Having a Pap test is the best way for me to find abnormal cells. [a]		.75		.57
If I get a Pap test and nothing is found, I do not worry as much about cervical cancer. [a]		.55		.49
If I find abnormal cells through a Pap test, my treatment for cervical cancer may not be as bad. [a]		.73		.67
Having a Pap test will decrease my chances of dying from cervical cancer. [a]		.75		.70
Perceived Common Barriers Subscale	11		10	
I am afraid to have a Pap test because I might find out something is wrong. [a]		.64		.61

Items of the modified Revised Susceptibility, Benefits, and Barriers Scale (SBBS)	Original SBBS		Vietnamese Version	
	Number of Items	Factor Loadings	Number of Items	Factor Loadings
I am afraid to have a Pap test because I don't understand what will be done. [a]		.72		.73
I don't know how to go about getting a Pap test. [a]		.68		.45
Having a Pap test is too embarrassing. [a]		.79		.78
Having a Pap test takes too much time. [a]		.75		.80
Having a Pap test is too painful. [a]		.64		.61
People doing Pap tests are rude to women. [a]		.66		.54
I cannot remember to schedule a Pap test. [a]		.48		.33
I have other problems more important than getting a Pap test. [a]		.67		.52
I am too old to need a routine Pap test. [a]		.70		.55

Note. Pap, Papanicolaou test.
[a] The items have been modified to reflect Pap testing health beliefs.
[b] An item, “Having a Pap test will help me find abnormal cells early” also cross loaded onto the perceived susceptibility subscale (.31).

Table 4. Comparison of Principal Axis Factoring with Oblimin Rotated Factor Loadings for the Original Cultural Barriers to Screening Inventory (CBSI) and Vietnamese Immigrant Women Participants (n = 201)

	Original CBSI		Vietnamese Version	
Items of the modified Cultural Barriers to Screening Inventory (CBSI)	**Number of Items**	**Factor Loadings**	**Number of Items**	**Factor Loadings**
Perceived Cultural Barriers				
Utilization of Eastern Medicine Subscale	3		3	
I sometimes use Eastern/Asian medicine as a treatment for health problems. [a]		.85		.59
I would choose to use Eastern/Asian medicine to cure an illness before trying Western/American medicine. [a]		.73		.73
I believe that Eastern/Asian medicine is very effective in treating health problems. [a]		.71		.54
Modesty Subscale	6		5	
I feel uncomfortable talking about my body with a doctor or nurse practitioner. [a]		.78		.72
I would feel embarrassed with a doctor or nurse practitioner examining my cervix as a part of a medical exam. [a]		.66		.94
I am modest about my body even if it involves a health examination. [a]		.64		.79
I only see a doctor or nurse practitioner when I am having a health problem. [a]		.56		.38
If I follow a healthy diet and exercise, I probably don't need to use other prevention methods like cancer screening tests. [a]		.55		.39

	Original CBSI		Vietnamese Version	
Items of the modified Cultural Barriers to Screening Inventory (CBSI)	**Number of Items**	**Factor Loadings**	**Number of Items**	**Factor Loadings**
Crisis Orientation Subscale	4		4	
Even if I do not have a family history of cervical cancer, it is important to be checked regularly. [a, b]		.78		.54
Cervical cancer screening test like Pap testing is a good method of finding cancer early. [a, b]		.71		.82
It is better to detect health problems early through screening efforts. [a, b]		.68		.89
When I get sick I usually take Western/American medicine. [a, b]		.55		.30
Lack of family Support Subscale	4		5	
My adult children have recommended for me to get checked for cancer. [a, b]		.76		.81
My spouse or partner has recommended that I get checked for cancer. [a, b]		n/a		.91
My family has advised me to go to the doctor or nurse practitioner to get checked for cancer. [a, b]		.62		.92
My family has talked to me about the importance of getting checked for cancer. [a, b]		.55		.83
I rely on my family to advise me about health matters. [a, b]		.43		.60

Note. Pap, Papanicolaou test.
[a] The items have been modified to perceived cultural barriers.
[b] Items of the crisis orientation and lack of family support subscales were reverse coded.

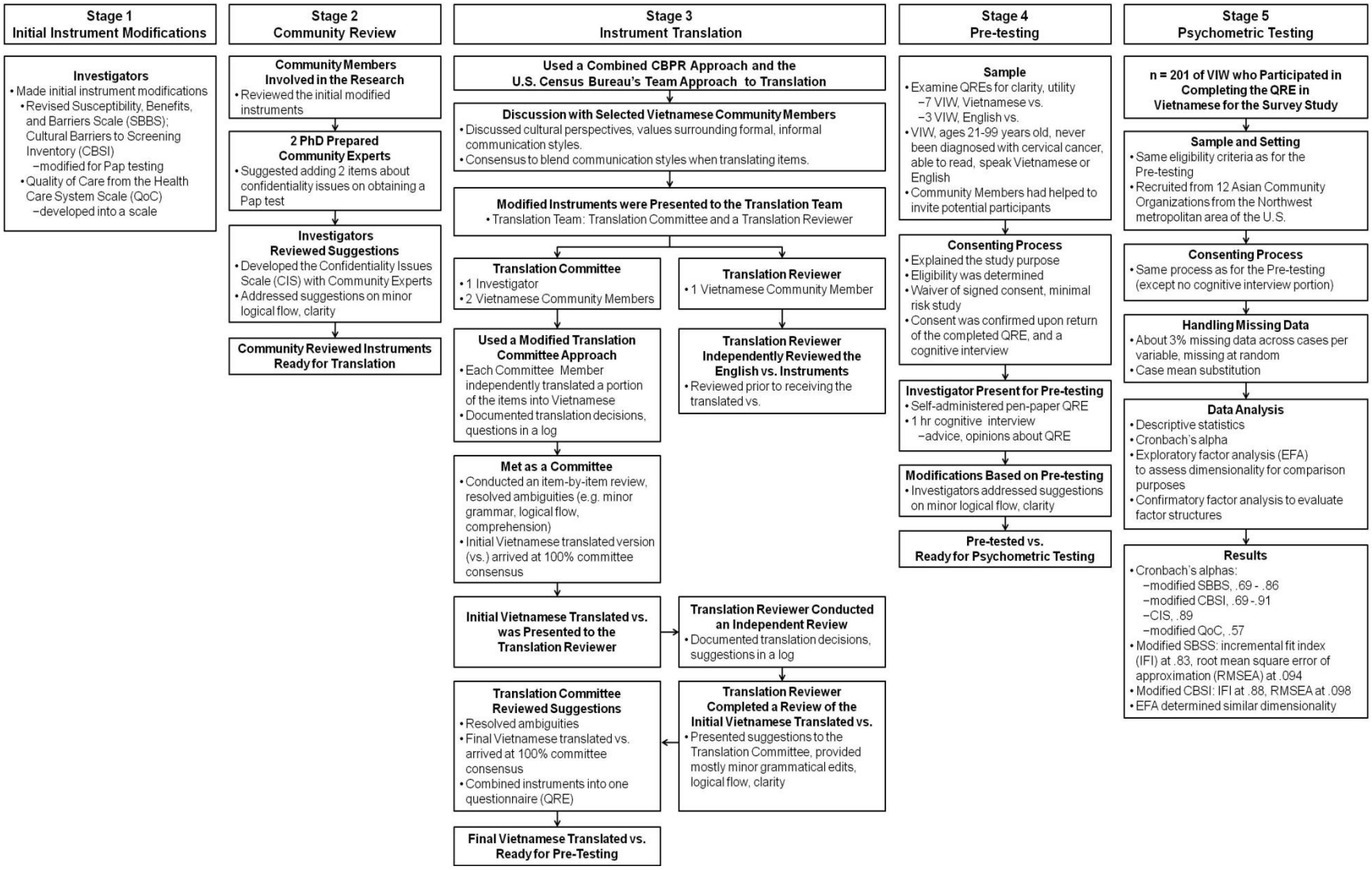

Figure 1. Overview of the Five Stages of Instrument Development

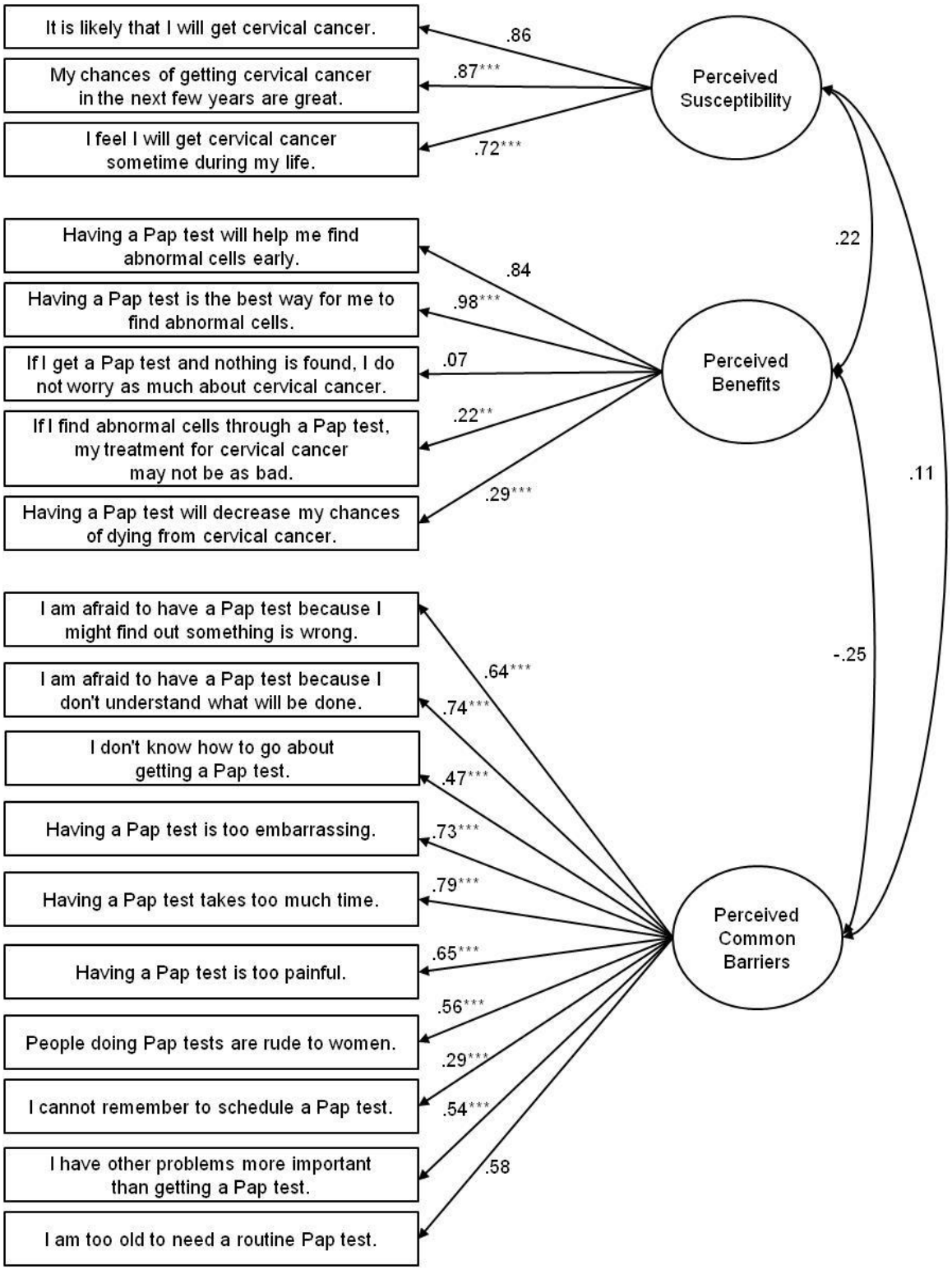

Figure 2. Three-factor Structure of the Modified Revised Susceptibility, Benefits, and Barriers Scale (SBBS). Completely standardized maximum likelihood parameter estimates.
** p < .01. *** p < .001.

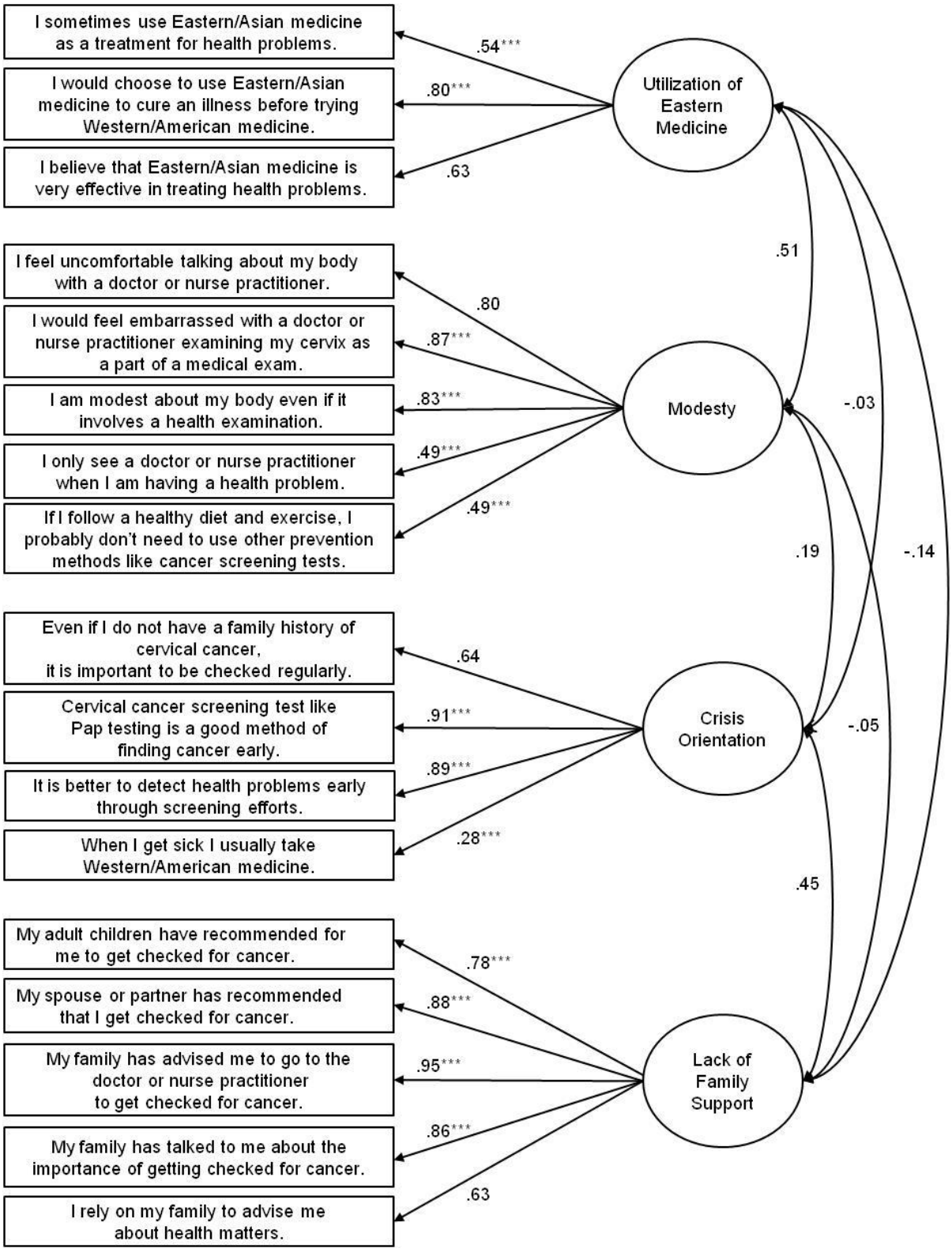

Figure 3. Four-factor Structure of the Modified Cultural Barriers to Screening Inventory (CBSI). Completely standardized maximum likelihood parameter estimates.
*** $p < .001$.

CHAPTER 4 RESULTS MANUSCRIPT

Cervical Cancer Beliefs and Pap Testing Practices Among Vietnamese Immigrant Women Living in the United States: An Ecological Collaborative Approach

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Abstract

Background: Vietnamese American women are diagnosed with cervical cancer and die at higher rates than that of White non-Hispanic and larger Asian women subgroups. Pap testing is low compared to the Healthy People Objectives. What little is known about Vietnamese immigrant women's (VIW, non U.S.-born) Pap testing beliefs includes perceiving cancer as death and preferring not to know if it cannot be changed. **Objective:** This cross-sectional community-based research examined the association between awareness, knowledge, confidentiality issues, and beliefs regarding cervical cancer and Pap testing, individual/external influencing factors, quality of care from the health care system, and knowledge of the HPV vaccine with Pap test receipt and adherence; and to describe community resources. **Methods:** A questionnaire was used with n = 211 VIW from the Northwest metropolitan area of the U.S. **Results:** 74% had received a Pap test and 69% were adherent. Confidentiality issues and common barriers to screening, modesty, and use of eastern medicine were negatively associated to receipt and adherence. English speaking ability, ever having requested a Pap test, a doctor/nurse practitioner recommended Pap testing, a regular provider, and health insurance were positively associated to receipt and adherence. Only 11% knew where to get free/low-cost Pap tests. **Conclusions:** Having a health care provider recommended Pap testing and health care insurance are external explanations for adhering to Pap testing. **Implications for Practice:** Advanced practice nurses are increasingly doing Pap testing and can promote screening among VIW by recognizing these influencing factors.

Keywords: Vietnamese women, Immigrants, Cancer screening, Pap testing, Cervical smears, Vaginal smears

Cervical Cancer Beliefs and Pap Testing Practices Among Vietnamese Immigrant Women Living in the United States: An Ecological Collaborative Approach

Background

In 2010, it was estimated that 12 200 women would be diagnosed with cervical cancer in the United States (U.S.) and that 4 210 women would die from cervical cancer.[1] Cervical cancer is likely to be successfully treated if detected in its early stages with a relative survival close to 100% for pre-invasive cervical cancer lesions and close to 92% at five years for invasive localized cervical cancer lesions.[2,3] Women who have never been screened or have not been screened within the past five years have a significant risk of developing invasive cervical cancer.[4] Approximately 60% of newly diagnosed cervical cancer cases occur among women who do not adhere to screening guidelines, and between 60-80% of women who are diagnosed with advanced cervical cancer have not had a Papanicolaou (Pap) test within the past five years.[3,5] A Pap test is a screening procedure that collects a small sample of cervical cells via a vaginal examination that are then examined under the microscope for pre-cancerous and cancerous lesions of the cervix.[6]

The overall use of Pap testing among women in the U.S. has become more common.[7] However, Vietnamese American women (VAW, U.S.-born and immigrants) continue to have low Pap testing rates. Across studies, approximately 37-80% of VAW reported having had at least one Pap test in their lifetime.[8-16] Only 68% of VAW reported adherence to cervical cancer screening guidelines (having had a Pap test in the past three years).[13] Women should continue to have a Pap test at least once every three years.[17] These rates were low compared to the national Healthy People 2010 objectives[18] set forth by the Centers for Disease Control and Prevention, which was for 97% of women aged 18 years and older to have at least one

Pap test in their lifetime and for 90% to have a Pap test within the past three years. Regular screening exams may result in detection and removal of pre-cancerous growths before they become malignant; thereby, contributing to increased control of cancer.[19] Cancers such as cervical cancer that can be prevented or detected earlier by screening accounts for at least 50% of all new cancer cases.[19]

Low Pap testing rates may be a contributing factor that places VAW at a higher risk for developing cervical cancer. Previous data (1998-2002) indicated that VAW were diagnosed with cervical cancer two times higher than White non-Hispanic women (16.8 vs. 8.1 per 100 000 respectively) and higher than all larger Asian women subgroups (Chinese, Filipino, Japanese, Korean).[20] VAW were more often diagnosed with late stage (regional spread or metastases to the regional lymph node) cervical cancer diagnosis compared to White non-Hispanic women (36% vs. 28% respectively) and Korean and Japanese Asian women subgroups.[20] In addition, VAW died at a higher rate from cervical cancer compared to White non-Hispanic women (4.4 vs. 2.4 per 100 000 respectively) and highest of all larger Asian ethnic subgroups.[20]

The human papilloma virus (HPV) has been shown to be the primary cause in the development of cervical cancer and is primarily acquired through sexual activity.[21] The prevalence of HPV in cervical cancer is 99.7% worldwide.[22] Cervical cells get invaded by a HPV type, and the HPV takes over the intracellular machinery which results in the replication of more viruses. The HPV vaccine, a quadrivalent vaccine, is protective towards four HPV types (ie, 6, 11, 16, 18), and has been available since June 2006.[23] The HPV vaccine is currently available for females as young as age 9 and up to 26 years old. There is

paucity of research regarding knowledge of the HPV vaccine with Pap testing among Vietnamese immigrant women (VIW, non U.S.-born).

There are little quantitative, descriptive data regarding what might be different among VIW regarding contributing factors to Pap testing.[9,10,12] Held cultural beliefs regarding cervical cancer screening may delay detection of cancer and treatment. Approximately 81% of VIW felt they were unlikely to ever be diagnosed with cervical cancer and reported having no history of cancer in one's family, feeling healthy, and never thinking about cancer as reasons for believing their cervical cancer risk was low.[12] Burke and colleagues[24] found that VIW performed practices of vaginal washing, and this was done as a preventive for illness and general women's health. VIW in this study only sought a doctor if there were signs of cervical cancer suggesting having to be symptomatic prior to seeking care. VIW believed that women in a monogamous relationship, older women, and women who were sexually inactive did not need to get Pap tests.[24] Other reasons VIW provided for never having a Pap test or avoiding getting Pap tests included perceiving cancer as death, preferring not to know about something that could not be changed, being shy or embarrassed, lacking a doctor's recommendation, lacking access to a gynecologist, experiencing pain from a past Pap test, experiencing a language barrier, and cost.[12, 24, 25]

Various theoretical perspectives had been used across studies. Some studies focused only on the individual cervical cancer screening behavior such as the Health Belief Model, Theory of Reasoned Action, and the Transtheoretical Model of Change.[9,12,14] Whereas, other studies focused on individual behavior and external influencing factors to cervical cancer screening such as the Health Behavior Framework and the Pathways model, which originated from the PRECEDE/PROCEED framework.[11,13]

Theoretical Framework

The Ecological Model (EM) of health behavior was the theoretical framework that guided this study.[26] The EM contains the central concept that health behavior has multiple interacting determinants of influences. An underlying assumption of the EM is that a combination of individual-level, environmental, and policy-level interventions are needed to have sustainability of changes in health behavior.[26] The EM consists of four principles: (1) multiple factors influence health behaviors; (2) influences on behaviors interact across these different levels, and there are multiple variables at each level; (3) the EM should be behavior specific in order to guide research and intervention; and (4) multi-level interventions might be the most effective in changing behavior. This implies that single-level interventions are unlikely to have sustainable effects. In this study, the EM provided a comprehensive framework for examining multiple influences on Pap test receipt and Pap test adherence.[26,27] The components of the EM included intrapersonal and external influences such as interpersonal, organizational, community, and health insurance mandate influences (figure 1). A health insurance mandate is a requirement for an insurance company or health plan to cover or offer coverage such as mandated benefits.[28] The EM is differentiated from behavioral models that focus only on individual characteristics. Use of an EM included individual explanations and moved beyond individual explanations which held individuals responsible for not engaging in cervical cancer screening.

The aims of this cross-sectional descriptive community-based study were (1) to examine the association between awareness, knowledge, confidentiality issues, and beliefs regarding cervical cancer and Pap testing, individual and external influencing factors, and quality of care from the health care system with Pap test receipt and Pap test adherence; (2)

to examine the association of knowledge of the HPV vaccine with Pap test receipt and Pap test adherence; and (3) to describe community resources. The associations between knowing where to get a free or low-cost Pap test with Pap test receipt and Pap test adherence were explored as a part of describing community resources. This study further explored the relationship among significant variables that were found to be independently associated with Pap test receipt and Pap test adherence in a multivariate logistic regression model to examine the unique associations for Pap test receipt and Pap test adherence. The secondary aims were (4) to explore exposure to the media regarding cervical cancer and Pap testing with Pap test receipt and Pap test adherence, and (5) to explore the intention of VIW ages 21 to 99 years living in the U.S. who had never had a Pap test to obtain a Pap test within the next three years. Findings for secondary aim 6 were reported in Chapter 3 (Nguyen et al., manuscript in process), and included a description of the instrument development, translation procedures, and an examination of the internal consistency reliability and structural validity of the Vietnamese translated instruments.

Methods

This study is community-based instead of being community-placed and collaborative based on the community based participatory research (CBPR) approach.[27] This study addressed a local relevance of a public health issue in the Vietnamese community. The implementation included active involvement of investigators and community members (ie, community consultant, advisors, liaisons, experts) in the research process. CBPR is an approach to gaining input and discussion with community members and organizational representatives to address rigor and cultural appropriateness of the study design including refinement of study aims, instruments, translation, implementation and recruitment, communication with organizations,

and interpretation of results. Co-learning had occurred in that investigators learned from community members' held understandings about the Vietnamese community through prolonged engagement by participating in community outreach activities (eg, community health forums and health fairs) and community members had acquired skills in how to conduct research.[27] Prolonged engagement by the first author occurred for over two years prior to conducting the study and continued during the study. Ongoing engagement is still being carried out after data analyses.

Instruments and Variables

The theoretical concepts were measured in the following instruments that were adapted and modified for Pap testing: the Foreign Born Chinese Women's (FBCW) Mammography and Pap Testing Questionnaire, Vietnamese Women's Health Project Questionnaire (VWHPQ), Health is Gold Survey (HGS), Revised Susceptibility, Benefits, and Barriers Scale (SBBS), and Cultural Barriers to Screening Inventory (CBSI).[13,29,30-32]

Intrapersonal influences. In this study, intrapersonal influences included sociodemographic characteristics/background such as identifying marital status, highest educational level, adaptation to the U.S, identifying with a religion, and having someone in the immediate family who has been diagnosed with cervical cancer. Intrapersonal influences included self-empowerment in ever having requested a doctor or nurse practitioner for a Pap test, cervical cancer awareness, Pap test awareness, knowing that Pap tests are necessary for women who are asymptomatic, sexually inactive, or postmenopausal, and knowledge of the HPV vaccine, confidentiality issues regarding being worried that a doctor or nurse practitioner or Vietnamese interpreter will let others know about obtaining a Pap test, Pap

testing health beliefs (perceived susceptibility, perceived benefits, perceived common barriers), and perceived cultural barriers to Pap testing.

Sociodemographic characteristics/background examined with Pap test receipt and Pap test adherence included (seven items): marital status, highest educational level, adaptation to the U.S. (proxy variables included age immigrated to the U.S., years lived in the U.S., and English speaking ability), identifying with a religion, and having someone in the immediate family (mother, sister, daughter) who has been diagnosed with cervical cancer.

Knowing anyone who has had cervical cancer (adapted[29]), age, country of birth, region primarily raised from in Vietnam, Vietnamese speaking ability, employment status, total annual household income before taxes, and having a history of a hysterectomy (adapted[13]) were only meant to be descriptive. Perceived causes of cervical cancer were also only meant to be descriptive, and were assessed with one multiple response item (six perceived causes: infection with HPV, infection with STDs [sexually transmitted diseases], genetics/family history, smoking/second hand smoking, hygiene/cleanliness, God's will; other, not sure/do not know, [adapted from the HGS[30]]). These results were reported as frequencies and percentages and were not included in the chi-square and logistic regression analysis.

Self-empowerment was also an individual influencing factor and was defined as an individual ever having requested a Pap test and was assessed with one item (no, yes). This item was adapted from the VWHPQ.[13]

Awareness was defined as having ever heard of cervical cancer and was examined with one item (no, yes). This item was adapted from the HGS.[30] Awareness of a Pap test was

defined as having ever heard of a Pap test and was examined with one item (no, yes). This item was adapted from the VWHPQ.[13]

Knowledge was defined as knowing Pap tests are necessary for women who are asymptomatic, sexually inactive, or postmenopausal and was measured with three true or false statements. The responses were scored as the number of correct responses (0-100%). Items were adapted from the VWHPQ.[13]

The HPV vaccine was defined as a medication that is given by an intramuscular route to prevent some forms of the human papilloma virus which can lead to the development of cervical cancer. Knowledge of the HPV vaccine was assessed with four items (no, yes) in which two items were reported as frequencies and percentages and only meant to be descriptive and were not included in the chi-square and logistic regression analysis. The other two items were having ever heard of the HPV vaccine and would recommend the HPV vaccine to others who would qualify were examined for their association with Pap test receipt and Pap test adherence.

The Confidentiality Issues Scale (CIS) (two-items) was developed with two community experts who had worked on a northwest metropolitan community-based Vietnamese Women's Health Project regarding beliefs about the Pap test. Confidentiality issues was defined as an individual being worried that the doctor, or nurse practitioner, or Vietnamese interpreter will let others know about obtaining a Pap test. Confidentiality issues was measured using a 5-point Likert scale with 1 being strongly disagree to 5 being strongly agree. The responses for the CIS were summed (range = 2-10) with a higher score indicating greater worry about confidentiality when obtaining a Pap test.

Perceived susceptibility was defined as an individual's beliefs about risk of threat or harm related to developing cervical cancer. Perceived benefits was defined as an individual's belief about positive benefits of Pap testing. Perceived common barriers was defined as an individual's personal obstacles that prevents Pap testing. The SBBS was modified to measure Pap testing health beliefs.[31] The modified SBBS for this study consisted of 18 items and three subscales: perceived susceptibility (3 items, range = 3-15), perceived benefits (5 items, range = 5-25), and perceived common barriers (10 items, range = 10-50). A 5-point Likert scale was used for each item ranging from 1 to 5, with 1 being strongly disagree to 5 being strongly agree. Scores were summed for each subscale and higher scores indicated greater perceived susceptibility, perceived benefits, and perceived common barriers. Content validity was supported by both expert and focus groups of women. Evidence to support structural validity was demonstrated by an exploratory factor analysis in which 54% of the variance was accounted for by the three extracted factors and was also supported with a Goodness of Fit Index of .87.[31] The SBBS demonstrated high internal consistency reliability and moderate test-retest reliability for perceived susceptibility, perceived benefits, and perceived barriers (Cronbach's alpha = .87, .75, .88, respectively; r = .62, .61, .71, respectively).[31]

Perceived cultural barriers was defined as an individual's beliefs about utilization of Eastern/Asian medicine for illness, modesty about one's body, perceived efficacy of Pap testing, and lack of family support as obstacles to Pap testing. The CBSI was modified to measure perceived cultural barriers with regard to Pap testing.[32] The modified CBSI for this study consisted of 17 items and four subscales: utilization of Eastern medicine (3 items, range = 3-15), modesty (5 items, range = 5-25), crisis orientation (4 items, range 4-20), and lack of family support (4 items, range = 4-20). A 5-point Likert scale was used for each item

ranging from 1 to 5, with 1 being strongly disagree to 5 being strongly agree. Scores were summed for each subscale and higher scores indicated greater endorsement of the perceived cultural barrier component. Some evidence to support structural validity was demonstrated with an exploratory factor analysis in which 53.9% of the variance was accounted for by the four extracted factors.[32] The CBSI also demonstrated moderate internal consistency reliability for utilization of Eastern medicine, modesty, crisis orientation, and lack of family support subscales (Cronbach's alpha = .72, .72, .61, .54, respectively).[32]

Interpersonal influences. Interpersonal influencing factors included having had a family member(s) or friend(s) suggested Pap testing and was assessed with two items (no, yes). Items were adapted from the VWHPQ.[13]

Organizational influences. Having a regular place of care (one item; no, yes), gender of regular primary health care provider (HCP) (one item), ethnicity of regular primary HCP (one item, Vietnamese, other), and having a preference for a female HCP to perform a Pap test (one item; no, yes, does not matter) were only meant to be descriptive in which results were reported as frequencies and percentages and not included in the chi-square or logistic regression analysis. Organizational influencing factors also included ever having a doctor or nurse practitioner (HCP) recommended Pap testing (one item; no, yes) and having a regular primary HCP (one item; no, yes). Items were all adapted from the VWHPQ[13] except for preference for a female HCP (FBCW Mammography and Pap Testing Questionnaire[29]).

Quality of care from the health care system was defined as an individual's view on the quality of care from the health care system. Five items were adapted and modified into a the Quality of Care from the Health Care System Scale (QoC) to measure quality of care.[30] Of the original five items for the quality of care from the health care system scale, one item

was not adapted because the question pertained to trust in the doctors and other HCPs to do what is best for patients which was not relevant to the conceptual definition in this study. One other item was adapted and modified, "When going to a doctor or nurse practitioner for health care services, Vietnamese receive the same quality of health care as Caucasian/non-Hispanic Whites" because this pertained to thoughts on the quality of care from the health care system. The remaining five items were developed into a scale. The original response scales varied across items.

The survey was based on the Pathways Model. A 5-point Likert scale was used for each item ranging from 1 to 5, with 1 being strongly disagree to 5 being strongly agree. The responses to the QoC were summed (range = 5-25) with a higher score indicating a greater view of the quality of care from the health care system. Although this is a study-specific instrument with no reported validity or reliability, the Vietnamese Community Health Promotion Project at the University of California San Francisco developed the instrument with the Vietnamese Reach for Health Initiative, a community coalition, in Santa Clara County, California that included questions from prior projects based on community focus groups and key informants (personal communication, Tung Nguyen, M.D., January, 7, 2009).

Community influences. Community resources was defined as identifying available cervical cancer programs in the community (five items; no, yes, not sure/do not know) and were only meant to be descriptive in which results were reported as frequencies and percentages and not included in the chi-square and logistic regression analysis (adapted from HGS[30]) except for knowing where to go to get a free low-cost Pap test (one item; no, yes; adapted from the HGS[30]) which was further examined for its association with Pap test receipt and Pap test adherence. Local community programs/projects that were recently available prior

to or currently available at the start of the survey included: the Free Friday Screenings of the Oregon Health & Science University Center for Women's Health, Vietnamese Health Promoter Program of the Providence Portland Medical Center, and the Vietnamese Women's Health Project of the Asian Family Center a Program of the Immigrant & Refugee Community Organization (IRCO/Asian Family Center).

Health insurance mandate influence. A health insurance mandate influence included having health care insurance that provided coverage for Pap testing. VIW in this study were recruited from the northwest metropolitan area in the state of Oregon of the U.S. Cervical cancer screening is a health insurance mandated benefit in Oregon.[28] Having health care insurance which provided coverage for cervical cancer screening was assessed with two items (no, yes). These items were adapted from the FBCW Mammography and Pap Testing Questionnaire.[29] One of these items asked if the health care plan covered cancer screening tests such as a Pap test, and this item was only meant to be descriptive in which results were reported as a frequency and percentage and not included in the chi-square and logistic regression analysis. The other item was analyzed using chi-square and logistic regression.

Pap test screening. Pap test receipt and Pap test adherence were the dependent variables. A Pap test is done to find out if a woman has pre-cervical cancer or cervical cancer. Pap test receipt was a self-reported history and was defined as a woman ever having had a scraping of cells from the cervix inside the vagina during a pelvic exam and was measured with one item (no, yes). This item was adapted from the VWHPQ.[13] Pap test adherence was a self-reported history and was defined as a woman having had a Pap test done within the past three years and was measured with one item (recoded into no, yes) and was adapted from the FBCW Mammography and Pap Testing Questionnaire.[29]

Pap test intention was defined as the degree to which an individual who has never had a Pap test is planning to obtain a Pap test within the next three years. This was assessed with one descriptive item using a 5-point Likert response scale and results were reported as frequencies and percentages and not included in the chi-square and logistic regression analysis.

Exposure to media. In the prior two years from the start of data collection, an individual may have been exposed to the media about cervical cancer and Pap testing. Exposure to media was defined as having heard of, read, or seen anything about cervical cancer and Pap testing on television, radio, or internet, or in a newspaper, booklet, or brochure, and was assessed with one item (no, yes).

Translation Procedures and Pre-testing

The questionnaire was translated into Vietnamese using a CBPR approach and the U.S. Census Bureau's team approach to translation.[33] Cultural perspectives and values surrounding formal and informal communication styles were discussed with selected Vietnamese community members and were considered when translating questionnaire items. The translation team involved a translation committee and a translation reviewer which consisted of one Vietnamese investigator and three Vietnamese community members. A modified translation committee approach was used.[34] A Vietnamese investigator, a community consultant (ie, Vietnamese immigrant woman, Vietnamese language teacher with a community health education background), and a community advisor (ie, Vietnamese-Chinese immigrant woman, nurse) each translated a portion of the questionnaire independently and documented translation decisions and questions in a log. Then the members met as a committee to resolve ambiguities, and the initial Vietnamese translated

version arrived at 100% committee consensus. The agreed initial translated version was reviewed independently by the translation reviewer (Vietnamese immigrant woman, public administration background). The translation reviewer's suggestions on minor grammatical edits, logical flow, and clarity were presented to the translation committee for final review, and the final translated version was determined by 100% committee consensus.

The questionnaire items were pre-tested for utility and clarity with ten VIW (seven participants for the Vietnamese version, three participants for the English version) with the expectation that the majority of participants will complete the Vietnamese version. These participants resembled the participants in the survey study (see sample section for eligibility criteria). After a participant completed the questionnaire, a cognitive interview was done. Modifications were made and addressed minor logical flow and clarity (eg, changing a "Neutral" as a Likert scale response to "Neither Disagree or Agree"). Participants did not feel irritated or uncomfortable by the items.

Sample Selection

A participant was determined eligible to participate in the study if she self-identified as a Vietnamese immigrant woman (have immigrated to the U.S. from Vietnam or another country) between the ages of 21 to 99 years, had never been diagnosed with cervical cancer, and was able to read and speak Vietnamese or English.

The age eligibility criterion was selected on the basis of the current Pap test screening guidelines. Pap test screening should be carried out within three years after a woman's first vaginal intercourse but no later than age 21 years.[35-37] The American Cancer Society[35] suggests that women ages 70 years and older may no longer need Pap testing if they have had three or more normal/negative Pap tests and no abnormal Pap tests in the past 10 years.

Though the U.S. Preventative Services Task Force[38] for cervical cancer screening recommends to not routinely perform cervical cancer screening among women older than age 65 years if they have had adequate recent screening with normal/negative Pap tests. However, women who have never been screened or have not been routinely screened should begin to engage in cervical cancer screening.[35,38]

Data Collection Procedures

The study protocol was approved by the Internal Review Board of the Oregon Health & Science University (OHSU) and the OHSU Knight Cancer Institute. Purposeful sampling was used to address sampling feasibility. This sampling method involved going out into the Vietnamese community to recruit and sample from organizations that have a concentrated congregation of Vietnamese. To improve the feasibility of recruiting the desired sample size, investigators worked with community members and identified 12 community sites in the northwest metropolitan area in Oregon (listed in order by date of data collection): (1) Vietnamese Senior's Association of Oregon (VSA of OR), (2) Vietnamese Senior Citizens of Washington County, (3) Ngoc Son Tinh Xa Buddhist Association, (4) Immaculate Heart Parish, (5) Asian Pacific Islander (API) Parent and Child Development Services Program (CDSP) of IRCO/Asian Family Center, (6) Tinh Xa Ngoc Chau Temple, (7) Hepatitis B Screening Clinic of the Hepatitis B/HIV Prevention & Education Project of IRCO/Asian Family Center, (8) IRCO, (9) Child Care Class, (10) Minh Quang Tinh Xa Temple, (11) Linh Son Tinh Xa Temple, and (12) Holy Mass Celebration of the Lovers of the Holy Cross of Thu Thiem Convent. Investigators have gained trust and received permission from respective leaders/members of these organizations to concurrently recruit and collect data at these sites.

The first author attended 21 community meetings, gatherings, and services for Vietnamese women and men at Asian community organizations including temples and churches. The respective organization leaders/members and investigators worked together to determine what would be culturally appropriate regarding making study invitation announcements at a data collection site. A newsletter advertisement about the study was requested to be distributed at VSA of OR and the Immaculate Heart Parish. Respective leaders/members made announcements at service activities in general regarding the date and time of the study prior to the day of data collection. Respective leaders/members or the first author made an announcement about the study during or after a service activity to invite potential participants on the scheduled day of data collection.

Participants were informed that they would be completing a one-time, self-administered pen and paper questionnaire that would take about 30 minutes to complete and they could choose to fill out the Vietnamese or English version. Participants were informed that they would be taking the questionnaire in a group setting and there would be a risk of loss of confidentiality; participation was voluntarily and the participant could choose not to participate. The consenting process included an investigator explaining the purpose of the study to each potential participant; and then her eligibility was determined. An information study sheet was provided as a waiver of signed consent. Consent was confirmed when the completed questionnaire was returned to the investigator. An investigator was present at the data collection sites and available for questions with the exception of two sites, IRCO and child care class, because all participants at these sites wanted to take home the questionnaire to complete.

Each participant understood that by returning the completed questionnaire that she agreed to participate in the study. Each participant received a $10 grocery gift card at the completion of the questionnaire as an appreciation for her time. If a participant had marked on the questionnaire that she had never had a Pap test, then a Vietnamese-English bilingual Cervical Cancer and Pap Testing informational brochure[39] and a referral regarding Pap testing was provided. These were also provided to participants who requested Pap testing information. All participants received a Pap Testing Information Sheet.

Data Management and Verification. Double data entry was used for data verification. One dataset was created from manual data entry and the second dataset was optically scanned using ABBYY Formreader 6.0 software.[40] Then both data sets were compared for accuracy and any discrepancies resolved.

Data Analysis

SPSS software (version 17.0.2, Chicago, Illinois) was used to conduct data analysis. Chi-square analyses for categorical study variables (a Fisher's exact test was conducted for an expected cell count < 5) and logistic regression analyses for continuous study variables were used to examine bivariate associations with Pap test receipt and Pap test adherence for study aims 1 and 2. Chi-square analysis of the association between knowing where to go to get a free or low cost Pap test with Pap test receipt and Pap test adherence was explored as a part of study aim 3. Descriptive statistics were used to describe community resources for study aim 3, the sample, and remaining study variables. Significant independent variables from bivariate analyses were further examined in a multivariate simultaneous logistic regression model.

Independent variables that were highly correlated with one another indicated potential multicollinearity (correlation > .70). Age immigrated to the U.S. and age in years (r = .73) were found to be highly correlated and having a regular primary HCP and regular place of care (r = .82) were also highly correlated. Based on theoretical rationales, this study selected age immigrated to the U.S. as an independent variable because our population of interest is with VIW, and this variable was found to be an accurate indicator of adaptation to the U.S.[29] Having a regular primary HCP was selected as an independent variable because this variable has to do with communication with a HCP and was found in a study to be positively associated with Pap test receipt and Pap test adherence.[13] The tolerance statistic was also used to assess for multicollinearity among the significant independent variables. Tolerance values were all > .20 which did not indicate a concern for multicollinearity.[41]

Power Analysis. In keeping with the exploratory nature of the study $P < .10$ was selected as the criterion for significance. A power analysis was conducted using PASS software and determined the minimal odds ratio detectable given a feasible sample size of 211 to achieve a power of .80 with an alpha level of .10. This was determined to be 1.50 for Pap test receipt and Pap test adherence.[42]

Handling Missing Data. Missingness was predominantly 2.8% across cases per independent variable (no missing data for the variable knowing that asymptomatic, sexually inactive, and postmenopausal women still need Pap testing) and data were determined to be primarily missing at random. Case mean substitution was used for missing items within scales/subscales (subscales of the modified SBBS and modified CBSI, CIS, QoC) when participants provided at least a minimum number of valid responses to the other scale items (eg, 75%).[43] Missing data at the scale level and for one-item measures became an issue due to

listwise deletion for handling missing data that is the default in many software packages. Using listwise deletion would have greatly reduced the sample size to 50% and as a result would reduce power and potentially bias parameter estimates. Thus, we used the expectation maximization (EM) algorithm to generate an imputed dataset.[44] EM is an iterative procedure that begins with estimating missing data based on assumed values for the parameters and observed data and missing estimates are then used to update the parameter estimates.[43]

Because marital status and highest educational level are categorical and presented with minimal missing data (1% across cases), the hot-deck imputation method was performed to impute missing data using a pattern matching approach in that scores from a group of similar cases was used to impute a score from that group.[43] A detailed examination of descriptive statistics and correlated variables of the observed data and imputed dataset revealed similar means, SDs, and correlations. Of the 30 correlated variables, only five correlated paired variables had a difference > than .10.

The observed data was used to describe the sample characteristics and results of the inferential analyses were reported on the imputed dataset.

Results

Survey Administration

Between February 27, 2010 and July 3, 2010, 250 participants were recruited (figure 2). Five women refused to participate right after having been screened for eligibility for a variety of reasons (eg, felt self-administered questionnaire was too long). Of the remaining 245 eligible VIW, 156 participants completed the questionnaire at the respective data collection site, whereas 55 participants completed the questionnaire as a take-home. Participants were to notify the investigator to return the completed questionnaire. Thirty-

nine participants who took the questionnaire home did not notify the investigator, and the final sample size was 211 for a response rate of 84.4%. Ninety-five percent of the participants chose to complete the questionnaire in Vietnamese.

Sample characteristics. Table 1 summarized the sample characteristics.

Perceived Causes of Cervical Cancer

Approximately 33% of participants thought that cervical cancer was caused by HPV and 45% thought it was caused by an infection with sexually transmitted diseases. Other perceived causes of cervical cancer included genetics/family history, smoking/second hand smoking, hygiene/cleanliness, and God's will (38%, 10%, 40%, 15% respectively).

HPV Vaccine

Of the 9% of participants who reported having had the HPV vaccine, 7% thought that Pap testing was still needed. Of the 5% of participants who were between the ages of 21 to 26 years old, 3% have had the HPV vaccine.

Community Resources

Table 2 summarized information on community resources.

Awareness, Knowledge, Confidentiality Issues, Beliefs, and Quality of Care from the Health Care System

Approximately 84% were aware of cervical cancer and 74% were aware of the Pap test. Approximately 38% had heard of the HPV vaccine, and 68% would recommend the HPV vaccine to others who would qualify to obtain the vaccine. Table 3 provided a summary of the mean scores, standard deviations, and range for the continuous variables.

Exposure to Media

Approximately 63% of participants have been exposed to media regarding cervical cancer and Pap testing (heard of, read, or seen anything eg, on television, radio, internet, newspaper, booklet, or brochure).

Pap Test Intention

Of the 23% of participants who had never had a Pap test, 13% reported having "Strongly Agree" or "Agree" with obtaining a Pap test within the next three years.

Pap Testing History

Approximately 74% of the participants had received a Pap test on at least one occasion and 69% have had a Pap test within the past three years.

Factors Bivariately Associated with Pap Test Receipt and Pap Test Adherence

Intrapersonal influencing factors. As shown in table 4, chi-square analyses indicated the following intrapersonal influencing factors that were positively associated to Pap test receipt: Pap test awareness ($\chi^2 = 71.51$, Phi = .58, $P < .001$), self-empowerment in ever having requested a doctor or nurse practitioner ($\chi^2 = 41.47$, Phi = .44, $P < .001$), marital status ($\chi^2 = 20.13$, Phi = .31, $P < .001$), educational level ($\chi^2 = 4.71$, Phi = .15, $P = .095$), having ever heard of the HPV vaccine ($\chi^2 = 11.60$, Phi = .23, $P < .001$), and would recommend the HPV vaccine to others who would qualify ($\chi^2 = 18.97$, Phi = .30, $P < .001$). Self-empowerment in ever having requested a doctor or nurse practitioner and educational level was positively associated to Pap test adherence (Phi = .20, $P = .024$; $\chi^2 = 5.86$, Phi = .19, $P = .054$, respectively).

Table 5 provided information on intrapersonal influencing factors that were examined using logistic regression analyses, and the following intrapersonal influencing factors were

negatively associated to both Pap test receipt and Pap test adherence: confidentiality issues in obtaining a Pap test (OR = .81, 90% CI [.69-.95]; OR = .72, 90% CI [.53-.98]), perceived common barriers (OR = .93, 90% CI [.90-.96]; OR = .92, 90% CI [.87-.99]), utilization of eastern medicine (OR = .78, 90% CI [.70-.88]; OR = .77, 90% CI [.61-.95]), and modesty (OR = .90, 90% CI [.85-.96]; OR = .86, 90% CI [.77-.96]). Crisis orientation (OR = .86, 90% CI [.77-.96]) and lack of family support (OR = .88, 90% CI [.83-.93]) were negatively associated to Pap test receipt and older age immigrated to the U.S. (OR = .95, 90% CI [.91-.98]) was less likely to adhere to Pap testing. Greater English speaking ability was positively associated to both Pap test receipt (OR = 1.51, 90% CI [1.14-2.01]) and Pap test adherence (OR = 3.04, 90% CI [1.62-5.71]) and knowing Pap tests are necessary for women who are asymptomatic, sexually inactive, or postmenopausal (OR = 5.67, 90% CI [2.62-12.29]) and length of years lived in the U.S. (OR = 1.12, 90% CI [1.08-1.16]) were positively associated to Pap test receipt.

Perceived benefits was not interpreted to be associated to Pap testing due to a structural validity issue based on a retrospective analysis. Details of the examination of the psychometric properties have been reported elsewhere (Nguyen et al., manuscript in process).

External influencing factors. Table 6 provided information on interpersonal, organizational, community, and health insurance mandate influencing factors. Chi-square analyses indicated the following variables to be positively associated to both Pap test receipt and Pap test adherence: ever having a doctor or nurse practitioner recommended Pap testing (χ^2 = 97.36, Phi = .68, P < .001; Phi = .23, P = .014 respectively), having a regular primary HCP (χ^2 = 16.41, Phi = .28, P < .001; Phi = .24, P = .011 respectively), and having health care insurance coverage (χ^2 = 20.50, Phi = .31, P < .001; Phi = .27, P = .004 respectively).

Ever having a family member(s) suggested Pap testing (χ^2 = 14.64, Phi = .26, P < .001) and ever having a friend (s) suggested Pap testing (χ^2 = 24.17, Phi = .34, P < .001) were significantly positively associated to Pap test receipt. Quality of care from the health care system was not associated to either Pap test receipt (OR = 1.04, 90% CI [.95-1.15]) or Pap test adherence (OR = 1.11, 90% CI [.93-1.33]).

Exposure to media about cervical cancer and Pap testing was positively associated to Pap test receipt (χ^2 = 5.64, Phi = .16, P = .018).

Exploratory Final Multivariate Logistic Regression Model

The independent variables that were significantly associated with the dependent variables from the bivariate analyses were further examined in the exploratory final multivariate logistic regression model. Twenty-one independent variables were examined for Pap test receipt, and 11 independent variables for Pap test adherence. Table 7 provided information on the independent variables in the exploratory final multivariate logistic regression model for both Pap test receipt and Pap test adherence.

Pap test receipt. Logistic regression analysis was conducted and indicated that self-empowerment in ever having requested a doctor or nurse practitioner for a Pap test, length of years lived in the U.S., English speaking ability, currently married or living with a partner, having some college or a graduate degree, Pap test awareness, knowing that Pap testing is still necessary for asymptomatic, sexually inactive, postmenopausal women, utilization of eastern medicine, lack of family support, ever having a friend(s) suggested Pap testing, ever having a doctor or nurse doctor or nurse practitioner recommended Pap testing, and exposure to media were associated to Pap test receipt. Large confidence intervals for Pap test awareness (CI = 16.38-994.79), self-empowerment in ever having requested a doctor or nurse

practitioner for a Pap test (CI = 4.84-148.60), and a doctor or nurse practitioner ever having recommended Pap testing (CI = 16.88-931.63) indicated that these three variables presented with quasi-separation in that there was an issue with limited variation in responses (predominantly yes) to these items with that of ever having received a Pap test.[45] A sensitivity analysis was conducted in that the variables with the large confidence intervals were removed from the model. The multivariate analysis was repeated. In this model, longer years lived in the U.S. (OR = 1.12, 90% CI [1.06-1.17]), currently married or living with a partner (OR = 2.81, 90% CI [1.25-6.31]), having some college or a graduate degree (OR = 2.62, 90% CI [1.06-6.51]), and ever having a friend(s) suggested Pap testing (OR = 2.62, 90% CI [1.06-6.51]) were found to be positively associated to Pap test receipt and being less likely to utilize eastern medicine (OR = .78, 90% CI [.66-.93]) and less likely to perceive lack of family support (OR = .84, 90% CI [.74-.94]) were also associated to Pap test receipt.

Pap test adherence. Logistic regression analysis was conducted and self-empowerment in ever having requested a doctor or nurse practitioner for a Pap test was positively associated to Pap test adherence (OR = 8.47, 90% CI [1.72-41.66]). A sensitivity analysis was conducted by removing this variable from the model and repeated the multivariate analysis to examine the remaining variables' association to the outcome variable. Taylor and colleagues had also removed this variable from their initial analysis.[13] In this model, ever having a doctor or nurse practitioner recommended Pap testing (OR = 4.90, 90% CI [1.20-19.98]) and having health care insurance coverage (OR = 5.07, 90% CI [1.05-24.47] were found to be positively associated to Pap test adherence.

Discussion

Cervical Cancer Awareness, Pap Test Awareness, and Pap Testing Rates

While 84% of VIW were aware of cervical cancer, 27% had never heard of the Pap test. These findings were consistent with a previous study by Nguyen and colleagues.[11] Although the sample age inclusion criteria included VIW who were at least 21 years of age based on new Pap testing guidelines,[38] his study demonstrated that VIW's Pap testing rates were dramatically lower than the Healthy People 2010 recommendations. The national objectives specifies 97% of women aged 18 years and older should have had at least one Pap test in their lifetime and that for 90% should have a Pap test in the past three years.[18] These low Pap testing rates were similar to other VAW and VIW studies.[8-16,46]

Sociodemographic Characteristics/Background as Intrapersonal Influencing Factors to Pap Testing

Most prior studies found that being currently married was more likely than non-married women to be associated with Pap test receipt.[9,11,12,16,47] In this study, women who were currently married or living with a partner were more likely than women who had been previously married and those who had never been married to have received a Pap test. A possible explanation for this surrounds cultural beliefs regarding marriage and sex. Burke and colleagues[24] found that VIW women believed that unmarried women do not need to get a Pap test, and Yi[16] found that VAW who believed that only married women should have a Pap test were more likely to have a Pap test than those who did not hold this belief. This suggests a stigmatization with premarital sex.[11] In contrast, Gomez and colleagues[8] found VAW who had never been married were more likely than women who had been married to have ever had a Pap test. It is challenging to understand what could be possible reasons for this

difference because Gomez and colleagues[8] also studied other Asian subgroups and combined most of the sample characteristics which makes comparison difficult.

Earlier studies found that having higher educational attainment was positively associated with Pap test receipt.[9,11] This was similar to the VIW in this study. VIW who had some college or a graduate degree were more likely than women who had a high school or a graduate equivalent degree and more likely than women with less than high school education to have ever received a Pap test.

Studies that examined adaptation to the U.S. did not find an association with Pap testing to be associated with Pap testing.[11, 13] This is likely due to combining U.S.-born and immigrant women data which made it challenging to determine whether there were any differences between these respective groups. Lee-Lin and colleagues'[48] study with foreign-born Chinese American women and breast cancer screening found age immigrated to the U.S. to accurately capture adaptation to the U.S. This study expanded the operational definition of adaptation to the U.S. to include length of years lived in the U.S., English speaking ability, and age immigrated to the U.S. This study demonstrated that VIW with a longer residency in the U.S. were associated with a greater likelihood of ever having received a Pap test. Considered independently of other predictors, VIW in this study who reported having greater English speaking ability were more likely to have obtained a Pap test. Yi[16] found greater English language acculturation to be more likely to ever having had a Pap test; however, this variable was measured as frequent use and a preference for English which differed from this study's operational definition which was how well they speak English. It is important to note that when considered independently of other predictors, VIW in this study

who were of an older age when immigrated to the U.S. were less likely to having a Pap test within the past three years.

Perceived Cultural Barrier Components as Intrapersonal Influencing Factors to Pap Testing

Greater use of eastern medicine as a perceived cultural barrier component was found to be less likely to ever having received a Pap test. Similar VAW studies have not examined use of eastern medicine as a perceived cultural barrier component to Pap testing. Further research is needed to understand why VIW who use eastern medicine were less likely to have obtained a Pap test.

When considered independently of other predictors, VIW who reported greater modesty were less likely to have obtained a Pap test and adhere to Pap testing. This contrasts with Taylor and colleagues'[13] study in that they did not find an association between modesty as a barrier with Pap testing. However, this variable was measured as a reason for preventing one's self in getting in a Pap smear which differed from this study's operational definition (a component of perceived cultural barriers) regarding being modest about one's body and examination of the cervix even if it involved a health examination. This made comparison difficult. Earlier qualitative studies indicated shyness or embarrassment as a barrier or avoidance in obtaining a Pap test.[24,49] Further examination is needed to explore modesty as a cultural barrier component to cervical cancer screening.

This study found that VIW who perceived greater lack of family support were less likely to have obtained a Pap test. Further examination is needed to explore the role of family to engaging in cervical cancer screening.

External Influencing Factors to Pap Testing

It is important to note that VIW who reported having had a family member(s) suggested Pap testing were positively associated with Pap test receipt as an independent association. An earlier study found that having had a family member(s) suggested Pap testing was positively associated to having a Pap test within the past three years.[13] In addition to perceived family support, having a family member(s) suggest Pap testing appeared to influence one's decision to engage in cervical cancer screening.

Taylor and colleagues[13] found that having had a friend(s) suggested Pap testing was positively associated with having a Pap test within the past three years. This study found that VIW who ever had a friend(s) suggest Pap testing were 2.6 times more likely than women who have not received this suggestion to ever have a Pap test. Communication with a friend(s) regarding Pap testing appears to influence one's decision to engage in cervical cancer screening.

A doctor having recommended Pap testing was positively associated with Pap test receipt and Pap test adherence, as confirmed in other studies.[11,13] VIW in this study who ever had a doctor or nurse practitioner recommend Pap testing were nearly 5.0 times more likely than women who have never received this recommendation to have had a Pap test within the past three years. A HCP and patient communication regarding Pap testing is important for adhering to cervical cancer screening guidelines. Nguyen and colleagues'[25] qualitative study on provider-patient cancer communication found that Vietnamese immigrants (women and men) relied on the doctor to guide them on what they needed to know and to advise on any necessary tests or treatments. Lack of a doctor's recommendation was found by an earlier

qualitative study to be a reason for never having had a Pap test or avoiding getting Pap tests.[24]

Only a few studies examined the variable health care insurance coverage with Pap testing, and these studies did not find an association.[11,13,16] Another study had combined different types of cancer screening making it difficult to differentiate whether having health care insurance coverage was associated to Pap testing alone.[10] It is important to note that VIW who reported having health care insurance coverage were 5 times more likely to have a Pap test within the past three years than women who did not have health care insurance. Further examination of this variable with Pap testing is needed to examine whether different types of health insurance coverage influences engagement in cervical cancer screening.

Other Cultural Studies with Immigrant Women and Pap Testing

Lee-Lin and colleagues[50] and Taylor and colleagues[51] conducted similar studies with Chinese American immigrant women and Cambodian American immigrant women respectively. Lee-Lin and colleagues[50] found low modesty and younger age at immigration to be more likely to have obtained a Pap test and to adhere to Pap testing. They also found that greater English speaking ability was more likely to have a Pap test within the past three years. Taylor and colleagues[51] found that having a physician recommended Pap testing remained significant predictors for Pap test receipt and recent Pap testing. Although recent Pap testing was defined as having the test within the past one year, and this reflected previous adherence screening guidelines. Years since immigration was a significant predictor for Pap test receipt. This study's findings were similar to these study findings in that adaptation to the U.S., low modesty, and physician recommended Pap testing was associated

with Pap testing. Similar findings suggest that these variables can be examined cross culturally.

Knowledge of the HPV Vaccine

The HPV vaccine has been approved by the U.S. Department of Health and Human Services Food and Drug Administration (DHHSFDA) since June 2006.[23] The HPV vaccine is currently available for females as young as age 9 and up to 26 years old. For the imputed data, of the 38% who had heard of the HPV vaccine, 88% had received a Pap test on at least one occasion. When considered independently of other predictors, those who had heard of the HPV vaccine and those who would recommend the HPV vaccine to others who would qualify were more likely to have obtained a Pap test and adhered to Pap testing. A possible explanation for this is that VIW who heard about the available HPV vaccine medication may have sought a HCP regarding vaccination. This can provide an opportunity for communication with a HCP about the HPV vaccine and Pap testing which could possibly have lead to the decision to having a Pap test done regardless of whether one was eligible to receive the HPV vaccine or not. It is important to note that this study demonstrated that only 33% of VIW thought that cervical cancer was caused by HPV, and that 32% of VIW would not recommend the HPV vaccine to others who would qualify. Further research is needed to understand the underlying context of whether or not to recommend the HPV vaccine.

Further research is also needed to understand VIW's knowledge and held cultural beliefs regarding HPV and the HPV vaccine. Prior qualitative studies have been conducted with other Asian ethnic subgroups about the HPV vaccine. Do and colleagues'[52] study of Cambodian American parents and community leaders in the Cambodia community found that the HPV vaccine was believed to be unnecessary for young Cambodians because of the

belief that they are not sexually active. Additionally, parents may not permit their daughters to be vaccinated because of the belief that it can promote promiscuity. Whereas, Wong's[53] study of young Malaysian women (native) found that women did not believe that being vaccinated would encourage promiscuity because it did not protect against other sexually transmitted diseases. Wong[53] also found that there was social stigma concerning the public's perception of women who sought the HPV vaccine and the potential to be perceived as sexually active by parents.

Community Resources

Knowing where to get a free or low-cost Pap test was not found to be associated with either Pap test receipt or Pap test adherence. This may be due to the visibility and availability of cervical cancer screening programs. Although 63% of VIW reported having been exposed to media regarding cervical cancer and Pap testing, about half of the VIW did not know of cervical cancer screening programs in the community, and 13% were unsure. When asked about local community projects/programs that were recently available prior or currently available at the start of the survey, approximately only 14% of VIW reported having ever heard of the Free Friday Screenings Program of OHSU Center for Women's Health; 17% reported having ever heard of the Vietnamese Health Promoter Program of the Providence Portland Medical Center; and 32% reported having ever heard of the Vietnamese Women's Health Project (VWHP) of IRCO/Asian Family Center. A possible explanation for the slightly higher report for having ever heard of the VWHP might be due to organizational outreach efforts as two of the data collection sites were programs within the Asian Family Center and IRCO as its own site.

Study Limitations and Strengths

There are factors limiting generalizability of findings and efforts were made to help minimize these limitations. The sample consisted of VIW who self-selected to be in this study. These participants might have a tendency to like to participate in activities such as studies, and this can limit the diversity in the sample. Leaders and members of respective Asian community organizations helped the investigators to gain trust by making invitation study announcements and publicly providing their endorsement for this study. This resulted in the investigators being able to reach potential participants who might not have participated related to trust issues. The type of measure was a self-report that could potentially lead to socially desirable bias.[54] Participants may have a tendency to answer the questions in a positive way (eg, a tendency to respond "yes" to questions). Efforts were made to minimize this limitation by being clear about the study purpose and the importance of answering questions honestly.

Verification for accuracy of self-report Pap testing was not carried out with medical chart reviews. This would not have been feasible because this study's purpose did not include a review of medical charts, and participants were not asked to provide follow-up contact information. Other efforts were made to minimize under or over reporting by providing embedded reminders in the instruction statements throughout the questionnaire regarding how the information will be kept confidential, the importance of accurate information, interests in the participants' views, and to answer each question honestly. The setting is limited to Asian community organizations in the northwest metropolitan area of the U.S. However, the investigators collected data from 12 sites as a way to address having heterogeneous settings versus only collecting data from a single or a few settings.

The strength of this study was the orientation of the community-based design. Use of a CBPR approach addressed a relevant local public health issue in the Vietnamese community. This study was also collaborative in that the use of a partnership approach in conducting research allowed investigators to gain input and discussion with community members and organizational representatives to design and implement a study that was culturally appropriate and sensitive. As a result, the study addressed rigor and cultural appropriateness. Prolonged engagement with the Vietnamese community is also a strength because it allowed the investigators to build a relationship of trust and understanding between the investigators and the Vietnamese community's needs. Continued engagement demonstrates ongoing commitment, and this is important in sustaining relationships as well as building new relationships. This study expanded the definition of HCPs to include nurse practitioners because the review of literature had a limited definition of primary HCPs to be mostly medical doctors. Nurse practitioners are also licensed HCPs, and a part of their practice includes doing Pap testing; therefore, having a comprehensive definition helped to provide clarity. This study explored the relationships among significant variables that were found to be independently associated with Pap test receipt and Pap test adherence in a multivariate logistic regression model in order to examine for unique associations Pap test receipt and Pap test adherence. Appropriate methods for handling missing data (EM algorithm and the hot-deck imputation method) were used and helped to maintain power and parameter estimates, and as a result provided confidence in the interpretation of the findings.

Conclusions and Implications

VIW are an at-risk, underserved population. VIW who were of older age when immigrated to the U.S. were less likely to adhere to Pap testing and those with greater

perceived modesty were less likely to have obtained a Pap test and to adhere to Pap testing. External explanations such as access to a HCP and having had a doctor or nurse practitioner recommended Pap testing, family, friends suggested Pap testing, health care insurance coverage, visibility/availability of screening programs contribute to explaining VIW's engagement in cervical cancer screening. The findings from this study can be used to inform culturally appropriate and relevant interventions with the goal of targeting multiple influencing factors so as to achieve adherence to cervical cancer screening. Advanced practice nurses are increasingly doing Pap testing and nurses can promote screening and education among VIW by recognizing these influencing factors in addition to recognizing the role of HCPs as an organizational influencing factor.

This study is the first to examine the association between knowledge of the HPV vaccine with Pap testing in VIW. More research is needed to further understand knowledge and held cultural beliefs regarding HPV and the HPV vaccine. Further research is also needed to further examine external influencing variables to Pap testing at the interpersonal, organizational, community, and health insurance mandate levels of influences and how variables interact across levels of the EM as well as adapt and develop culturally appropriate instruments.

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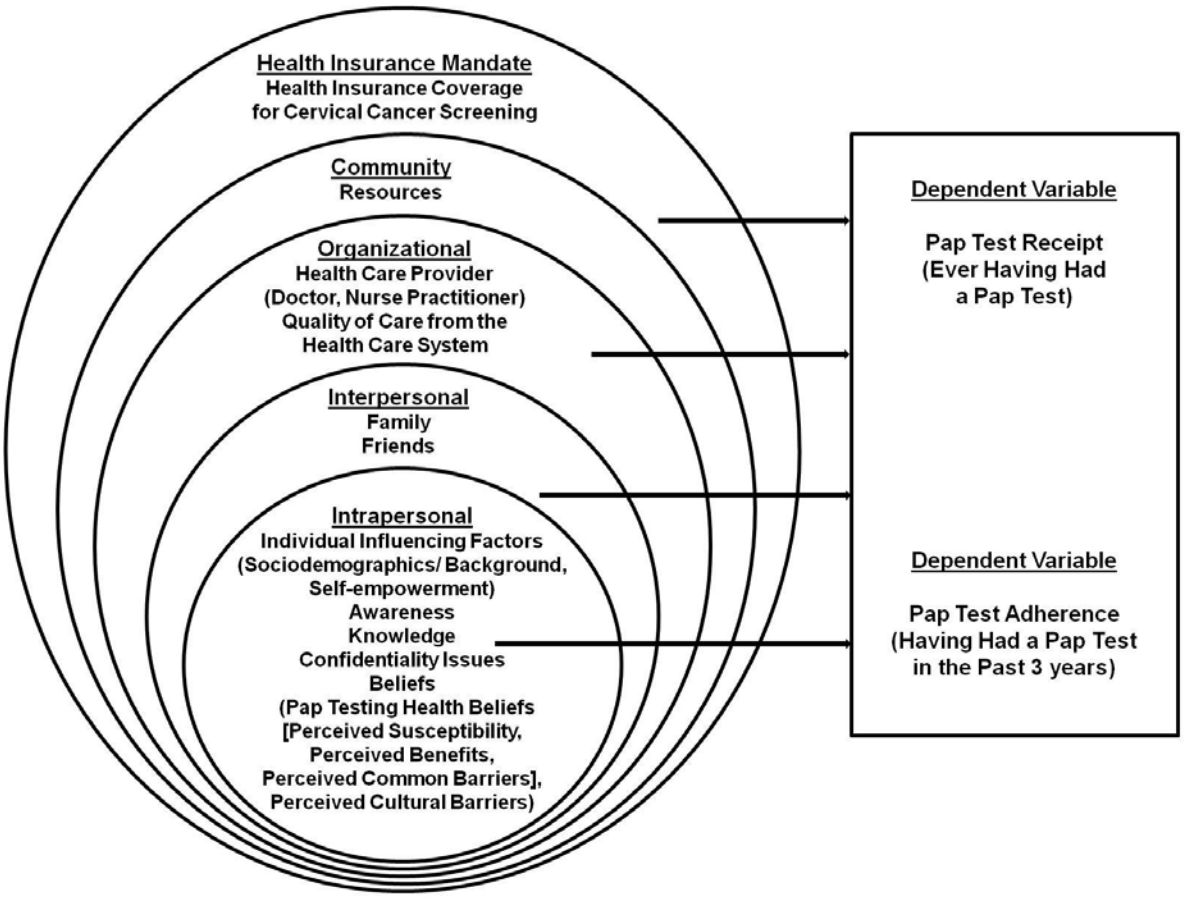

Figure 1. Ecological Model

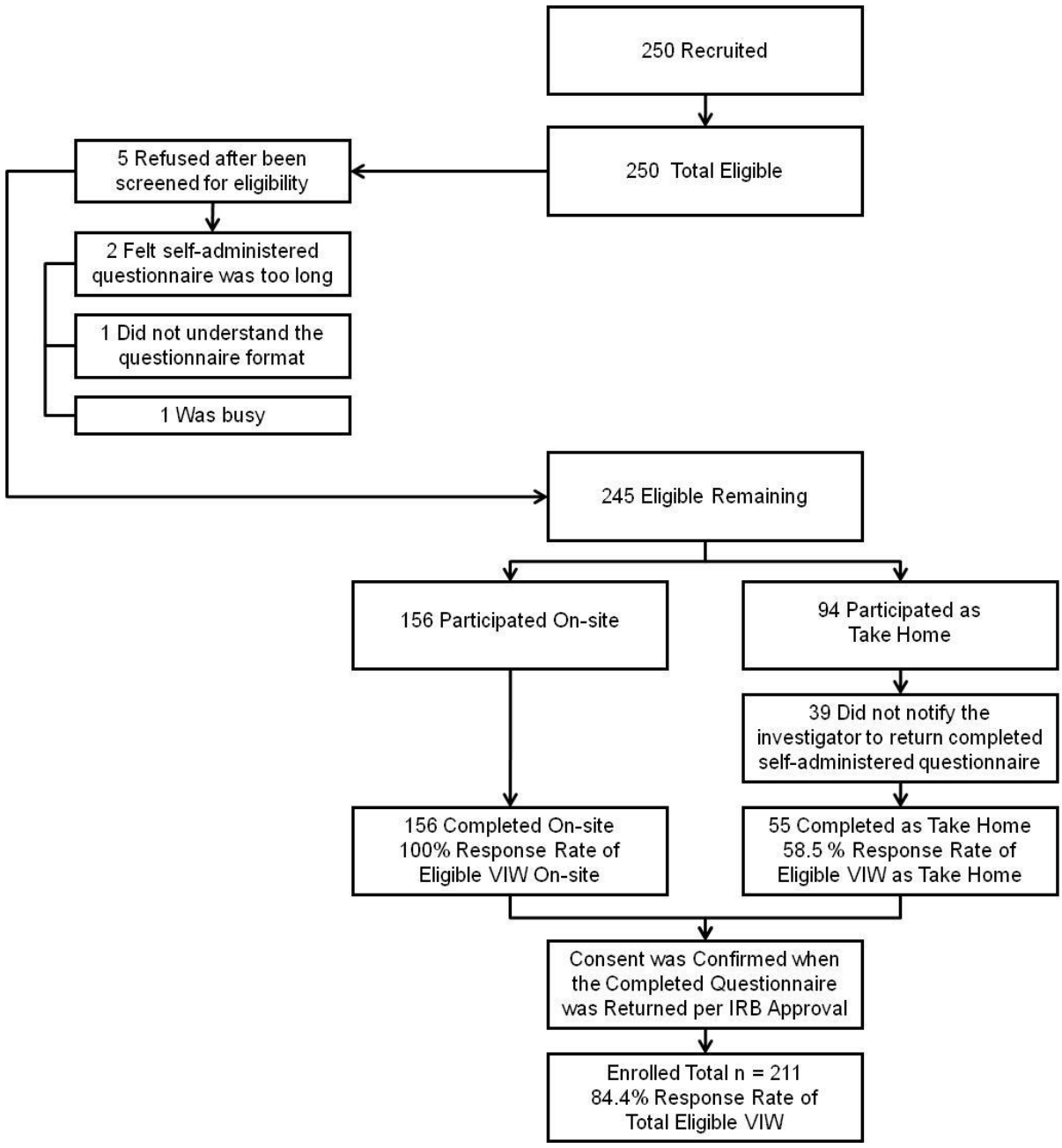

Figure 2. Survey Response

Table 1. Sample Characteristics

Variable	n (%)
Age, years, mean ± SD	49.85 ± 13.96
Born in Vietnam	205 (97.2)
Region primarily raised from in Vietnam, Southern region	158 (74.9%)
Adaptation to the U.S.	
Age, years, immigrated to the U.S., mean ± SD	34.93 ± 14.63
Years lived in the U.S., mean ± SD	15.29 ± 9.15
English speaking ability	
None at all, poorly	85 (40.3%)
Average	93 (44.1%)
Well, fluently	26 (12.3%)
Vietnamese speaking ability	
None at all, poorly	5 (2.4%)[a]
Average	36 (17.1%)
Well, fluently	165 (78.2%)
Marital Status	
Never been married	31 (14.7%)
Currently married or living with a partner	139 (65.9%)
Previously married	38 (18%)
Identifies with a religion	199 (94.3%)
Buddhist	134 (63.5%)
Catholic	57 (27%)
Educational level	
Less than high school	82 (38.9%)
High school, 12th grade, G.E.D.	51 (24.2%)
Some college or higher	76 (36%)
Employment status	
Not employed	83 (39.3%)
Employed full-time	101 (47.9%)
Total annual household income before taxes	
Less than $15,000	69 (32.7%)
Between $15,000 and $29,999	43 (20.4%)
Had a hysterectomy	16 (7.6%)
Have a regular place of care	157 (74.4%)
Have a non-Vietnamese regular primary HCP	97 (46%)

Variable	n (%)
Have a female regular primary HCP	93 (44.1%)
Prefer to see a female HCP for a Pap test	152 (72%)
Have health care insurance coverage	156 (73.9%)
Knowing health care plan provides coverage for Pap testing	128 (60.7%)

Abbreviations: G.E.D., graduate equivalent degree; HCP, health care provider; n, sample size; Pap, Papanicolaou test; %, percentage; SD, standard deviation; U.S., United States.

[a] Zero frequency for “none at all”.

Table 2. Community Resources

Variables	n (%)	Not Sure/ Do Not Know n (%)
Know of cervical cancer screening programs in the community	64 (30.3%)	27(12.8%)
Know where to get a free or low-cost Pap test	24 (11.4%)	18 (8.5%)
Ever having attended a community forum on cervical cancer or Pap testing	22 (10.4%)	17 (8.1%)
Have ever heard of the Free Fridays Screenings of OHSU Center for Women's Health	29 (13.7%)	26 (12.3%)
Have ever heard of the Vietnamese Health Promoter Program of Providence Portland Medical Center	35 (16.6%)	25 (11.8%)
Have ever heard of the Vietnamese Women's Health Project of IRCO/Asian Family Center	67 (31.8%)	24 (11.4%)

Abbreviations: IRCO, Immigrant & Refugee Community Organization; OHSU, Oregon Health & Science University; Pap, Papanicolaou test; %, percentage; n, sample size.

Table 3. Scores for Knowledge, Confidentiality Issues, Beliefs, and Quality of Care from the Health Care System

Variables	Mean ± SD	Range
Knowing Pap tests are necessary for asymptomatic, sexually inactive, or postmenopausal women (% correct score)	0.81 ± 0.32	0.00-1.00
Confidentiality issues	3.61 ± 1.57	2-10
Perceived susceptibility	6.66 ± 2.63	3-15
Perceived benefits	19.35 ± 3.32	7-25
Perceived common barriers	21.89 ± 7.14	10-50
Utilization of eastern medicine	8.06 ± 2.52	3-15
Modesty	12.01 ± 4.24	5-25
Crisis orientation	7.66 ± 2.38	4-20
Lack of family support	11.66 ± 4.39	5-25
Quality of care from the health care system	19 ± 2.76	12-25

Abbreviations: Pap, Papanicolaou test; %, percentage; SD, standard deviation.

Table 4. Association of Categorical Intrapersonal Influencing Factors with Pap Test Receipt and Pap Test Adherence

Variables	Pap Test Receipt (n = 211) (df = 1)					Pap Test Adherence (n = 157) (df = 1)				
	n (%)	Ever Been Screened %	χ^2	Phi	*P*	n (%)	Screened Past Three Years %	χ^2	Phi	*P*
Cervical cancer awareness										
Yes	177 (84)	76	2.00	.10	.157	135 (86)	92	– [a]	-.05	1.000
No	34 (16)	65				22 (14)	96			
Pap test awareness										
Yes	155 (74)	90	**71.51**	**.58**	**<.001**[d]	139 (89)	94	– [a]	.12	.144
No	56 (26)	32				18 (11)	83			
Having ever heard of the HPV vaccine										
Yes	80 (38)	88	**11.60**	**.23**	**.001**[c]	70 (45)	94	.67	.07	.414
No	131 (62)	66				87 (55)	91			
Would recommend the HPV vaccine to others who would qualify										
Yes	144 (68)	83	**18.97**	**.30**	**<.001**[d]	120 (76)	94	– [a]	.12	.155
No	67 (32)	55				37 (24)	87			
Self-empowerment in ever having requested a doctor or nurse practitioner for a Pap test										
Yes	111 (53)	93	**41.47**	**.44**	**<.001**[d]	103 (66)	96	– [a]	**.20**	**.024**[c]
No	100 (47)	54				54 (34)	85			

Variables	Pap Test Receipt (n = 211) (df = 1)					Pap Test Adherence (n = 157) (df = 1)				
	n (%)	Ever Been Screened %	χ^2	Phi	*P*	n (%)	Screened Past Three Years %	χ^2	Phi	*P*
Identifies with a religion	205 (97)	74	– [a]	-.04	1.000	152 (97)	93	– [a]	.08	.332
Yes	6 (3)	83				5 (3)	80			
No										
Marital status	–	–	**20.13**	**.31**	**< .001** [d]	–	–	1.62	.10	.445
Currently married or living with a partner	141 (67)	80	–	–	–	113 (72)	94	–	–	–
Previously married	39 (19)	80	–	–	–	31 (20)	90	–	–	–
Never been married	31 (14)	42	–	–	–	13 (8)	85	–	–	–
Educational level	–	–	**4.71**	**.15**	**.095** [b]	–	–	**5.86**	**.19**	**.054** [b]
Some college or a Graduate Degree	78 (37)	82	–	–	–	64 (41)	95	–	–	–
High school or G.E.D. equivalent	51 (24)	75	–	–	–	38 (24)	97	–	–	–
Less than high school	82 (40)	67	–	–	–	55 (35)	86	–	–	–
Having someone in the immediate family who has been diagnosed with cervical cancer										
Yes	10 (5)	60	– [a]	-.07	.282	6 (4)	100	– [a]	.06	1.000
No	201 (95)	75				151 (96)	92			

Abbreviations: χ^2, chi-square; df, degrees of freedom; G.E.D., graduate equivalent degree; HPV, human papilloma virus; n, sample size; Pap, Papanicolaou test; %, percentage; Phi, Phi coefficient.

[a] A Fisher's exact test was conducted for an expected count(s) of less than five in a cell.

[b] $P < .10$.

[c] $P < .05$.

[d] $P < .001$.

Table 5. Association of Continuous Intrapersonal Influencing Factors with Pap Test Receipt and Pap Test Adherence using Simple Logistic Regressions

Variables	Pap Test Receipt (n = 211)			Pap Test Adherence (n = 157)		
	B	**SE**	**OR (90% CI)**	**B**	**SE**	**OR (90% CI)**
Knowing Pap tests are necessary for women who are asymptomatic, sexually inactive, or postmenopausal	**1.74**	**.47**	**5.67(2.62-12.29)[a]**	-1.14	1.48	.32 (.03-3.66)
Confidentiality issues	**-.21**	**.10**	**.81 (.69-.95)[a]**	**-.32**	**.19**	**.72 (.53-.98)[a]**
Pap testing health beliefs						
Perceived susceptibility	.01	.06	1.01 (.91-1.11)	.04	.12	1.04 (.86-1.26)
Perceived benefits	.10	.05	1.10 (1.02-1.19)[b]	-.11	.11	.90 (.75-1.08)
Perceived common barriers	**-.08**	**.02**	**.93 (.90-.96)[a]**	**-.08**	**.04**	**.92 (.87-.99)[a]**
Perceived cultural barriers						
Utilization of eastern medicine	**-.25**	**.07**	**.78 (.70-.88)[a]**	**-.27**	**.13**	**.77 (.61-.95)[a]**
Modesty	**-.10**	**.04**	**.90 (.85-.96)[a]**	**-.15**	**.07**	**.86 (.77-.96)[a]**
Crisis orientation	**-.15**	**.07**	**.86 (.77-.96)[a]**	-.09	.12	.92 (.76-1.11)
Lack of family support	**-.13**	**.04**	**.88 (.83-.93)[a]**	.03	.08	1.03 (.91-1.18)
Adaption to the U.S.						
Age immigrated to the U.S.	-.01	.10	(.98-1.01)	**-.06**	**.02**	**.95 (.91-.98)[a]**
Years lived in the U.S.	**.11**	**.02**	**1.12 (1.08-1.16)[a]**	.08	.04	1.08 (1.01-1.15)
English speaking ability	**.41**	**.17**	**1.51 (1.14-2.01)[a]**	**1.11**	**.38**	**3.04 (1.62-5.71)[a]**
Quality of care from the health care system	.04	.06	1.04 (.95-1.15)	.11	.11	1.11 (.93-1.33)

Abbreviations: CI, confidence interval; OR, odds ratio; Pap, Papanicolaou test; B, regression coefficient; SE, standard error; U.S., United States.

[a] $P < .10$.

[b] Perceived benefits was not interpreted to be significant due to a structural validity issue based on a retrospective analysis.

Table 6. Association of Categorical External Influencing Factors with Pap Test Receipt and Pap Test Adherence

Variables	Pap Test Receipt (n = 211) (df = 1)					Pap Test Adherence (n = 157) (df =1)				
	n (%)	Ever Been Screened %	χ^2	Phi	*P*	n (%)	Screened Past Three Years %	χ^2	Phi	*P*
Family ever having suggested Pap testing										
Yes	106 (50)	86	**14.64**	**.26**	**<.001**[d]	91 (58)	93	.34	.05	.561
No	105 (50)	63				66 (42)	91			
Friend(s) ever having suggested Pap testing										
Yes	119 (56)	87	**24.17**	**.34**	**<.001**[d]	104 (66)	94	– [a]	.10	.222
No	92 (44)	58				53 (34)	89			
Doctor or nurse practitioner ever having recommended Pap testing										
Yes	142 (67)	95	**97.36**	**.68**	**<.001**[d]	135 (86)	95	– [a]	**.23**	**.014**[c]
No	69 (33)	32				22 (14)	77			
Having a regular primary health care provider										
Yes	169 (80)	81	**16.41**	**.28**	**<.001**[d]	136 (87)	95	– [a]	**.24**	**.011**[c]
No	42 (20)	50				21 (13)	76			
Knowing where to get a free or low-cost Pap test										
Yes	24 (11)	83	1.13	.07	.29	20 (13)	95	– [a]	.63	1.000
No	187 (89)	73				137 (87)	92			

Variables	Pap Test Receipt (n = 211) (df = 1)					Pap Test Adherence (n = 157) (df =1)				
	n (%)	Ever Been Screened %	χ^2	Phi	*P*	n (%)	Screened Past Three Years %	χ^2	Phi	*P*
Having health care insurance coverage										
Yes	161 (76)	82	**20.50**	**.31**	**<.001**[d]	132 (84)	96	– [a]	**.27**	**.004**[c]
No	50 (24)	50				25 (16)	76			

Abbreviations: χ^2, chi-square; df, degrees of freedom; n, sample size; Pap, Papanicolaou test; %, percentage; Phi, Phi coefficient.
[a] A Fisher's exact test was conducted for an expected count(s) of less than five in a cell.
[b] $P < .10$.
[c] $P < .05$.
[d] $P < .001$.

Table 7. Exploratory Final Multivariate Logistic Regression Model of Intrapersonal and External Influencing Factors on Pap Test Receipt and Pap Test Adherence

Variables	Pap Test Receipt (n =211)			Pap Test Adherence (n= 157)		
	B	SE	OR (90% CI)	B	SE	OR (90% CI)
Pap test awareness	–	–	–	–	–	–
Knowing Pap tests are necessary for women who are asymptomatic, sexually inactive, or postmenopausal	.16	.75	1.17 (.34-3.99)	–	–	–
Having ever heard of the HPV vaccine	.52	.55	1.69 (.68-4.19)	–	–	–
Would recommend the HPV vaccine to others who would qualify	.78	.53	2.18 (.92-5.18)	–	–	–
Self-empowerment in ever having requested a doctor or nurse practitioner for a Pap test	–	–	–	–	–	–
Currently married or living with a partner	**1.03**	**.49**	**2.81 (1.25-6.31)[a]**	–	–	–
Never been married			Reference	–	–	–
Some college or a graduate degree	**1.04**	**.60**	**2.62 (1.06-6.51)[a]**	-.66	.93	.52 (.11-2.40)
Less than high school			Reference			Reference
Age immigrated to the U.S.	–	–	–	-.05	.03	.96 (.91-1.00)
Years lived in the U.S.	**.11**	**.03**	**1.12 (1.06-1.17)[a]**	–	–	–
English speaking ability	-.20	.31	.82 (.50-1.37)	.39	.55	1.48 (.60-3.64)
Confidentiality issues	.02	.19	1.02 (.76-1.38)	-.38	.37	.68 (.37-1.27)
Perceived common barriers	-.05	.05	.96 (.88-1.04)	.06	.09	1.06 (.91-1.23)
Utilization of eastern medicine	**-.25**	**.11**	**.78 (.66-.93)[a]**	-.21	.18	.81 (.60-1.10)
Modesty	-.02	.08	.98 (.86-1.12)	-.14	.13	.87 (.70-1.08)
Crisis orientation	.03	.11	1.03 (.86-1.24)	–	–	–
Lack of family support	**-.18**	**.07**	**.84 (.74-.94)[a]**	–	–	–
Family member(s) ever having suggested Pap testing	.55	.53	1.73 (.72-4.15)	–	–	–
Friend(s) ever having suggested Pap testing	**.97**	**.55**	**2.62 (1.06-6.51)[a]**	–	–	–
Doctor or nurse practitioner ever having recommended Pap testing	–	–	–	**1.59**	**.86**	**4.90 (1.20-19.98)[a]**
Having a regular primary health care provider	.29	.63	1.34 (.48-3.75)	1.06	.91	2.88 (.64-12.87)
Having health care insurance coverage	.15	.64	1.16 (.41-3.29)	**1.62**	**.96**	**5.07 (1.05-24.47)[a]**
Exposure to media	-.21	.53	.81 (.34-1.94)	–	–	–

Abbreviations: CI, confidence interval; HPV, human papilloma virus; OR, odds ratio; Pap, Papanicolaou test; B, regression coefficient; SE, standard error; U.S., United States.

[a] $P < .10$.

CHAPTER 5

Discussion

Overview

This discussion chapter focused on expansion of some of the methodological issues that were faced in this study: modified data collection procedures, use of appropriate methods for handling missing data, quasi-separation (the Donner-Hauck phenomenon), and sensitivity testing. An in-depth description of cultural lessons learned helped to illustrate the complexity of conducting a cross-cultural study. A description of a new Vietnamese immigrant women (VIW) study since the review of the literature and the newly released Healthy People 2020 cervical cancer screening target objective was also provided. This discussion chapter also focused on expansion of the key study results reported in Chapters three and four. The focus was particularly on future directions for instrument refinement, research with VIW, and implications for health education and prevention practices with VIW. Included in this discussion was a summary of the limitations and strengths of this study.

Methodological Issues

Modified data collection procedures in this survey study. Community leaders and members from one of the earlier data collection sites, Asian Pacific Islander Parent and Child Development Services Program of the Asian Family Center a Program of the Immigrant & Refugee Community Organization (IRCO), brought forth the concern that there were potential women who would like to participate but were unable to stay at the data collection site due to a variety of reasons (e.g., work). Since the priority was to be inclusive of the diversity of the potential sample participants recruited from the community sites, not

including these VIW participants would have been culturally insensitive and limited generalizability of the study findings.

The study protocol was modified to provide the option of taking home the self-administered pen and paper questionnaire if potential participants were unable to stay at the data collection site to complete it. The consenting process remained the same. The Oregon Health & Science University (OHSU) Protection of Human Subjects Institutional Review Board (IRB) and the OHSU Knight Cancer Institute IRB approved this modification. This study enrolled 95 participants prior to the modification in data collection procedures. Despite two different modes of survey administration, the sample participants were recruited from the same study settings.

Appropriate methods for handling missing data in this survey study. Even though the overall extent of missing data was predominantly 2.8% across cases per independent variable (no missing data for the variable knowing that asymptomatic, sexually inactive, and postmenopausal women still need Pap testing), the issue of missingness became an issue when the significant independent variables from the bivariate analyses were further examined in the exploratory final multivariate logistic regression model. Due to the number of significant independent variables that were being examined (21 for the Pap test receipt, 11 for Pap test adherence), listwise deletion would have greatly reduced the sample size to less than 50%; thereby reducing power and potentially bias this study's parameter estimates. Pairwise deletion was also determined not to be an appropriate method for handling missing data. For example, a case with a missing value would be deleted from the analysis that included the variable with the missing value; as a result, there would be different sample sizes for each analysis which could lead to instability.

Other methods for handling missing data had been supported by the literature including case mean substitution and expectation maximization, and these were used to maintain this study's statistical power and help minimize biasing parameter estimates (Graham & Schafer, 2002). The expectation maximization algorithm was used to generate an imputed dataset. Expectation maximization is an iterative procedure that begins with estimating missing data based on assumed values for the parameters and observed data and missing estimates are then used to update the parameter estimates (Fox-Wasylyshyn & El-Masri, 2005). In addition, the hot-deck imputation method for imputing missing data for a small percentage of cases (marital status and educational level) using a pattern matching approach was used (Fox-Wasylyshyn & El-Masri).

A concern was that the total observations that had some missingness might be different from the imputed data. Data from the Vietnamese translated version and English version were analyzed using both the observed data and the imputed data. A detailed examination of descriptive statistics and correlated variables of the observed data and imputed data revealed similar means, SD, percentages, and correlations (see Appendix M, N, and O). Of the 30 correlated variables, only five correlated paired variables had a difference greater than .10. This provided confidence that the imputed data were not different from that of the observed data and supported that the imputed data were not an entirely different sample from that of the observed data. Additional support came from the bivariate logistic regression analyses of the independent variables with Pap test receipt and Pap test adherence on the observed data and imputed data that compared similarly (see Appendix P, Q, R, and S). For the imputed data for Pap test receipt, four additional variables were found to be positively associated and this included educational level, exposure to media regarding

cervical cancer and Pap testing, lower confidentiality issues, and crisis orientation. For the imputed data for Pap test adherence, one additional variable was found to be positively associated and this was lower confidentiality issues.

Quasi-separation (The Donner-Hauck Phenomena) and sensitivity testing. This study had a few independent variables that presented quasi-separation. Quasi-separation is a condition that refers to near perfect predictions of the variable (Hancock & Mueller, 2010). This occurs when the dependent variable separates an independent variable to a certain degree (UCLA Academic Technology Services [ATS], Statistical Consulting Group, 2007). Quasi-separation may be attributed to the binary nature of these independent variables (e.g., meaning that the no or yes response could limit variability). This may mean that there was an issue with limited variation in responses (predominantly yes) to these items with that of the dependent variable. The other issue may be the sample size. Quasi-separation differs from complete separation which is a condition that refers to perfect predictions (Hancock & Mueller). This occurs when the dependent variable separates an independent variable completely (UCLA ATS Statistical Consulting Group).

When included as independent variables in the multivariate logistic regression model, large confidence intervals were found for Pap test awareness (CI = 16.38-994.79), self-empowerment in ever having requested a doctor or nurse practitioner for a Pap test (CI = 4.84-148.60), and having a doctor or nurse practitioner ever having recommended Pap testing (CI = 16.88-931.63) for Pap test receipt. In addition, currently married or living with a partner and having some college or a graduate degree also had somewhat large confidence intervals (2.56-56.62, 1.05-50.41 respectively) and suggested quasi-separation. Prior to removing independent variables that suggested quasi-separation, sensitivity testing was

conducted. Sensitivity testing helped to determine which variables were potentially important to maintain in the final model.

Firstly, these variables with somewhat large confidence intervals were removed initially with the other variables that had large confidence intervals on a statistical basis. Then the model with the remaining independent variables were re-examined and utilization of eastern medicine, lack of family support, length of years lived in the U.S., and a friend(s) ever having suggested Pap testing were found to be positively associated to Pap test receipt. Next, of the variables that were initially removed, only currently married or living with a partner was added back and the model was re-examined. Currently married or living with a partner, utilization of eastern medicine, lack of family support, length of years lived in the U.S., and a friend(s) ever having suggested Pap testing were found to be positively associated to Pap test receipt. Next, currently married or living with a partner was removed again, and then only having some college or a graduate degree was added back, and the model was re-examined again. Having some college or a graduate degree, utilization of eastern medicine, lack of family support, length of years lived in the U.S., and a friend(s) ever having suggested Pap testing were found to be positively associated to Pap test receipt. Table 1 provided information on sensitivity testing.

Table 1. Sensitivity Testing for the Exploratory Final Multivariate Logistic Regression Model for Pap Test Receipt

Variables	Added Currently Married or Living with a Partner			Removed Currently Married or Living with a Partner and Added Some College or a Graduate Degree		
	B	**SE**	**OR (90% CI)**	**B**	**SE**	**OR (90% CI)**
Pap test awareness			**REMOVED**			**REMOVED**
Knowing Pap tests are necessary for women who are asymptomatic, sexually inactive, or postmenopausal	.288	.722	1.333 (.407-4.371)	.299	.732	1.348 (.404-4.491)
Having ever heard of the HPV vaccine	.657	.547	1.929 (.785-4.740)	.522	.535	1.686 (.700-4.062)
Would recommend the HPV vaccine to others who would qualify	.756	.512	2.131 (.917-4.948)	.793	.517	2.210 (.944-5.177)
Self-empowerment in ever having requested a doctor or nurse practitioner for a Pap test			**REMOVED**			**REMOVED**
Currently married or living with a partner	**.965**	**.476**	**2.624 (1.198-5.745**)*			**REMOVED**
Never been married			Reference			
Some college or a graduate degree			**REMOVED**	**.956**	**.581**	**2.601 (1.001-6.759)***
Less than high school						Reference
Years lived in the U.S.	**.099**	**.029**	**1.104 (1.054-1.158)***	**.103**	**.029**	**1.109 (1.057-1.163)***
English speaking ability	-.024	.292	.977 (.604-1.579)	-.245	.298	.783 (.480-1.277)
Confidentiality issues	.070	.178	1.073 (.800-1.437)	.093	.177	1.097 (.821-1.467)
Perceived common barriers	-.059	.050	.943 (.868-1.023)	-.056	.050	.946 (.871-1.027)
Utilization of eastern medicine	**-.242**	**.106**	**.785 (.660-.934)***	**-.249**	**.104**	**.780 (.657-.925)***
Modesty	.013	.078	1.013 (.890-1.152)	-.028	.080	.972 (.853-1.109)
Crisis orientation	-.015	.108	.985 (.824-1.176)	.007	.111	1.007 (.840-1.209)
Lack of family support	**-.141**	**.067**	**.869 (.777-.970)***	**-.181**	**.070**	**.834 (.744-.936)***

Variables	Added Currently Married or Living with a Partner			Removed Currently Married or Living with a Partner and Added Some College or a Graduate Degree		
	B	**SE**	**OR (90% CI)**	**B**	**SE**	**OR (90% CI)**
Family member(s) ever having suggested Pap testing	.586	.531	1.798 (.750-4.309)	.414	.534	1.513 (.628-3.643)
Friend(s) ever having suggested Pap testing	**.960**	**.553**	**2.612 (1.052-6.484)***	**1.146**	**.550**	**3.145 (1.273-7.768)***
Doctor or nurse practitioner ever having recommended Pap testing	**REMOVED**			**REMOVED**		
Having a regular primary health care provider	.337	.615	1.401 (.510-3.850)	.144	.603	1.155 (.428-3.112)
Having health care insurance coverage	.204	.614	1.226 (.447-3.364)	.297	.616	1.346 (.489-3.705)
Exposure to media	-.152	.516	.859 (.368-2.005)	-.560	.503	.571 (.250-1.306)

Note. β, regression coefficient; SE, standard error; OR, odds ratio; CI, confidence interval; HPV, human papilloma virus; Pap, Papanicolaou test; U.S., United States.
* $p < .10$.

This sensitivity testing suggested that currently married or living with a partner and having some college or a graduate degree were relevant independent variables in the exploratory final multivariate logistic regression model for Pap test receipt. These independent variables did not have large confidence intervals. Additionally, being currently married had been supported by most prior studies to be positively associated with Pap test receipt (Nguyen, McPhee, Nguyen, Lam, & Mock, 2002; Do et al., 2007; Ho et al., 2005; Schulmeister & Lifsey, 1999; Yi, 1998). Also, prior studies had found that having higher educational attainment was positively associated with Pap test receipt (Nguyen et al., 2002; Ho et al., 2005). Therefore, adding currently married or living with a partner and having some college or a graduate degree back to be examined with the other remaining independent variables in the exploratory final logistic regression model for Pap test receipt was both supported statistically and theoretically.

A somewhat large confidence interval for self-empowerment in ever having requested a doctor or nurse practitioner for a Pap test (CI = 1.72-41.66) was also found for Pap test adherence. In the exploratory final logistic regression model for Pap test adherence, after having removed self-empowerment in ever having requested a doctor or nurse practitioner for a Pap test, then ever having a doctor or nurse practitioner recommended Pap testing and having health care insurance coverage were found to be positively associated to Pap test adherence.

Due to the descriptive nature of this study and having had broad study aims, there were a considerable number of independent variables that were being examined. Twenty-one variables were examined together in a logistic regression multivariate model for Pap test receipt and eleven variables were examined together for Pap test adherence. Future survey

studies might consider refining the study aims to focus on examining selected variables (e.g., potentially modifiable [doctors or nurse practitioners ever recommended Pap testing]). This could help to reduce the number of items in a questionnaire which would reduce the length and possibly the time it takes to fill out a questionnaire. It is important to note that two potential participants refused to participate in this study because they felt the questionnaire was long. This suggested that the length of a questionnaire can deter a potential participant from participating in a study which can potentially limit the diversity in sampling. Also, some of the items from the modified Revised Susceptibility, Benefits, and Barriers Scale (SBBS) and the modified Cultural Barriers to Screening Inventory (CBSI) did not appear to be related to the respective factor structure for these instruments. The modified SBBS and CBSI could undergo instrument refinement and sensitivity testing. A discussion regarding future directions for instrument refinement and sensitivity testing is discussed in detail later in this chapter.

Cultural Lessons Learned: Challenges and Strategies When Conducting a Cross-Cultural Study Within a Community Setting.

Prolonged engagement and community networking to gain trust. This study has demonstrated the importance of prolonged engagement with the Vietnamese community to help in building relationships of trust and understanding between the investigators and the Vietnamese community's needs, and also involved obtaining support from community organizations' leaders and members for the study (Knobf et al., 2007). Prolonged engagement with the Vietnamese community through involvement with community outreach activities for over two years prior to conducting the study, and continued during the study (four years total). There was active participation in health fairs and forums through several

volunteering roles (nurse consultant, Vietnamese bilingual, bicultural interpreter, nurse immunizer, mentored community members on research, nursing, and health disparities). Each activity helped build trust and community networking (Knobf et al., 2007). Most of the community outreach activities were through the AFC/IRCO and some were through the Providence Portland Medical Center.

The Ph.D. candidate's background as a professional nurse led to being asked frequently to volunteer. This investigator offered to help and often led certain assigned tasks. Managers and project/program coordinators stated that her "willingness and volunteering efforts were seen as sincere care for the community" and that they "greatly appreciated her time in helping the community" (e.g., consulting on course curriculum, poster presentations, and wellness fairs). Other community outreach activities included workshops about conducting research and dissemination.

A collaborative opportunity emerged between the investigator and the community liaison for the Vietnamese Senior Citizens of Washington County (VSC). A special request for a Community Healthy Teaching Workshop was proposed. This was one of this study's data collection sites and was also a recruiting site for the immunization clinic of the Hepatitis B/HIV Prevention & Education Project (HPEP). The VSC president wanted to engage the investigator with the community members of this association before approaching them with the research survey. The principal investigator partnered with HPEP to develop a workshop that could be conducted in Vietnamese. The Community Health Teaching Workshop was very time intensive with only a few days to design a culturally appropriate, sensitive, and relevant course curriculum. In addition, the workshop had to be approved by other committee members, followed by gathering appropriate pre-printed information in

Vietnamese and English, and the printing and packaging materials for the workshop. There was a rigid timeline so that the workshop could be added to the agenda of a meeting that the VSC president had scheduled with community members. Establishing trust with community partners was essential because of the reliance on one another to achieve common goals. This project in addition to the investigator's history of prolonged engagement demonstrated to HPEP leadership that she was dependable, efficient, and resourceful.

Challenges in gaining trust: Various community gate-keepers. One large church-based Asian community organization did not grant permission to collect data. While the study topic was supported by the leaders and pastoral council of this organization, they perceived that the dissertation research was meeting a personal goal rather than a project that would benefit the Vietnamese community. In addition, the concern about fairness was identified. If they were to approve this study, then they would have had to approve other graduate students' projects. The leaders and pastoral council were concerned that due to having a large number of admitted students (bible and Vietnamese language school), then it was determined to be unfair and not feasible to approve all graduate students' projects. The community consultant and the investigators were not invited to partake in this formal discussion.

The lesson learned from this organization's denial of the research project was that there were several different levels of gatekeepers/leaderships to consider when trying to gain access.

An equivalent large Asian-based community organization to this church-based organization was a temple setting in which we were a success, and conducted the study. The gatekeeper was the religious Buddhist monk leader. Our community liaison had been a

dedicated community member volunteer at this temple and had known the religious Buddhist monk leader for over 25 years. The religious Buddhist monk leader had conducted funeral ceremonies for this community liaison's family members, come to family dinners, and joined in family prayers.

It took about one year for the community liaison to set up a meeting between the investigator with the religious Buddhist monk leader. There were reservations on the part of the religious Buddhist monk leader about having a research study conducted at the temple. This would have been the first study allowed to be conducted at the temple site. Building on the established trust between the community liaison and the religious Buddhist monk leader, the Ph.D. candidate met and discussed the study purpose and the implications of the findings. An observation was that the religious Buddhist monk leader discussed his inquiries with the community liaison rather than the female investigator. The investigator's discussion with the community liaison about research, protection of human participants, and emphasis on confidentiality of the gathered information was essential and served as the foundation for answering the religious leader Buddhist monk's inquiries. In this situation, the community liaison was also a gate keeper as he provided endorsement for this survey study.

The community members with whom we worked brought the survey study to "hard to reach" participants that would have been otherwise not included and would have limited generalizability of the findings. It is important to think about the issues of various gate keepers as well as the various levels of gatekeepers.

A CBPR approach: Innovative approach to conducting research. James, Yu, Henrikson, Bowen, and Fullerton (2008) posited that investigators may need to negotiate in how the study is being conducted by shifting from a traditional research control to a

community-based research in exchange for approval and support of the partnership with the community. Use of a community based participatory research (CBPR) approach, having community input in this study, relationship building, respect for the Vietnamese community through early and consistent engagement, taking time and effort to be entrenched in a community setting has been demonstrated in this study as methods to address trust issues (Minkler & Wallerstein, 2003; James et al., 2008). This study addressed a relevant local public health need in the Vietnamese community and strove to be collaborative. It is essential to sustain existing trusting relationships while continuing to build new trusting relationships. The investigators continue to collaborate with Asian and Vietnamese programs/organizations; thereby, demonstrating continued commitment to improving the communities' health and well being.

Plan for disseminating study findings to the community. Dissemination of findings will maintain engagement with the Asian and Vietnamese community. Emerging plans include reporting multiple influencing factors to engagement in Pap testing at established programs/organizations (data collection sites). One of our community advisors is an organizational representative from the Providence Cancer Center of the Providence Portland Medical Center and has partnered with the dissertation research team. We will work on a plan that involves pulling our resources and knowledge of the organizational leaders in the Vietnamese community. We will seek to partner with other community organizations (e.g., AFC/IRCO) so as to pull together more resources and knowledge. The thought was that the organizational leaders would be able to learn about the study findings and its implications (e.g., community) as well as learn about other existing community projects/programs. Therefore, we would be able to share a range of information. This

process would provide us with an opportunity to sustain built relationships through our demonstration of information sharing as well as build new trusting relationships that are grounded on our commitment to serving the community. This is an important message to convey.

New VIW Study Since the Review of the Literature

Taylor et al. (2009) conducted a cross-sectional, community-based survey study with 1,516 VIW in metropolitan Seattle, Washington of the United States (U.S.). They found higher cervical cancer screening rates compared to this study and earlier studies. Ninety-three percent of VIW reported having received a Pap test on at least one occasion and 81% were adherent to Pap testing guidelines. Taylor et al. (2009) suggested that over the past five years, the Vietnamese community in Seattle had been the focus of cervical cancer control efforts by the National Breast and Cervical Cancer Early Detection Program and a community clinic system that served limited English-speaking Asian Americans, and these efforts may have contributed to the higher Pap testing rates.

Taylor et al. (2009) found greater English language proficiency more likely to have had a Pap test and adhered to Pap testing, which was similar to this study with VIW. Additionally, longer years lived in the U.S. was also more likely to have had a Pap test (Taylor et al., 2009), and this too was similar to this study with VIW. Adaptation to the U.S. appeared to influence engagement in Pap testing. Taylor et al. (2009) examined sociodemographic variables in a multivariate logistic regression model. Taylor et al. (2009) found that VIW who were currently married were more likely than previously married women and 4.3 times more likely than never been married women to have ever received a Pap test. The variables examined in the multivariate logistic regression model differed for

this study with VIW from that of Taylor et al.'s (2009) study which made comparison difficult. In this study with VIW, women who were currently married or living with a partner were more likely than women who have been previously married and were 2.8 times more likely than women who have never been married to ever have received a Pap test. A possible explanation for this surrounds cultural beliefs regarding marriage and sex. Studies suggested a stigmatization with premarital sex (Burke et al., 2004; Nguyen et al., 2002; Yi, 1998). Additionally, Taylor et al. (2009) found higher educational level to be positively associated with Pap test adherence. Whereas, in this study with VIW, educational level was found to be more likely to have had a Pap test and adhered to Pap testing as independent associations. This study was similar to Taylor et al.'s (2009) findings that VIW who knew that Pap testing was necessary for asymptomatic, sexually inactive, and post-menopausal women were more likely to have had a Pap test. Further education regarding who needs Pap testing may be a way to help promote cervical cancer screening.

Taylor et al. (2009) found that VIW who had a doctor recommend Pap testing were found to be 2.7 times more likely than women who did not receive this recommendation to adhere to Pap testing. VIW in this study were nearly 5.0 times more likely than women who have never received this recommendation to adhere to Pap testing. This suggested that a health care provider and patient communication regarding Pap testing was important for adhering to cervical cancer screening guidelines.

Healthy People 2020 Cervical Cancer Screening Target Objective

Healthy People 2020, released in 2010, target for cervical cancer screening is 93% of women aged 21 to 65 years old should be screened for cervical cancer. VIW in this study still had low Pap testing rates when compared to the new national target objective (Healthy

People.gov). This study identified multiple influencing factors relevant to adherence to cervical cancer screening that inform culturally appropriate and relevant intereventions. Advanced practice nurses who provide Pap testing can promote screening and education among VIW as an individual influencing factor, as well as recognizing the role of health care providers as an organizational influencing factor. Further research addressing external influencing variables to Pap testing at the interpersonal, organizational, community, and health insurance mandate levels of influences, how variables interact across levels of the Ecological Model, as well as adapting and development of culturally appropriate instruments is needed.

Summary of Key Study Results

Summary of key results for the psychometric testing and future instrument refinement. Cronbach's alpha for internal consistency reliability of the perceived susceptibility, benefits, and common barriers subscales of the modified Revised Susceptibility, Benefits, and Barriers Scale (SBBS) were moderate to high with alphas of .86, .69, and .86, respectively. The modified Cultural Barriers to Screening Inventory (CBSI) subscales, utilization of eastern medicine, modesty, crisis orientation, and lack of family support yielded moderate to high Cronbach's alphas of .69, .83, .77, and .91, respectively. The Confidentiality Issues Scale (CIS) had a high Cronbach's alpha of .89, and the alpha for the Quality of Care from the Health Care System Scale (QoC) was moderately low at .57. The incremental fit index (IFI) of the three-factor structure of the SBBS was at .83 and the root mean square error of approximation (RMSEA) was at .094. The IFI of the four-factor structure of the CBSI was at .88 and the RMSEA was at .098. The results did not yield a

proportionate improvement in the fit of the respective structure and yielded a relative lack of fit for both of the structures.

The relative lack of fit of the factors within the respective structure may be due to having items that presented with lower standardized regression weights (less than .50) that indicated that an item was not aligned or related to the respective factor (Moss, 2008). A sensitivity testing could be conducted in which items, starting with the lowest regression weight, could be removed one by one to examine the improvement in the fit of the respective factor structure.

For the perceived benefits subscale of the modified SBBS, the item, "If I get a Pap test and nothing is found, I do not worry as much about cervical cancer" had the lowest regression weight at .07 and would be removed first. The item, "If I find abnormal cells through a Pap test, my treatment for cervical cancer may not be as bad" with a regression weight at .22 would be removed next. Then the item with a regression weight at .29, "Having a Pap test will decrease my chances of dying from cervical cancer" would be removed. Based on the findings from the sensitivity testing for the modified SBBS, if there was an improvement in the fit of the structure, then this may suggest that perceived benefits may not be a good fit culturally related to VIW's beliefs about benefits to Pap testing.

Sensitivity testing could continue by removing items from the perceived common barriers subscale of the modified SBBS starting with the item with the lowest regression weight. The following item had a regression weight at .29, "I cannot remember to schedule a Pap test" and would be removed first. Additional information obtained from an exploratory factor analysis showed that this item also had a low factor loading at .33. The next item to be removed, "I don't know how to go about getting a Pap test" had a regression weight at .47.

For the modified CBSI, the following item of the crisis orientation subscale had the lowest regression weight at .28, “When I get sick I usually take Western/American medicine” and would be removed first. Two items of the modesty subscale each had a regression weight at .49, “If I follow a healthy diet and exercise, I probably don’t need to use other prevention methods like cancer screening tests” and “I only see a doctor or nurse practitioner when I am having a health problem” and would be removed next. Additional information obtained from an exploratory factor analysis showed that all three items also had low factor loadings less than .40.

This study used individual cognitive interviews and pre-testing of the questionnaire with VIW who resembled the survey study participants to assess for the utility and clarity of the instruments prior to the survey study. In addition to sensitivity testing, the use of focus group discussions would evaluate assumptions about the reality as understood by VIW (Fowler, 1995). This would provide further support in the form of a qualitative context, as well as provide an explanation for why perceived benefits might not have been a good fit when examining Pap testing health beliefs. Also, focus groups discussions could help to provide information on the assumptions about the way VIW understand other items, terminology, or concepts (Fowler).

Summary of key results for the primary study aims. For the imputed data, only 74% of VIW had received a Pap test on at least one occasion and 69% were adherent.

In the exploratory final multivariate model, longer years lived in the U.S. (OR = 1.12, 90% CI [1.06-1.17]), currently married or living with a partner (OR = 2.81, 90% CI [1.25-6.31]), having some college or a graduate degree (OR = 2.62, 90% CI [1.06-6.51]), and having a friend(s) suggested Pap testing (OR = 2.62, 90% CI [1.06-6.51]) were more likely to

have had a Pap test. Utilization of eastern medicine (OR = .78, 90% CI [.66-.93]) and lack of family support (OR = .84, 90% CI [.74-.94]) were less likely to have had a Pap test. Having a doctor or nurse practitioner recommended Pap testing (OR = 4.90, 90% CI [1.20-19.98]) and health care insurance coverage (OR = 5.07, CI [1.05-24.47]) were more likely to adhere to Pap testing.

When examined independently of other predictors, having ever heard of the human papilloma virus (HPV) vaccine and would recommend the HPV vaccine to others who would qualify were both more likely to have obtained a Pap test and adhered to Pap testing. Only 33% of VIW thought that cervical cancer was caused by HPV, and 32% of VIW would not recommend the HPV vaccine to others who would qualify.

Fifty-one percent did not know of cervical cancer screening programs in the community, and only 11% knew where to get a free or low-cost Pap test. When asked about local community projects/programs that were recently available prior or currently available at the start of the survey, approximately 14% of VIW reported having ever heard of the Free Friday Screenings Program of OHSU Center for Women's Health. About 17% reported having ever heard of the Vietnamese Health Promoter Program of the Providence Portland Medical Center. Approximately, 32% reported having ever heard of the Vietnamese Women's Health Project (VWHP) of AFC/IRCO.

Future research with VIW. A CBPR approach was used to conduct a relevant local public health research in the Vietnamese community. This study used a collaborative and partnership approach in conducting research which allowed investigators to connect with community members and organizational representatives with the design and implemention of a study that was culturally appropriate and sensitive. As a result, the study addressed issues

of rigor and appropriateness. The prolonged engagement with the Vietnamese community was essential as it allowed the investigators to build a relationship of trust and understanding between the investigators and the Vietnamese community. Continued engagement demonstrates ongoing commitment. This was important in sustaining relationships as well as building new relationships. This could lead to sustainability of shared common goals such as promoting adherence to cervical cancer screening.

This study demonstrated that longer residency in the U.S. of VIW was associated with a greater likelihood of ever having received a Pap test. Further research is needed to examine whether there are variances with Pap testing outcomes within subgroups of VIW. For example, examining variances within newly immigrated (e.g., within one year, within five years) versus those who had immigrated a long time ago (e.g., greater than ten years, greater than 20 years). There was a history of Vietnamese immigration patterns (waves) to the U.S. There are four main waves of immigration for Vietnamese (Purnell, 2008). Wave one began in April 1975 when South Vietnam fell into the communist control of North Vietnam, and this departure was described to be unexpected and unplanned. Wave two occurred in the late 1970s and Vietnamese were described as having grown disenchanted with communism. Wave three started in 1979, where there was the creation of the Orderly Departure Program which provided a safe and legal exit, and Vietnamese were able to reunite with families already in the U.S. Wave four started in 1987, where the passage of the Amerasian Homecoming Act provided the entry of former South Vietnamese military officers, other political detainees, children of U.S. servicemen and Vietnamese women, and close relatives. Identification of subgroups within VIW could advance the knowledge of how

subgroups are defined and whether there are any unique variances that could help explain engagement in a preventative health behavior such as cervical cancer screening.

Greater use of eastern medicine as a perceived cultural barrier component was found to be less likely to ever having received a Pap test. Similar VAW studies have not examined use of eastern medicine as a perceived cultural barrier component to Pap testing. There is paucity in research with regards to this area including how common is the use of eastern medicine by VIW? Further research is needed to understand why VIW who used eastern medicine were less likely to have obtained a Pap test. Qualitative methodology could help in understanding the underlying context. This could include understanding reasons underlying the use of eastern medicine and how it could be a cultural barrier to engaging in cervical cancer screening.

Perceived lack of family support and communication with a friend(s) appears to influence VIW's decision to engage in cervical cancer screening. Further examination is needed to explore the role of family and friends to engaging in cervical cancer screening. Qualitative methodology is one method for gaining a deeper understanding of how and why family support and friends, a form of social support, might influence Pap testing. Also, how this could affect VIW's decisions to engage in Pap testing. The information obtained could help inform targeted interventions aimed at family and social support.

This study was the first to examine the association between knowledge of the HPV vaccine with Pap testing in VIW. When examined independently of other predictors, having ever heard of the HPV vaccine and would recommend the HPV vaccine to others were both more likely to have obtained a Pap test and adhered to Pap testing. A possible explanation for this is that VIW who heard about the available HPV vaccine medication may have sought

a health care provider regarding vaccination. This can provide an opportunity for communication with a health care provider about the HPV vaccine and Pap testing which as a result could possibly have led to having a Pap test regardless of whether one was eligible to receive the HPV vaccine or not. More than one quarter of the VIW participants thought that cervical cancer was caused by HPV, and 32% of VIW would not recommend the HPV vaccine to others who would qualify. More research is needed to further understand knowledge and held cultural beliefs regarding HPV and the HPV vaccine.

The HPV vaccine has been approved by the U.S. Department of Health and Human Services Food and Drug Administration (DHHSFDA) since June 2006 (U.S. DHHSFDA, 2006). The HPV vaccine is currently available for females as young as age 9 and up to 26 years old which matches the inclusion criteria of this study, between ages 21 to 99 years. More insight is needed to understand the role of health care providers, community leaders, and parents as influences to the HPV vaccine receipt for Vietnamese young children, adolescents, and women and continuation of cervical cancer screening.

Implications for Health Education and Prevention Practices with VIW

Pap testing rates in this study with VIW were lower than that specified for the Healthy People 2010 and 2020 cervical cancer screening target objectives (Centers for Disease Control and Prevention, 2003; Healthy People.gov). Advanced practice nurses are increasingly doing Pap testing and nurses have a vital role in the promotion of screening and education among VIW by recognizing multiple influencing factors.

Sociodemographic characteristics also influenced engagement in cervical cancer screening. Recognizing these influencing factors can help in the identification of at-risk VIW. VIW who had resided longer in the U.S. were found to be more likely to have had a

Pap test than those who have not lived as long in the U.S. Adaptation to the U.S. appears to have influenced women's engagement in cervical cancer screening. Health care providers who work and provide care to communities are in a position to identify VIW patients who are at risk. They can further assess VIW's understanding and held beliefs of prevention and screening as a method of early detection for pre-cancer and cancerous lesions of the cervix. This study found that women who were currently married or living with a partner were more likely to have had a Pap test. There may be held cultural beliefs regarding marriage and sex that could be a possible explanation for whether or not VIW engages in Pap testing (e.g., premarital stigmatization) (Burke et al., 2004; Nguyen et al., 2002; Yi, 1998). Health care providers can further assess VIW's held cultural beliefs and can promote screening by providing clarification.

Access to health care in the form of having health care insurance coverage and the visibility and availability of cervical cancer screening programs are areas that deserve attention. Having health care insurance was found in this study to influence VIW's adherence to cervical cancer screening. VIW who reported having health care insurance were more likely than women who did not have health care insurance coverage to adhere to Pap testing. In the state of Oregon, cervical cancer screening is a mandated health insurance benefit (Bunce & Wieske, 2009).

About half of the VIW participants in this study did not know of cervical cancer screening programs in the community and only a smaller portion of VIW knew of where to go to get a free or low-cost Pap test. This may be due to the visibility and availability of cervical cancer screening programs. For example, there is the Free Screening Program of the Center for Women's Health at Oregon Health & Science University. The Free Screening

Program is located in Portland, Oregon on Marquam Hill and has been advertised in the Oregonian (English newspaper) and through organizational outreach efforts. There are six Planned Parenthood health centers throughout the Portland, Oregon metropolitan area. The name of the health center may appear to only be for individuals planning or suspecting pregnancy; however, the health centers provides other services including cervical cancer screening. There is Outside In which provides care to homeless youths as well as non-insured and under-insured youths and is located in downtown Portland, Oregon. There is also the National Breast and Cervical Cancer Early Detection Program which is a federally funded program that assists uninsured and impoverished women in getting regular Pap tests. All of these cervical cancer screening programs can be located through an internet search.

Only about one quarter of the VIW participants had heard of the VWHP of the AFC/IRCO. Health care providers can partner and collaborate with Asian community-based organizations to discuss outreach efforts and to promote visibility of cervical cancer screening programs. A partnership approach can help provide an opportunity to build a trusting relationship that includes valuing perspectives and inputs from both sides. Discussions can place emphasis on cultural appropriateness and sensitivity of the programs, and enhance the understanding of multiple influencing factors to cancer screening as well as to address sustainability of the preventative behavior.

Study Limitations and Strengths

There are factors limiting generalizability of findings and efforts were made to minimize these limitations. The sample of VIW were self-selected. These participants might have a tendency to like to participate in activities such as studies, and this can limit the diversity in the sample. Leaders and members of respective Asian community organizations

helped the investigators to gain trust by making invitation study announcements and publicly providing their endorsement for this study. This resulted in the investigators being able to reach potential participants who might not have participated related to trust issues. The type of measure was self-report that could potentially lead to socially desirable bias (Sadish, Cook, Campbell, 2002). Participants may have had a tendency to answer the questions in a positive way (e.g., a tendency to respond "yes" to questions). Efforts were made to minimize this limitation by being clear about the study purpose and the importance of answering questions honestly. Verification for accuracy of self-report Pap testing was not carried out with medical chart reviews. This would not have been feasible because the study's purpose did not include a review of medical charts, and participants were not asked to provide follow-up contact information. Other efforts were made to minimize under or over reporting by providing embedded reminders in the instruction statements throughout the questionnaire regarding how the information would be kept confidential, the importance of accurate information, interests in the participants' views, and to answer each question honestly. The setting is limited to Asian community organizations in the northwest metropolitan area of the U.S. However, the investigators collected data from 12 sites as a way to address having heterogeneous settings versus only collecting data from a single or a few settings.

Prolonged engagement with the Vietnamese community for over two years prior to conducting the study was a strength because it allowed the investigators to build a relationship of trust with community members in the Vietnamese community. Continued engagement demonstrates ongoing commitment, and this is important in sustaining relationships as well as building new relationships. Community-based oriented design was another strength. This study used an innovative approach to conducting research. This study

was also collaborative in that the use of a partnership approach in conducting research allowed investigators to gain input and discussion with community members and organizational representatives to design and implement a study that was culturally appropriate and sensitive. As a result, the study addressed rigor and cultural appropriateness.

Use of a CBPR approach addressed a local relevant public health issue in the Vietnamese community, and this approach in adapting and developing a questionnaire led to improved internal consistency reliability and support for structural validity. Working with community members and community experts helped in determining the adequacy of scales/subscales as a measure of the study concepts of interest for the targeted VIW population within the Vietnamese community, maximized item appropriateness to the VIW population while maintaining integrity of the item tapping into the concept, and helped in the identification of a relevant concept (confidentiality issues in obtaining a Pap test) that would have been otherwise omitted if a CBPR approach was not implemented. The combined CBPR and the U.S. Census Bureau translation team approaches helped to minimize construct bias because efforts were made to translate in a meaningful way rather than literal translation. As a result, the meaning of the translated items was maintained so that the underlying intent of each item was understood by VIW. This improved structural validity because it helped to provide support that the instruments measured what it was intended to measure. This also improved internal consistency reliability because discussions surrounding the comprehension of the wording of the translated items were done with the understanding that this can impact how participants answer items within a scale/subscale. Using a combination of CBPR and the U.S. Census Bureau's team approaches to translation could advance cross cultural measurements nursing science because cultural perspectives and values are discussed;

decisions are made as a team in resolving ambiguities, and provide a way of capturing the team's decisions about what items mean rather than relying on back-translation. Funding for studies that use such translation approaches should be a priority as well as recognizing the time and commitment required of the translation team members.

Other strengths of this study were:

a) expanding the definition of health care providers to include nurse practitioners because the review of literature defined primary health care providers as mostly medical doctors. Nurse practitioners are also licensed health care providers, and a part of their practice includes doing Pap testing; therefore, having a comprehensive definition helped to provide clarity.

b) exploration of the relationship among significant variables that were found to be independently associated with Pap test receipt and Pap test adherence in a multivariate logistic regression model in order to examine for unique associations Pap test receipt and Pap test adherence. Appropriate methods for handling missing data (expectation maximization algorithm and the hot-deck imputation method) were used and helped to maintain power and parameter estimates and as a result provided confidence in the interpretation of the findings.

Summary

This study examined Vietnamese immigrant women's (VIW) beliefs about cervical cancer screening and influencing factors to screening. A combined community based participant research (CBPR) and the U.S. Census Bureau's translation team, a culturally sensitive approach, translated items in a meaningful way that minimized construct bias. This study advances the knowledge on what is known about influencing factors to engagement in

cervical cancer screening among VIW. VIW who had lower use of eastern medicine and lower perceived lack of family support were more likely to have had at least one Pap test in their lifetime. The role of a doctor or nurse practitioner recommending Pap testing and having access to health care insurance coverage contributed to the understanding of VIW's adherence to cervical cancer screening guidelines. Finally, the findings from this study can be used to inform culturally appropriate and relevant interventions with the goal of targeting multiple influencing factors to support adherence to cervical cancer screening.

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APPENDICES

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Appendix A

Final English and Vietnamese Version

Vietnamese Immigrant Women's Pap Testing Questionnaire

Vietnamese Immigrant Women's Pap Testing Questionnaire

English

Is this your first time to complete this questionnaire?	☐ No (Please talk to the researcher) ☐ Yes (Please continue)
Were you born in or before 1989?	☐ No (Please talk to the researcher) ☐ Yes (Please continue)

Thank you for your time in filling out this survey. Your information will be kept confidential. It is important for us to have accurate information. Please answer each question honestly.

Please place an X in the box that corresponds to your response. See example: ☒

Numbers used should be as follows: 1 2 3 4 5 6 7 8 9 0

Written answers should be as follows: Other (Please give an example) grandmother

Participant ID #: ☐☐☐

Question 1. This question is about your health care. **Please place an X in the box that corresponds to your response.**

1.	Is there a particular hospital, clinic, or primary health care provider's office where you regularly go for health care?	☐ No ☐ Yes ☐ Not sure/Do not know

Questions 2-5. The following questions are about your primary health care provider. **Please place an X in the box that corresponds to your response.**

2.	Do you have a primary health care provider that you regularly see?	☐ No (If no, **Skip** to question 6) ☐ Yes ☐ Not sure/Do not know (If not sure/do not know, **Skip** to question 6)
3.	If you answered yes to question 2, please choose one answer by placing an X in the box: 	☐ Doctor ☐ Nurse Practitioner ☐ Other (Please give an example) _____ ☐ Not sure/Do not know
4.	Is your regular primary health care provider a man or a woman?	☐ Man ☐ Woman
5.	Is your regular primary health care provider Vietnamese?	☐ No (Please specify ethnicity) _____ ☐ Yes

Questions 6-7. The following are questions about cervical cancer. **Please place an X in the box that corresponds to your response.**

6.	Have you ever heard of cervical cancer?	☐ No ☐ Yes ☐ Not sure/Do not know

7. What do you think causes cervical cancer? (Place an X in the box by all that apply)

- ☐ Genetics/Family history
- ☐ Infection with STDs (sexually transmitted diseases)
- ☐ Infection with the HPV (human papilloma virus)
- ☐ Hygiene/Cleanliness
- ☐ Smoking/Second hand smoking
- ☐ God's will
- ☐ Other (Please give an example) _____
- ☐ Not sure/Do not know

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Questions 8-11. The following questions are about Pap testing. Remember that your information will be kept confidential. It is important for us to have accurate information. Please answer each question honestly. **Please place an X in the box that corresponds to your response.**

8.	Have you ever heard of a Pap test?	☐ No ☐ Yes ☐ Not sure/Do not know
9.	A Pap test is when a doctor or nurse practitioner does a pelvic exam and also takes a scraping of cells from the cervix inside the vagina and sends it to a laboratory. Have you ever had a Pap test?	☐ No ☐ Yes (If yes, **Skip** to question 10) ☐ Not sure/Do not know

The following statement is about your thought on getting a Pap test. There is no right or wrong answer. Remember that the information you provide will be kept confidential. Please answer this statement honestly by telling us if you disagree or agree with the following statement by placing an **X** in the box that corresponds to your response.

		Strongly Disagree	Disagree	Neither Disagree or Agree	Agree	Strongly Agree
9a.	I plan to get a Pap test within the next 3 years.	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5

(If you answered question 9a, **Skip** to question 12)

10. If you answered yes to question 9, when did you have your last Pap test?
(Please choose one answer below by placing an **X** in the box)

☐ Less than/Just about 1 year ago
☐ More than 1 year ago, but not yet 2 years
☐ Just about 2 years ago
☐ More than 2 years ago, but not yet 3 years
☐ Just about 3 years ago
☐ More than 3 years ago
☐ Other (Please specify in months and years) ☐☐ (Months) ☐☐ (Years)
☐ Not sure/Do not know

11. How frequently do you get a Pap test?
(Please choose one answer below by placing an **X** in the box)

☐ None at all
☐ Once every year
☐ Once every 2 years
☐ Once every 3 years
☐ Other (Please give an example) _____

Question 12. This question is about your health history. Please place an ✖ in the box that corresponds to your response.

12.	Have you had a health problem that caused you to have a hysterectomy (for example, have your uterus removed)?	☐ No ☐ Yes ☐ Not sure/Do not know

Questions 13-15. The following questions are regarding what you know about Pap testing. Remember that the information you provide will be kept confidential. **Please place an ✖ in the box that corresponds to your response.**

	True	False	Not sure/ Do not know
13. A woman needs a Pap test if she has no symptoms.	☐	☐	☐
14. A woman needs a Pap test if she is not having sexual relations with a man.	☐	☐	☐
15. A woman needs a Pap test after menopause when her periods have stopped.	☐	☐	☐

Questions 16-20. The following questions are about Pap testing. **Please place an ✖ in the box that corresponds to your response.**

16.	Has a doctor or nurse practitioner ever told you that you should have a Pap test?	☐ No ☐ Yes ☐ Not sure/Do not know

17.	Have any of your family members (blood kins or relatives) ever suggested that you have a Pap test?	☐ No ☐ Yes (Please specify relationship but do not include the name of the person(s)) _____ _____ _____ ☐ Not sure/Do not know
18.	Have any of your friends ever suggested that you have a Pap test?	☐ No ☐ Yes ☐ Not sure/Do not know
19.	Has anyone other than a doctor or nurse practitioner, family members, or friends suggested that you have a Pap test? 0 201201 000251	☐ No ☐ Yes (Please specify relationship but do not include the name of the person(s)) _____ _____ _____ ☐ Not sure/Do not know
20.	Have you ever asked a doctor or a nurse practitioner for a Pap test?	☐ No ☐ Yes ☐ Not sure/Do not know

Questions 21-37. The following statements may relate to your beliefs about getting cervical cancer and about the Pap test. There is no right or wrong answers. We are very interested in your view. Remember that the information you provide will be kept confidential. **Please answer each statement honestly by telling us if you disagree or agree with the following statements by placing an X in the box that corresponds to your response.**

		Strongly Disagree	Disagree	Neither Disagree or Agree	Agree	Strongly Agree
21.	It is likely that I will get cervical cancer.	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
22.	My chances of getting cervical cancer in the next few years are great.	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
23.	I feel I will get cervical cancer sometime during my life.	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
24.	Having a Pap test will help me find abnormal cells early.	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
25.	Having a Pap test is the best way for me to find abnormal cells.	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
26.	I am afraid to have a Pap test because I might find out something is wrong.	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
27.	I am afraid to have a Pap test because I don't understand what will be done.	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
28.	I don't know how to go about getting a Pap test.	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
29.	Having a Pap test is too embarrassing.	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
30.	Having a Pap test takes too much time.	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
31.	Having a Pap test is too painful.	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5

		Strongly Disagree	Disagree	Neither Disagree or Agree	Agree	Strongly Agree
32.	People doing Pap tests are rude to women.	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
33.	I cannot remember to schedule a Pap test.	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
34.	I have other problems more important than getting a Pap test.	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
35.	I am too old to need a routine Pap test.	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
36.	One reason for not getting a Pap test would be because I am worried that my doctor or nurse practitioner will let other people know.	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
37.	One reason for not getting a Pap test would be because I am worried that the Vietnamese interpreter will let other people know.	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5

Questions 38-54. The following statements may relate to your beliefs about medical treatment and cervical cancer. There is no right or wrong answers. Remember that the information you provide will be kept confidential. **Please answer each statement honestly by telling us if you disagree or agree with the following statements by placing an ✖ in the box that corresponds to your response.**

		Strongly Disagree	Disagree	Neither Disagree or Agree	Agree	Strongly Agree
38.	I sometimes use Eastern/Asian medicine as a treatment for health problems.	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
39.	I would choose to use Eastern/Asian medicine to cure an illness before trying Western/American medicine.	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
40.	I believe that Eastern/Asian medicine is very effective in treating health problems.	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
41.	I feel uncomfortable talking about my body with a doctor or nurse practitioner.	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
42.	I would feel embarrassed with a doctor or nurse practitioner examining my cervix as a part of a medical exam.	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
43.	I am modest about my body even if it involves a health examination.	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
44.	I only see a doctor or nurse practitioner when I am having a health problem.	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
45.	If I follow a healthy diet and exercise, I probably don't need to use other prevention methods like cancer screening tests.	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
46.	Even if I do not have a family history of cervical cancer, it is important to be checked regularly.	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5

		Strongly Disagree	Disagree	Neither Disagree or Agree	Agree	Strongly Agree
47.	Cervical cancer screening test like Pap testing is a good method of finding cancer early.	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
48	It is better to detect health problems early through screening efforts.	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
49.	When I get sick I usually take Western/American medicine.	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
50.	My adult children have recommended for me to get checked for cancer.	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
51.	My spouse or partner has recommended that I get checked for cancer.	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
52.	My family has advised me to go to the doctor or nurse practitioner to get checked for cancer.	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
53.	My family has talked to me about the importance of getting checked for cancer.	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
54.	I rely on my family to advise me about health matters.	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5

Questions 55-57. The following statements may relate to your beliefs about Pap testing. There is no right or wrong answers. **Please answer each statement honestly by telling us if you disagree or agree with the following statements by placing an X in the box that corresponds to your response.**

		Strongly Disagree	Disagree	Neither Disagree or Agree	Agree	Strongly Agree
55.	If I get a Pap test and nothing is found, I do not worry as much about cervical cancer.	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
56.	If I find abnormal cells through a Pap test, my treatment for cervical cancer may not be as bad.	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
57.	Having a Pap test will decrease my chances of dying from cervical cancer.	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5

Questions 58-62. The following questions are about the HPV (human papilloma virus) vaccine. **Please place an X in the box that corresponds to your response.**

		No	Yes	Not sure/ Do not know
58.	Have you heard about the HPV (human papilloma virus) vaccine?	☐	☐	☐
59.	If you are ages 21-26 years old, then have you had the HPV (human papilloma virus) vaccine? (If you are over 26, please leave blank)	☐	☐	☐
60.	Would you recommend the HPV (human papilloma virus) vaccine to others (for example daughters, sisters) who would qualify for this vaccine?	☐	☐	☐
61.	If you had the HPV (human papilloma virus) vaccine, then do you think that Pap testing is still needed?	☐	☐	☐

62. Please list other concerns you have regarding the HPV (human papilloma virus) vaccine.

Questions 63-69. The following questions are about cervical cancer screening programs in the community. **Please place an ✖ in the box that corresponds to your response.**

63.	In the past two years, have you heard of, read, or seen anything about cervical cancer and Pap testing (for example on the television, radio, newspaper, booklet, brochure, internet)?	☐ No ☐ Yes ☐ Not sure/Do not know
64.	Do you know of cervical cancer programs in the community?	☐ No (If no, **Skip** to question 65) ☐ Yes ☐ Not sure/Do not know (If not sure/do not know, **Skip** to question 65)

64a. Please specify the names of the cervical cancer programs in the community in the space provided below.

		No	Yes	Not sure/ Do not know
65.	Do you know where to go to get a free or low-cost Pap test in the Portland, Oregon metropolitan area?	☐	☐	☐
66.	Have you heard of the Vietnamese Health Promoter Program of Providence Hospital Systems?	☐	☐	☐
67.	Have you heard of the Vietnamese Women's Health Project of the Asian Family Center at IRCO (Immigrant & Refugee Community Organization)?	☐	☐	☐
68.	Have you heard of the Free Friday Screenings program of the OHSU (Oregon Health & Science University) Center for Women' Health?	☐	☐	☐
69.	Have you ever attended a Community Forum on cervical cancer and Pap testing?	☐	☐	☐

Questions 70-74. The following statements are about your thoughts on the quality of care from the health care system. We are very interested in your view. There is no right or wrong answers. Remember that the information you provide will be kept confidential. **Please answer each statement honestly by telling us if you disagree or agree with the following statements by placing an X in the box that corresponds to your response.**

		Strongly Disagree	Disagree	Neither Disagree or Agree	Agree	Strongly Agree
70.	Generally speaking, the health care system in the United States treats people unfairly based on their race or ethnic background.	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
71.	Generally speaking, the health care system in the United States treats people unfairly based on how well they speak English.	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
72.	When going to a doctor or nurse practitioner for health care services, Vietnamese receive the same quality of health care as Caucasian/non-Hispanic Whites.	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
73.	When you see a doctor or nurse practitioner, he or she explains things to you in a way you can understand.	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
74.	When you see a doctor or nurse practitioner, he or she treats you with respect.	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5

Questions 75-92. The following is the last section of questions. These questions are about you, so that we can describe the group that filled out our survey. Remember the information you provide will be kept confidential. **Please place an X in the box that corresponds to your response. Please write answers clearly.**

75. In what country were you born?
(Please choose one answer below by placing an X in the box)

☐ Vietnam

☐ Other (Please specify country) _____ (If other, **Skip** question 76)

76. Were you primarily raised from one of the following regions in Vietnam?
(Please choose one answer below by placing an X in the box)

☐ Northern region ☐ Central region ☐ Southern region

☐ Not sure/Do not know

---

77. What is your age (Western age)? ☐☐ (Please specify)

78. What was your age in years when you moved to the United States to live?

☐☐ (Please specify)

79. How many years have you lived in the United States?

☐☐ (Please specify)

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80. How well do you speak English?
(Please choose one answer below by placing an X in the box)

☐ Not at all ☐ Poorly ☐ Average

☐ Well ☐ Fluently ☐ Not sure/Do not know

81. How well do you speak Vietnamese?
(Please choose one answer below by placing an X in the box)

☐ Not at all ☐ Poorly ☐ Average

☐ Well ☐ Fluently ☐ Not sure/Do not know

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82. What is your religion?
(Please choose one answer below by placing an X in the box)

☐ Buddhist ☐ Catholic

☐ Other (Please specify religion) _____

☐ Do not identify with a religion ☐ Not sure/Do not know

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83. What is your current marital status?
(Please choose one answer below by placing an X in the box)

☐ Married ☐ Not married, living with a partner ☐ Single

☐ Separated ☐ Divorced ☐ Widowed

---

84. What is your highest level of formal education?
(Please choose one answer below by placing an X in the box)

☐ No formal schooling (0)

☐ Elementary school (Kindergarten to 5th grade)

☐ Middle school (6th to 8th grade)

☐ Some high school (9th to 11th grade)

☐ High school (12th grade)/Graduate Equivalent Degree (G.E.D.)

☐ Some college (less than 2 years)/vocational or technical school

☐ Associate's degree (2-3 years)

☐ Bachelor's degree (4 years)

☐ Master's degree

☐ Doctoral degree

---

85. What is your current employment status?
(Please choose one answer below by placing an X in the box)

☐ Not employed ☐ Employed less than part-time

☐ Employed part-time ☐ Employed full-time

---

86. What is your occupation? (Please choose one answer below by placing an X in the box)

☐ Homemaker ☐ Student ☐ Retired

☐ Other (Please specify occupation) _____

87. What is your total annual household income before taxes?
(Please choose one answer below by placing an X in the box)

☐ Less than $15,000 ☐ Between $15,000 and $29,999

☐ Between $30,000 and $44,999 ☐ Between $45,000 and $59,999

☐ Between $60,000 and $74,999 ☐ Between $75,000 and $89,000

☐ Greater than or equal to $90,000 ☐ Not sure/Do not know

		No	Yes	Not sure/ Do not know
88.	Do you have any kind of health care coverage (including health care insurance, preferred provider organizations (PPOs), health maintenance organization (HMO), Oregon Health Plan (OHP), Medicare)?	☐	☐	☐
89.	Does your health care plan cover cancer screening tests such as a Pap test?	☐	☐	☐

90.	Do you prefer to see a female health care provider for a Pap test?	☐ No ☐ Yes ☐ Does not matter to me ☐ Not sure/Do not know
91.	Do you know anyone who had cervical cancer?	☐ No ☐ Yes ☐ Not sure/Do not know

92.	Has anyone in your immediate family (mother, sister, daughter) had cervical cancer?	☐ No (You are done with the survey) ☐ Yes ☐ Not sure/Do not know (You are done with the survey)
92a.	If you answered yes to question 92, please place an X in the box by all that apply:	☐ Yes, mother ☐ Yes, sister(s) ☐ Yes, daughter(s)

You have completed the survey. We greatly appreciate your time and effort in participating. Your willingness to do this may help other Vietnamese immigrant women with their health.

We would like to know how you felt about participating in this study and if you have any suggestions for how we can improve. Please write your comments below.

Những Câu Hỏi Về Thử Nghiệm Pap Cho Di Dân Phụ Nữ Việt Nam
Tiếng Việt

Đây có phải là lần đầu tiên qúy vị điền bản tham khảo ý kiến này không?	☐ Không (Xin nói chuyện với nghiên cứu viên) ☐ Có (Xin tiếp tục)
Có phải qúy vị sinh ra trong hoặc trước năm 1989?	☐ Không (Xin nói chuyện với nghiên cứu viên) ☐ Có (Xin tiếp tục)

Cảm ơn qúy vị đã dành thời gian điền vào bản tham khảo ý kiến này. Tài liệu của quí vị cung cấp sẽ được giữ bảo mật. Điều quan trọng đối với chương trình nghiên cứu là có được những thông tin chính xác. Xin vui lòng trả lời mỗi câu hỏi một cách trung thực.

Để trả lời xin đánh dấu X vào chỗ ô trống mà qúy vị cảm thấy thích hợp.

Xin xem thí dụ: ☒

Cách thức biên số nên giống như sau: 1 2 3 4 5 6 7 8 9 0

Cách thức điền câu trả lời nên giống như sau: Khác hơn (Xin cho thí dụ) bà ngoại

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Mã Số Của Người Tham Dự #: ☐☐☐

Câu Hỏi 1. Câu hỏi này là về việc chăm sóc sức khỏe của quý vị. **Để trả lời xin đánh dấu ✘ vào chỗ ô trống mà quý vị cảm thấy thích hợp.**

1.	Qúy vị có đi một bệnh viện, phòng khám bệnh, hay phòng mạch bác sĩ hay chuyên viên y tá [quyền chẩn đoán bệnh và được viết toa thuốc] chính của qúy vị để khám sức khỏe thường xuyên không?	☐ Không ☐ Có ☐ Không chắc chắn/Không biết

Câu Hỏi 2-5. Sau đây là những câu hỏi về bác sĩ hay chuyên viên y tá [quyền chẩn đoán bệnh và được viết toa thuốc] của qúy vị. **Để trả lời xin đánh dấu ✘ vào chỗ ô trống mà quý vị cảm thấy thích hợp.**

2.	Qúy vị có một bác sĩ hay chuyên viên y tá [quyền chẩn đoán bệnh và được viết toa thuốc] thường xuyên chăm sóc sức khỏe cho qúy vị không?	☐ Không (Nếu không xin **Bỏ** câu hỏi 3, 4, 5. Xin **Trả Lời** câu hỏi 6) ☐ Có ☐ Không chắc chắn/Không biết (Nếu không chắc chắn/không biết xin **Bỏ** câu hỏi 3, 4, 5. Xin **Trả Lời** câu hỏi 6)
3.	Nếu qúy vị trả lời có ở câu hỏi số 2, xin chọn một câu trả lời bằng cách đánh dấu ✘ vào chỗ ô trống:	☐ Bác sĩ ☐ Chuyên viên y tá [quyền chẩn đoán bệnh và được viết toa thuốc] ☐ Khác hơn (Xin cho thí dụ) _____ ☐ Không chắc chắn/Không biết
4.	Bác sĩ hay chuyên viên y tá [quyền chẩn đoán bệnh và được viết toa thuốc] chính của qúy vị là nam hay nữ?	☐ Nam ☐ Nữ

5.	Có phải bác sĩ hay chuyên viên y tá [quyền chẩn đoán bệnh và được viết toa thuốc] chính của qúy vị là người Việt không?	☐ Không (Xin vui lòng ghi rõ dân tộc) _____ ☐ Có

Câu Hỏi 6-7. Sau đây là những câu hỏi về ung thư cổ tử cung. **Để trả lời xin đánh dấu ✘ vào chỗ ô trống mà quý vị cảm thấy thích hợp.**

6.	Qúy vị có từng nghe qua ung thư cổ tử cung không?	☐ Không ☐ Có ☐ Không chắc chắn/Không biết

7. Theo qúy vị nghĩ, những nguyên nhân gì có thể gây ra ung thư cổ tử cung?
(Xin chọn tất cả những câu trả lời thích hợp bằng cách đánh dấu ✘ vào chỗ ô trống)

- ☐ Di truyền/Lịch sử của gia đình
- ☐ Nhiễm trùng siêu vi khuẩn (những bệnh lây truyền qua đường quan hệ tình dục)
- ☐ Nhiễm trùng siêu vi khuẩn HPV (human papilloma virus)
- ☐ Vệ sinh
- ☐ Hút thuốc/Hít phải khói thuốc của người hút
- ☐ Ý trời
- ☐ Khác hơn (Xin cho thí dụ) _____
- ☐ Không chắc chắn/Không biết

Câu Hỏi 8-11. Sau đây là những câu hỏi về thử nghiệm Pap. Xin nhớ rằng **tài liệu** quý vị **cung cấp sẽ được** giữ bảo **mật**. Điều quan trọng đối với chương trình nghiên cứu là có được những thông tin chính xác. Xin vui lòng trả lời mỗi câu hỏi một cách trung thực. **Để trả lời xin đánh dấu ✘ vào chỗ ô trống mà quý vị cảm thấy thích hợp.**

8.	Qúy vị có từng nghe qua thử nghiệm Pap không?	☐ Không ☐ **Có** ☐ Không chắc chắn/Không biết
9.	Thử nghiệm Pap là khi bác sĩ hay chuyên viên y tá [quyền chẩn đoán bệnh và được viết toa thuốc] tiến hành khám vùng âm hộ và lấy một phần tế bào ở cổ tử cung bên trong âm đạo để gởi đến phòng thử nghiệm. Vậy, từ trước đến nay, qúy vị đã có bao giờ được thử nghiệm Pap không?	☐ Không ☐ **Có** (Nếu **có** xin **Bỏ** câu hỏi 9a. Xin **Trả Lời** câu hỏi 10) ☐ Không chắc chắn/Không biết

Câu sau đây là về suy nghĩ của qúy vị trong vấn đề thử nghiệm Pap. Sẽ không có câu trả lời đúng hay sai. Xin qúy vị nhớ rằng những thông tin qúy vị cung cấp sẽ được giữ bảo mật. Xin trả lời câu này một cách trung thực bằng cách đánh dấu ✘ vào chỗ ô trống khi chọn câu trả lời đồng ý hoặc không đồng ý.

		Chắc Chắn Không Đồng Ý	Không Đồng Ý	Không Đồng Ý hoặc Đồng Ý	Đồng Ý	Chắc Chắn Đồng Ý
9a.	Tôi dự tính sẽ đi thử nghiệm Pap trong vòng 3 năm tới.	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5

(Nếu qúy vị trả lời câu hỏi 9a, xin **Bỏ** câu hỏi 10, 11. Xin **Trả Lời** câu hỏi 12)

10. Nếu qúy vị trả lời có ở câu hỏi số 10, thì qúy vị đi thử nghiệm Pap lần cuối cùng là lúc nào? (Xin chọn một câu trả lời thích hợp bằng cách đánh dấu ✘ vào chỗ ô trống)

☐ Ít hơn/Cách đây khoảng 1 năm
☐ Hơn 1 năm vừa qua, nhưng mà chưa quá 2 năm
☐ Cách đây khoảng 2 năm
☐ Hơn 2 năm vừa qua, nhưng mà chưa quá 3 năm
☐ Cách đây khoảng 3 năm
☐ Hơn 3 năm vừa qua
☐ Khác hơn (Xin vui lòng ghi rõ tháng và năm) ☐☐ (Tháng) ☐☐ (Năm)
☐ Không chắc chắn/Không biết

11. Qúy vị thường đi thử nghiệm Pap như thế nào?

(Xin chọn một câu trả lời thích hợp bằng cách đánh dấu ✖ vào chỗ ô trống)

☐ Không bao giờ có ☐ Mỗi năm một lần

☐ 2 năm một lần ☐ 3 năm một lần

☐ Khác hơn (Xin cho thí dụ) _____

Câu Hỏi 12. Câu hỏi này là về lịch sử chăm sóc sức khỏe của qúy vị. **Để trả lời xin đánh dấu ✖ vào chỗ ô trống mà quý vị cảm thấy thích hợp.**

12.	Qúy vị có bị bệnh gì mà dẫn đến việc phẫu thuật cắt bỏ tử cung không (chẳng hạn như tử cung của qúy vị phải bị cắt bỏ)?	☐ Không ☐ **Có** ☐ Không chắc chắn/Không biết

Câu Hỏi 13-15. Sau đây là những câu hỏi về sự hiểu biết về thử nghiệm Pap. Xin nhớ rằng **tài liệu cung cấp sẽ được** giữ gìn bí **mật**. **Để trả lời xin đánh dấu ✖ vào chỗ ô trống mà quý vị cảm thấy thích hợp.**

	Đúng	Sai	Không chắc chắn/Không biết
13. Phụ nữ cần thử nghiệm Pap dù họ không có triệu chứng.	☐	☐	☐
14. Phụ nữ cần thử nghiệm Pap dù không có quan hệ tình dục với đàn ông.	☐	☐	☐
15. Phụ nữ cần thử nghiệm Pap sau khi mãn kinh, dù khi không còn kinh nữa.	☐	☐	☐

Câu Hỏi 16-20. Sau đây là những câu hỏi về thử nghiệm Pap. **Để trả lời xin đánh dấu ✖ vào chỗ ô trống mà quý vị cảm thấy thích hợp.**

16.	Bác sĩ hay chuyên viên y tá [quyền chẩn đoán bệnh và được viết toa thuốc] có bao giờ nói là qúy vị cần nên có thử nghiệm Pap không?	☐ Không ☐ **Có** ☐ Không chắc chắn/Không biết

17.	Có bao giờ những người trong gia đình (cùng dòng máu hay là họ hàng) của qúy vị khuyên qúy vị nên đi thử nghiệm Pap không?	☐ Không ☐ **Có** (Xin vui lòng ghi rõ quan hệ nhưng không cần cho biết tên họ của người nói) _____ _____ _____ ☐ Không chắc chắn/Không biết
18.	Có bao giờ bạn bè của qúy vị khuyên qúy vị nên đi thử nghiệm Pap không?	☐ Không ☐ **Có** ☐ Không chắc chắn/Không biết
19.	Có người nào khác ngoài bác sĩ hay chuyên viên y tá [quyền chẩn đoán bệnh và được viết toa thuốc], người trong gia đình, hay bạn bè khuyên qúy vị nên đi thử nghiệm Pap không?	☐ Không ☐ **Có** (Xin vui lòng ghi rõ quan hệ nhưng không cần cho biết tên họ của người nói) _____ _____ _____ ☐ Không chắc chắn/Không biết
20.	Qúy vị có bao giờ tự yêu cầu bác sĩ hay chuyên viên y tá [quyền chẩn đoán bệnh và được viết toa thuốc] để cho thử nghiệm Pap không?	☐ Không ☐ **Có** ☐ Không chắc chắn/Không biết

Câu Hỏi 21-37. Sau đây là những câu có thể liên quan đến những quan niệm của qúy vị về ung thư cổ tử cung và việc thử nghiệm Pap. Không có câu trả lời nào là đúng hoặc sai. Chúng tôi rất quan tâm đến ý kiến của quý vị. Xin qúy vị nhớ rằng những thông tin quý vị cung cấp sẽ được giữ bảo mật. **Xin trả lời mỗi câu này một cách trung thực bằng cách đánh dấu ✖ vào chỗ ô trống khi chọn câu trả lời đồng ý hoặc không đồng ý.**

		Chắc Chắn Không Đồng Ý	Không Đồng Ý	Không Đồng Ý hoặc Đồng Ý	Đồng Ý	Chắc Chắn Đồng Ý
21.	Có lẽ rằng tôi sẽ bị ung thư cổ tử cung.	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
22.	Cơ hội tôi bị ung thư cổ tử cung trong vài năm tới rất là cao.	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
23.	Tôi có cảm giác rằng là trong cuộc đời tôi một lúc nào đó tôi sẽ bị ung thư cổ tử cung.	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
24.	Thử nghiệm Pap sẽ giúp tôi tìm thấy những tế bào không được bình thường sớm hơn.	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
25.	Đối với tôi thử nghiệm Pap là một cách tốt nhất để tìm thấy những tế bào không được bình thường.	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
26.	Tôi sợ đi thử nghiệm Pap bởi vì tôi có thể bị phát hiện ra một cái gì đó không bình thường.	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
27.	Tôi sợ đi thử nghiệm Pap bởi vì tôi không hiểu là người ta sẽ làm gì.	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
28.	Tôi không biết làm sao để đi thử nghiệm Pap.	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
29.	Làm thử nghiệm Pap rất là xấu hổ.	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
30.	Làm thử nghiệm Pap mất rất nhiều thời gian.	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
31.	Làm thử nghiệm Pap rất là đau.	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5

		Chắc Chắn Không Đồng Ý	Không Đồng Ý	Không Đồng Ý hoặc Đồng Ý	Đồng Ý	Chắc Chắn Đồng Ý
32.	Những người tiến hành thử nghiệm Pap rất là mất lịch sự với phụ nữ.	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
33.	Tôi không nhớ để làm hẹn cho thử nghiệm Pap.	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
34.	Tôi có những vấn đề khác quan trọng hơn là đi thử nghiệm Pap.	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
35.	Tôi qúa già để cần đi thử nghiệm Pap định kỳ.	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
36.	Một lý do mà để tôi không đi thử nghiệm Pap là bởi vì tôi lo sợ rằng bác sĩ hay chuyên viên y tá [quyền chẩn đoán bệnh và được viết toa thuốc] của tôi sẽ cho những người khác biết.	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
37.	Một lý do mà tôi không đi thử nghiệm Pap là bởi vì tôi lo sợ rằng người thông dịch tiếng Viet sẽ cho những người khác biết.	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5

Câu Hỏi 38-54. Sau đây là những câu có thể liên quan đến những quan niệm của quý vị về sự điều trị y học và ung thư cổ tử cung. Không có câu trả lời nào là đúng hoặc sai. Xin quý vị nhớ rằng những thông tin quý vị cung cấp sẽ được giữ bảo mật. **Xin trả lời mỗi câu này một cách trung thực bằng cách đánh dấu ✖ vào chỗ ô trống khi chọn câu trả lời đồng ý hoặc không đồng ý.**

		Chắc Chắn Không Đồng Ý	Không Đồng Ý	Không Đồng Ý hoặc Đồng Ý	Đồng Ý	Chắc Chắn Đồng Ý
38.	Thỉnh thoảng tôi sử dụng thuốc Đông Y/Á châu để chữa trị những vấn đề sức khỏe.	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
39.	Tôi chọn thuốc Đông Y/Á Châu để chữa lành bệnh trước khi thử thuốc Tây/Mỹ.	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
40.	Tôi tin rằng là thuốc Đông Y/Á Châu rất có hiệu quả trong việc chữa trị những vấn đề sức khỏe.	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
41.	Tôi cảm thấy không thoải mái khi nói chuyện với bác sĩ hay chuyên viên y tá [quyền chẩn đoán bệnh và được viết toa thuốc] về thân thể của tôi.	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
42.	Tôi cảm thấy xấu hổ với bác sĩ hay chuyên viên y tá [quyền chẩn đoán bệnh và được viết toa thuốc] khi khám cổ tử cung của tôi như là một phần của sự khám nghiệm y khoa.	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
43.	Tôi rất là e dè với thân thể của tôi ngay cả khi có liên quan đến việc khám sức khỏe.	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
44.	Tôi chỉ đi gặp bác sĩ hay chuyên viên y tá [quyền chẩn đoán bệnh và được viết toa thuốc] khi nào sức khỏe của tôi có vấn đề.	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
45.	Nếu tôi tuân theo một chế độ ăn uống lành mạnh và tập thể dục điều độ, tôi có lẽ không cần phải sử dụng các phương pháp phòng ngừa khác như là những thử nghiệm để truy tìm ung thư.	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5

		Chắc Chắn Không Đồng Ý	Không Đồng Ý	Không Đồng Ý hoặc Đồng Ý	Đồng Ý	Chắc Chắn Đồng Ý
46.	Cho dù gia đình tôi không có lịch sử về ung thư cổ tử cung, thì việc đi khám thường xuyên cũng rất quan trọng.	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
47.	Xét nghiệm ung thư cổ tử cung như là thử nghiệm Pap là một phương pháp tốt để tìm thấy ung thư sớm hơn.	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
48.	Phát hiện bệnh sớm qua những sự cố gắng khám nghiệm thì tốt hơn.	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
49.	Khi tôi bị bệnh, tôi thường dùng thuốc Tây/Mỹ.	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
50.	Những người con lớn của tôi đã khuyên tôi nên đi thử nghiệm về ung thư.	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
51.	Người phối ngẫu hay là người bạn đời của tôi đã khuyên tôi nên đi thử nghiệm về ung thư.	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
52.	Gia đình tôi đã khuyên tôi đi bác sĩ hay chuyên viên y tá [quyền chẩn đoán bệnh và được viết toa thuốc] để thử nghiệm về ung thư.	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
53.	Gia đình tôi đã nói với tôi về sự quan trọng của việc thử nghiệm về ung thư.	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
54.	Tôi dựa vào khuyên bảo của gia đình về những vấn đề sức khỏe.	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5

Câu Hỏi 55-57. Sau đây là những câu có thể liên quan đến những quan niệm của qúy vị về thử nhiệm Pap. Không có câu trả lời nào là đúng hoặc sai. **Xin trả lời mỗi câu này một cách trung thực bằng cách đánh dấu ✘ vào chỗ ô trống khi chọn câu trả lời đồng ý hoặc không đồng ý.**

		Chắc Chắn Không Đồng Ý	Không Đồng Ý	Không Đồng Ý hoặc Đồng Ý	Đồng Ý	Chắc Chắn Đồng Ý
55.	Nếu tôi thử nghiệm Pap mà không tìm thấy gì, tôi không phải lo lắng nhiều về ung thư cổ tử cung.	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
56.	Từ thử nghiệm Pap nếu tôi tìm thấy những tế bào không bình thường, sự chữa trị ung thư cổ tử cung cũng không đến nỗi quá tệ.	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
57.	Thử nghiệm Pap sẽ giảm được nguy cơ bị chết vì ung thư cổ tử cung.	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5

Câu Hỏi 58-62. Sau đây là những câu hỏi về thuốc chủng ngừa HPV (siêu vi khuẩn human papilloma virus). **Để trả lời xin đánh dấu ✘ vào chỗ ô trống mà quý vị cảm thấy thích hợp.**

		Không	Có	Không chắc chắn/Không biết
58.	Qúy vị có bao giờ nghe qua thuốc chủng ngừa HPV (human papilloma virus) không?	☐	☐	☐
59.	Nếu tuổi của qúy vị là 21-26 tuổi, thì qúy vị có chích thuốc chủng ngừa HPV (human papilloma virus) không? (Nếu qúy vị lớn hơn 26 tuổi, xin để trống)	☐	☐	☐
60.	Qúy vị có khuyên những người khác (thí dụ con gái của qúy vị, chị, em) đi chích thuốc chủng ngừa HPV (human papilloma virus) nếu họ đủ điều kiện cho thuốc ngừa này?	☐	☐	☐
61.	Nếu qúy vị đã được chích thuốc chủng ngừa HPV (human papilloma virus) vậy qúy vị nghĩ rằng thử nghiệm Pap có cần thiết nữa không?	☐	☐	☐

62. Xin vui lòng ghi xuống những quan tâm của qúy vị có liên quan đến thuốc chủng ngừa HPV (human papilloma virus).

Câu Hỏi 63-69. Sau đây là những câu hỏi về chương trình thử nghiệm ung thư cổ tử cung trong cộng đồng. **Để trả lời xin đánh dấu ✘ vào chỗ ô trống mà quý vị cảm thấy thích hợp.**

63.	Trong hai năm qua, qúy vị có bao giờ nghe qua, đọc qua, hoặc thấy qua những gì về ung thư cổ tử cung và thử nghiệm Pap (thí dụ như trên truyền hình, radio/đài, báo chí, tập sách, sách mỏng, internet)?	☐ Không ☐ Có ☐ Không chắc chắn/Không biết
64.	Qúy vị có biết về chương trình ung thư cổ tử cung trong cộng đồng không?	☐ Không (Nếu không xin **Bỏ** câu hỏi 64a. Xin **Trả Lời** câu hỏi 65) ☐ Có ☐ Không chắc chắn/Không biết (Nếu không chắc chắn/không biết xin **Bỏ** câu hỏi 64a. Xin **Trả Lời** câu hỏi 65)

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64a. Xin vui lòng ghi rõ tên của các chương trình ung thư cổ tử cung trong cộng đồng vào chỗ trống dưới đây.

		Không	Có	Không chắc chắn/Không biết
65.	Qúy vị có biết nơi nào khám nghiệm Pap miễn phí hoặc với chi phí thấp trong vùng thủ đô Portland, Oregon?	☐	☐	☐
66.	Qúy vị có nghe qua Chương Trình Khuyến Khích Sức Khoẻ Cho Người Việt Nam của Hệ Thống Bệnh Viện Providence?	☐	☐	☐
67.	Qúy vị có nghe qua Chương Trình Sức Khỏe Phụ Nữ Việt Nam của Asian Family Center ở IRCO (Immigrant & Refugee Community Organization)?	☐	☐	☐
68.	Qúy vị có nghe qua chương trình Free Friday Screenings của OHSU (Oregon Health & Science University Center) Center for Women's Health?	☐	☐	☐
69.	Qúy vị có từng tham dự diễn đàn về ung thư cổ tử cung và thử nghiệm Pap trong cộng đồng không?	☐	☐	☐

Câu Hỏi 70-74. Sau đây là những câu về những suy nghĩ của quý vị về hiệu quả chất lượng chăm sóc sức khỏe của hệ thống chăm sóc sức khỏe. Chúng tôi rất quan tâm đến ý kiến của quý vị. Không có câu trả lời nào là đúng hoặc sai. Xin quý vị nhớ rằng những thông tin quý vị cung cấp sẽ được giữ bảo mật. **Xin trả lời mỗi câu này một cách trung thực bằng cách đánh dấu ✖ vào chỗ ô trống khi chọn câu trả lời đồng ý hoặc không đồng ý.**

		Chắc Chắn Không Đồng Ý	Không Đồng Ý	Không Đồng Ý hoặc Đồng Ý	Đồng Ý	Chắc Chắn Đồng Ý
70.	Nói chung, hệ thống chăm sóc sức khỏe tại Hoa Kỳ đối xử không công bằng với mọi người bởi vì nó dựa trên nguồn gốc hoặc sắc tộc của họ.	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
71.	Nói chung, hệ thống chăm sóc sức khỏe tại Hoa Kỳ đối xử không công bằng với mọi người bởi vì nó dựa trên khả năng nói tiếng Anh thông thạo của họ.	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
72.	Khi quý vị đến gặp bác sĩ hay là chuyên viên y tá [quyền chẩn đoán bệnh và được viết toa thuốc] cho các dịch vụ chăm sóc sức khỏe, người Việt Nam và người da trắng/ da trắng nhưng không thuộc gốc Tây Ban Nha đều nhận được chất lượng chăm sóc sức khỏe như nhau.	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
73.	Khi quý vị đi đến bác sĩ hay chuyên viên y tá [quyền chẩn đoán bệnh và được viết toa thuốc], ông ấy hay cô ấy có giải thích mọi thứ để cho quý vị hiểu được.	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
74.	Khi quý vị đi đến bác sĩ hay chuyên viên y tá [quyền chẩn đoán bệnh và được viết toa thuốc], ông ấy hay cô ấy có sự tôn trọng đối với quý vị.	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5

Câu Hỏi 75-92. Sau đây là những câu hỏi của phần cuối cùng. Những câu hỏi này là về quý vị, để giúp chúng tôi hiểu về những người đã điền vào bản tham khảo ý kiến. Xin quý vị nhớ rằng những thông tin mà quý vị cung cấp sẽ được giữ bảo mật. **Để trả lời xin đánh dấu ✘ vào chỗ ô trống mà quý vị cảm thấy thích hợp. Xin vui lòng ghi câu trả lời rõ rang.**

75. Qúy vị được sanh ở nước nào?
(Xin chọn một câu trả lời thích hợp bằng cách đánh dấu ✘ vào chỗ ô trống)

☐ Việt Nam

☐ Khác hơn (Xin vui lòng ghi rõ sanh để ở nước nào) _____
(Nếu khác hơn xin **Bỏ** câu 76. Xin **Trả Lời** câu hỏi 77)

76. Qúy vị chính thức lớn lên ở vùng nào của Việt Nam?
(Xin chọn một câu trả lời thích hợp bằng cách đánh dấu ✘ vào chỗ ô trống)

☐ Miền Bắc ☐ Miền Trung ☐ Miền Nam

☐ Không chắc chắn/Không biết

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77. Qúy vị bao nhiêu tuổi (tuổi Tây)? ☐☐ (Xin vui lòng ghi rõ chi tiết)

78. Qúy vị định cư tại Hoa Kỳ lúc mấy tuổi?

☐☐ (Xin vui lòng ghi rõ chi tiết)

79. Qúy vị sinh sống tại Hoa Kỳ được bao nhiêu năm?

☐☐ (Xin vui lòng ghi rõ chi tiết)

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80. Qúy vị nói tiếng Anh thông thạo như thế nào?
(Xin chọn một câu trả lời thích hợp bằng cách đánh dấu ✘ vào chỗ ô trống)

☐ Không được chút nào ☐ Kém ☐ Trung bình

☐ Giỏi ☐ Lưu loát ☐ Không chắc chắn/không biết

81. Qúy vị nói tiếng Việt thông thạo như thế nào?
(Xin chọn một câu trả lời thích hợp bằng cách đánh dấu ✘ vào chỗ ô trống)

☐ Không được chút nào ☐ Kém ☐ Trung bình

☐ Giỏi ☐ Lưu loát ☐ Không chắc chắn/không biết

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82. Qúy vị theo tôn giáo nào?
(Xin chọn một câu trả lời thích hợp bằng cách đánh dấu ✘ vào chỗ ô trống)

☐ Đạo Phật ☐ Đạo Thiên Chúa

☐ Khác hơn (Xin vui lòng ghi rõ tôn giáo) _____

☐ Không theo tôn giáo ☐ Không chắc chắn/không biết

83. Tình trạng hôn nhân hiện thời của qúy vị như thế nào?
(Xin chọn một câu trả lời thích hợp bằng cách đánh dấu ✘ vào chỗ ô trống)

☐ Kết hôn ☐ Không kết hôn, sống chung với bạn đời ☐ Độc thân

☐ Ly thân ☐ Ly dị ☐ Ở Góa

84. Xin cho biết trình độ học vấn cao nhất của qúy vị?
(Xin chọn một câu trả lời thích hợp bằng cách đánh dấu ✘ vào chỗ ô trống)

☐ Không có đi học (0)

☐ Tiểu học (mẫu giáo tới lớp 5)

☐ Trung tiểu học (lớp 6 tới lớp 8)

☐ Vài năm trung học (lớp 9 tới lớp 11)

☐ Trung học (lớp 12)/Graduate Equivalent Degree (G.E.D.)

☐ Vài năm đại học (ít hơn 2 năm)/trường kỹ thuật hay dạy nghề

☐ Bằng trung cấp (2 tới 3 năm)

☐ Bằng Tú tài (4 năm)

☐ Bằng Thạc sĩ

☐ Bằng Tiến sĩ

85. Hiện nay tình trạng việc làm của qúy vị như thế nào?
(Xin chọn một câu trả lời thích hợp bằng cách đánh dấu ✘ vào chỗ ô trống)

☐ Không làm việc ☐ Làm việc ít hơn bán thời gian

☐ Làm việc bán thời gian ☐ Làm việc toàn thời gian

86. Qúy vị làm nghề gì?
(Xin chọn một câu trả lời thích hợp bằng cách đánh dấu ✖ vào chỗ ô trống)

☐ Nội trợ ☐ Sinh viên ☐ Về hưu

☐ Khác hơn (Xin vui lòng ghi rõ việc làm nghề) _____

87. Tổng thu nhập hàng năm trước khi khấu trừ thuế của qúy vị là bao nhiêu?
(Xin chọn một câu trả lời thích hợp bằng cách đánh dấu ✖ vào chỗ ô trống)

☐ Ít hơn $15,000 ☐ Giữa $15,000 và $29,999

☐ Giữa $30,000 và $44,999 ☐ Giữa $45,000 và $59,999

☐ Giữa $60,000 và $74,999 ☐ Giữa $75,000 và $89,000

☐ Hơn hoặc bằng $90,000 ☐ Không chắc chắn/Không biết

		Không	Có	Không chắc chắn/Không biết
88.	Qúy vị có bảo hiểm (chăm sóc) sức khỏe không (bao gồm bảo hiểm chăm sóc sức khỏe, preferred provider organizations (PPOs), health maintenance organization (HMO), Oregon Health Plan (OHP), Medicare)?	☐	☐	☐
89.	Chương trình bảo hiểm sức khỏe của qúy vị có bao gồm cho các thử nghiệm ung thư chẳng hạn như là thử nghiệm Pap không?	☐	☐	☐

90.	Qúy vị có muốn bác sĩ hay chuyên viên y tá [quyền chẩn đoán bệnh và được viết toa thuốc], làm thử nghiệm Pap cho qúy vị là phụ nữ không?	☐ Không ☐ Có ☐ Không quan trọng đối với tôi ☐ Không chắc chắn/Không biết
91.	Qúy vị có quen biết ai bị ung thư cổ tử cung không?	☐ Không ☐ Có ☐ Không chắc chắn/Không biết

92.	Có ai trong gia đình của qúy vị (mẹ, chị em, con gái) bị ung thư cổ tử cung không?	☐ Không (Qúy vị đã hoàn thành bản tham khảo ý kiến) ☐ Có ☐ Không chắc chắn/không biết (Qúy vị đã hoàn thành bản tham khảo ý kiến)
92a.	Nếu qúy vị trả lời có ở câu hỏi số 92, xin chọn tất cả những câu trả lời thích hợp bằng cách đánh dấu ✘ vào chỗ ô trống)	☐ Có, mẹ ☐ Có, chị em ☐ Có, con gái

Qúy vị đã hoàn thành bản thăm tham khảo ý kiến. Chúng tôi rất cảm qúy vị đã bỏ thời gian và sự nỗ lực của qúy vị trong việc tham gia. Sự sẵn sàng của qúy vị để làm điều này có thể giúp các di dân phụ nữ Việt Nam với sức khỏe của họ.

Chúng tôi muốn được biết những cảm nghĩ của qúy vị trong việc tham dự vào chương trình nghiên cứu này và nếu qúy vị có ý kiến để giúp cho chúng tôi có thể làm tốt hơn. Xin vui lòng ghi ý kiến của qúy vị dưới đây.

Appendix B

Proposed Questionnaire Map Plan

Thank you for your time in filling out this survey. Your information will be kept confidential. It is important for us to have accurate information. Please answer each question honestly.

The first section of questions is about your health care.
[Health Care section from Taylor et al. (2004)]

INDIVIDUAL INFLUENCING FACTORS
REGULAR PLACE OF CARE

1. Is there a particular hospital, clinic, or primary health care provider's office where you regularly go for health care?

____No
____Yes
____Not sure/Do not know

AIM 1
Taylor et al. (2004)
STUDY-SPECIFIC INSTRUMENT WITH NO REPORTED VALIDITY OR RELIABILITY

REGULAR PROVIDER

2. Do you have a primary health care provider that you regularly see?

____No (Skip to question 6)
____Yes
____Not sure/Do not know (Skip to question 6)

AIM 1
Taylor et al. (2004)

3. If you answered yes to question 2, please choose one below:

____Doctor
____Nurse practitioner
____Other (please specify)
_____
____Not sure/Do not know

RESEARCH Q 1.8
Connie added

4. Is your primary regular health care provider a man or a woman?

____Man
____Woman

RESEARCH Q 1.8
Taylor et al. (2004)

5. Is your primary regular health care provider Vietnamese?

____No
____Yes
____Other (please specify)
_____

AIM 1, RESEARCH Q 1.9
Taylor et al. (2004)

The following are a set of questions about cervical cancer.

AWARENESS

6. Have you ever heard of cervical cancer?

____No
____Yes
____Not sure/Do not know

AIM 1
Nguyen et al., 2006

STUDY-SPECIFIC INSTRUMENT WITH NO REPORTED VALIDITY OR RELIABILITY

CAUSES OF CERVICAL CANCER

7. What do you think causes cervical cancer (check all that apply)?

____Genetics/Family history
____Infection with STDs (sexually transmitted diseases)
____Infection with the HPV (human papilloma virus)
____Hygiene/Cleanliness

____Smoking/Second hand smoking

____God's will

____Other (please specify)

_____

____Not sure/Do not know

RESEARCH Q 1.3
Nguyen et al., 2006, modified by adding sexually transmitted diseases

Te following set of questions are about Pap testing. Remember that your information will be kept confidential. It is important for us to have accurate information. Please answer each question honestly.

AWARENESS

8. Have you ever heard of a Pap test?

____No
____Yes
____Not sure/Do not know

AIM 1
Taylor et al., 2004

PAP TEST RECEIPT

9. A Pap test is when a doctor or nurse practitioner does a pelvic exam and also takes a scraping of cells from the cervix inside the vagina and sends it to a laboratory. Have you ever had a Pap test?

____No

____Yes (Skip to question 10)

____Not sure/Do not know

Dependent variable, RESEARCH Q 1.1,Taylor et al., 2004, modified "tissue" to "cells"

The following question is about your thoughts on getting a Pap test. There is no right or wrong answer. Remember that the information you provide will be kept confidential. Please answer this question honestly by telling us if you disagree or agree with the following statement:

PAP TEST INTENTION

a. I plan to get a Pap test within the next 3 years.

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

1 2 3 4 5

(If you answered question 9a, skip to question 12)

Aim 6, RESEARCH Q 6.1, Connie added

PAP TESTING ADHERENCE

10. When did you have your last Pap test? (please choose one)

____Less than/Just about 1 year ago
____More than 1 year ago, but not yet 2 years
____Just about 2 years ago
____More than 2 years ago
____Just about 3 years ago
____More than 3 years ago
____Other (Please specify in months and years)
_____(Months)
_____(Years)
____Not sure/Do not know

Dependent variable, RESEARCH Q 1.1
Lee-Lin et al., 2007

PAP TESTING FREQUENCY

11. How frequently do you get a Pap test?
____None at all
____Once every year
____Once every 2 years
____Once every 3 years
____Other (please specify)
_____

RESEARCH Q 1.1, Connie added
INDIVIDUAL INFLUENCING FACTOR

12. Have you had a health problem that caused you to have a hysterectomy (for example, have your uterus removed)?

____No

____Yes
____Not sure/Do not know

RESEARCH Q 1.8, Taylor et al., 2004

The following set of questions is what you know about Pap testing. Remember that the information you provide will be kept confidential.

KNOWLEDGE

13. A woman needs a Pap test if she has no symptoms.

____True

____False

____Not sure/Do not know

AIM 1, Taylor et al., 2004, original response scale, categorical

____Yes

____No

____Not sure/Do not know

14. A woman needs a Pap test if she is not currently sleeping with a man.

____True

____False

____Not sure/Do not know

AIM 1, Taylor et al., 2004

15. A woman needs a Pap test after menopause when her periods have stopped.

____True

____False

____Not sure/Do not know

AIM 1, Taylor et al., 2004

The following set of questions is about Pap testing.

EXTERNAL INFLUENCING FACTORS

16. Has a doctor or nurse practitioner ever told you that you should have a Pap test?

____No
____Yes
____Not sure/Do not know

AIM 1, RESEARCH Q 1.9, Taylor et al. (2004)

17. Have any of your family members (blood kins or relatives) ever suggested that you have a Pap test?

____No

____Yes (Please specify but do not include the name of the person(s)).

_____

_____

____Not sure/Do not know

AIM 1, RESEARCH Q 1.9, Taylor et al. (2004)

18. Have any of your friends ever suggested that you have a Pap test?

____No
____Yes
____Not sure/Do not know

AIM 1, RESEARCH Q 1.9, Taylor et al. (2004)

19. Has anyone other than a doctor or nurse practitioner, family members, or friends suggested that you have a Pap test?

____No

____Yes (Please specify but do not include the name of the person(s).)

_____

_____

____Not sure/Do not know

RESEARCH Q 1.8, Connie added

INDIVIDUAL INFLUENCING FACTORS

SELF-EMPOWERMENT

20. Have you ever asked a doctor or a nurse practitioner for a Pap test?

____No
____Yes

____Not sure/Do not know

AIM 1, RESEARCH Q 1.9, Taylor et al. (2004)

The following section of questions is about your beliefs about getting cervical cancer and about the Pap test. There is no right or wrong answers. We are very interested in your view. Remember that the information you provide will be kept confidential. Please answer each question honestly by telling us if you disagree or agree with the following statements:

Champion 1999 Refined susceptibility, benefits and barriers scale,
original scale for mammography screening and breast cancer, modified all items for Pap testing and cervical cancer

CONCEPT: BELIEFS (CERVICAL CANCER AND PAP TESTING)

PERCEIVED SUSCEPTBILITY

21. It is likely that I will get cervical cancer.

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1	2	3	4	5

AIM 1
Champion 1999

22. My chances of getting cervical cancer in the next few years are great.

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1	2	3	4	5

AIM 1
Champion 1999

23. I feel I will get cervical cancer sometime during my life.

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1	2	3	4	5

AIM 1
Champion 1999

PERCEIVED BENEFITS

24. Having a Pap test will help me find abnormal cells early.

Strongly	Disagree	Neutral	Agree	Strongly

Disagree				Agree
1	2	3	4	5

AIM 1
Champion 1999

25. Having a Pap test is the best way for me to find abnormal cells.

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1	2	3	4	5

AIM 1
Champion 1999

PERCEIVED COMMON BARRIERS

26. I am afraid to have a Pap test because I might find out something is wrong.

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1	2	3	4	5

AIM 1
Champion 1999

27. I am afraid to have a Pap test because I don't understand what will be done.

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1	2	3	4	5

AIM 1
Champion 1999

28. I don't know how to go about getting a Pap test.

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1	2	3	4	5

AIM 1
Champion 1999

29. Having a Pap test is too embarrassing.

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1	2	3	4	5

AIM 1
Champion 1999

30. Having a Pap test takes too much time.

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1	2	3	4	5

AIM 1
Champion 1999

31. Having a Pap test is too painful.

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1	2	3	4	5

AIM 1
Champion 1999

32. People doing Pap tests are rude to women.

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1	2	3	4	5

AIM 1
Champion 1999

33. I cannot remember to schedule a Pap test.

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1	2	3	4	5

AIM 1
Champion 1999

34. I have other problems more important than getting a Pap test.

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1	2	3	4	5

AIM 1
Champion 1999

35. I am too old to need a routine Pap test.

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1	2	3	4	5

AIM 1
Champion 1999

CONFIDENTIALITY ISSUES

36. One reason for not getting a Pap test would be because I am worried that my doctor or nurse practitioner will let other people know.

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1	2	3	4	5

AIM 1
Connie added

37. One reason for not getting a Pap test would be because I am worried that the Vietnamese interpreter will let other people know.

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1	2	3	4	5

AIM 1
Connie added

The following section of questions is about your beliefs about medical treatment and cervical cancer. There is no right or wrong answers. Remember that the information you provide will be kept confidential. Please answer each question honestly by telling us if you disagree or agree with the following statements:

Tang et al. 2000 Cultural Barriers to Screening Inventory, originally for mammography and breast cancer and colorectal cancer screening, modified for Pap testing and cervical cancer.

CONCEPT: BELIEFS, PERCEIVED CULTURAL BARRIERS

UTLIZATION OF EASTERN/ASIAN MEDICINE

38. I sometimes use Eastern/Asian medicine as a treatment for health problems.

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1	2	3	4	5

AIM 1
Tang et al., 2000

39. I would choose to use Eastern/Asian medicine to cure an illness before trying Western medicine.

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

1	2	3	4	5

AIM 1
Tang et al., 2000

40. I believe that Eastern/Asian medicine is very effective in treating health problems.

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1	2	3	4	5

AIM 1
Tang et al., 2000

MODESTY

41. I feel uncomfortable talking about my body with a doctor or nurse practitioner.

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1	2	3	4	5

AIM 1
Tang et al., 2000
Modified, clarified nurse to nurse practitioner

42. I would feel embarrassed with a doctor or nurse practitioner examining my cervix as a part of a medical exam.

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1	2	3	4	5

AIM 1
Tang et al., 2000

43. I am modest about my body even if it involves a health examination.

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1	2	3	4	5

AIM 1
Tang et al., 2000

44. I only see a doctor or nurse practitioner when I am having a health problem.

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1	2	3	4	5

AIM 1
Tang et al., 2000

45. If I follow a healthy diet and exercise, I probably don't need to use other prevention methods like cancer screening tests.

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1	2	3	4	5

AIM 1
Tang et al., 2000

CRISIS ORIENTATION

46. Even if I do not have a family history of cervical cancer, it is important to be checked regularly.

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1	2	3	4	5

AIM 1
Tang et al., 2000

47. Cervical cancer screening test like Pap testing is a good method of finding cancer early.

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1	2	3	4	5

AIM 1
Tang et al., 2000

48. It is better to detect health problems early through screening efforts.

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1	2	3	4	5

AIM 1
Tang et al., 2000

Modified for clarity from original item "It is better to detect health problems early through screening efforts than discover something later and have to treat it"

49. When I get sick I usually take Western/American medicine.

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

1 2 3 4 5

AIM 1
Tang et al., 2000
LACK OF FAMILY SUPPORT

50. My adult children has recommended for me to get checked for cancer.

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1	2	3	4	5

AIM 1
Tang et al., 2000
Modified for clarity, original item included family friends

51. My spouse or partner has recommended that I get checked for cancer.

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1	2	3	4	5

AIM 1
Connie added

52. My family has advised me to go to the doctor or nurse practitioner to get checked for cancer.

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1	2	3	4	5

AIM 1
Tang et al., 2000
Modified for clarity, original item included friends and the term “never”

53. My family has talked to me about the importance of getting checked for cancer.

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1	2	3	4	5

AIM 1
Tang et al., 2000
Modified for clarity, original item included close family friends

54. I rely on my family to advise me about health matters.

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1	2	3	4	5

AIM 1
Tang et al., 2000

The following are questions about your beliefs about Pap testing. There is no right or wrong answers. Please answer each question honestly by telling us if you disagree or agree with the following statements:

PERCEIVED BENEFITS (CONTINUED—MOVED ITEMS HERE)

55. If I get a Pap test and nothing is found, I do not worry as much about cervical cancer.

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1	2	3	4	5

AIM 1
Champion 1999

56. If I find abnormal cells through a Pap test, my treatment for cervical cancer may not be as bad.

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1	2	3	4	5

AIM 1
Champion 1999

57. Having a Pap test will decrease my chances of dying from cervical cancer.

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1	2	3	4	5

AIM 1
Champion 1999
The following set of questions is about the HPV vaccine.

58. Have you heard about the HPV vaccine?

____No
____Yes
____Not sure/Do not know

RESEARCH Q 2.1, Connie added

59. If you are ages 21-26 years old, then have you had the HPV vaccine?

____No
____Yes
____Not sure/Do not know

RESEARCH Q 2.1, Connie added

60. Would you recommend the HPV vaccine to others (for example daughters, sisters) who would qualify for this vaccine?

____No
____Yes
____Not sure/Do not know

RESEARCH Q 2.1, Connie added

61. If you had the HPV vaccine, then do you think that Pap testing is still needed?

____No
____Yes
____Not sure/Do not know

RESEARCH Q 2.1 Connie added

62. Please list other concerns you have regarding the HPV vaccine.

_____

_____

_____

RESEARCH Q 2.1
Connie added

The following set of questions is about cervical cancer screening programs in the community.

<u>EXPOSURE TO MEDIA</u>

63. In the past two years, have you heard of, read, or seen anything about cervical cancer and Pap testing (for example on the television, radio, newspaper, booklet, brochure, internet)?

____No
____Yes
____Not sure/Do not know

SECONDARY AIM 5, RESEARCH Q5.1
Connie added

COMMUNITY RESOURCES

64. Do you know of cervical cancer programs in the community?

____No (Skip to question 60)

____Yes

____Not sure/Do not know (Skip to question 60)

AIM 3, RESEARCH Q 3.1
Connie added

a. Please specify the names of the cervical cancer programs in the community in the space provided below. If you need more space, then please feel welcome to use the back of this page.

_____

_____

_____

_____

_____

AIM 3, RESEARCH Q 3.1
Connie added

65. Do you know where to go to get a free or low-cost Pap test in the Portland, Oregon metropolitan area?

____No
____Yes
____Not sure/Do not know

AIM 3, RESEARCH Q 3.1
modified from Nguyen et al., 2006

66. Have you heard of the Vietnamese Health Promoter Program of Providence Hospital Systems?

____No
____Yes
____Not sure/Do not know

AIM 3, RESEARCH 3.1
Connie added

67. Have you heard of the Vietnamese Women's Health Project of the Asian Family Center at IRCO (Immigrant & Refugee Community Organization)?

____No
____Yes
____Not sure/Do not know

AIM 3, RESEARCH Q 3.1
Connie added

68. Have you heard of the Free Friday Screenings program of the Oregon Health & Science University Center of Women's Health?

____No
____Yes
____Not sure/Do not know

AIM 3, RESEARCH Q 3.1
Connie added

69. Have you ever attended a Community Forum on cervical cancer and Pap testing?

____No
____Yes
____Not sure/Do not know

AIM 3, RESEARCH Q 3.1
modified from Nguyen et al., 2006

The following are a set of questions about your thoughts on the quality of care from the health care system. We are very interested in your view. There is no right or wrong answers. Remember that the information you provide will be kept confidential. Please answer each question honestly.

EXTERNAL INFLUENCING FACTORS

QUALITY OF CARE FROM THE HEALTH CARE SYSTEM

70. Generally speaking, the health care system in the United States treats people unfairly based on what their race or ethnic background is.

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1	2	3	4	5

AIM 1
Questions about perceived quality of care from the health care system from Nguyen et al., 2006
STUDY-SPECIFIC INSTRUMENT WITH NO REPORTED VALIDITY OR RELIABILITY

Modified response scale from Nguyen et al., 2006

71. Generally speaking, the health care system in the United States treats people unfairly based on how well they speak English.

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1	2	3	4	5

AIM 1
Modified response scale from Nguyen et al., 2006
Generally speaking, how often do you think the health care system in the United States treats people unfairly based on how well they speak English?

Never Often Not Too Often Somewhat Often Often Very Often (1-5)

72. When going to a doctor or nurse practitioner for health care services, Vietnamese receive the same quality of health care as Caucasian/non-Hispanic Whites.

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1	2	3	4	5

AIM 1
Modified from Nguyen et al., 2006, original
When going to a doctor or nurse practitioner for health care services, what do you think most Vietnamese receive in terms of quality of health care compared to non-Hispanic Whites?

____Lower quality of health care
____Same quality of health care
____Higher quality of health care
____Not sure/Do not know

73. When you see a doctor or nurse practitioner, he or she explain things to you in a way you can understand.

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1	2	3	4	5

AIM 1
Nguyen et al., 2006, original
When you see a doctor or nurse practitioner, does he or she explain things to you in a way you could understand?

____Yes

____No

____Not sure/Do not know

74. When you see a doctor or nurse practitioner, he or she treats you with respect.

Strongly	Disagree	Neutral	Agree	Strongly

Disagree				Agree
1	2	3	4	5

AIM 1
Nguyen et al., 2006
When you see a doctor or nurse practitioner, does he or she treat you with respect?

____Yes

____No

____Not sure/Do not know

The following is the last section of questions. These questions are about you, so that we can describe the group that filled out our survey. Remember the information you provide will be kept confidential.

INIVIDUAL INFLUENCING FACTORS

75. Where were you born (country)? (Please choose one)
____Viet Nam
____Other (Please specify) _____
(Skip to question 72)

RESEARCH Q 1.8

76. Were you primarily raised from one of the following regions in Vietnam? (Please choose one)
____Northern region
____Central region
____Southern region
____Note sure/Do not know

RESEARCH Q 1.8

77. What is your age (Western age)?
____ (Please specify)
AIM 1, RESEARCH Q 1.9
Continuous

78. What was your age when you moved to the United States to live?

____(Please specify)
AIM 1, RESEARCH Q 1.9
Continuous

79. How many years have you lived in the United States?

____(Please specify)

AIM 1, RESEARCH Q 1.9
Continuous

80. How well do you speak English? (Please choose one)

____Not at all
____Poorly
____Average
____Well
____Fluently
____Not sure/Do not know

AIM 1, RESEARCH Q 1.9
Ordinal, treat as continuous

81. How well do you speak Vietnamese? (Please choose one)

____Not at all
____Poorly
____Average
____Well
____Fluently
____Not sure/Do not know

RESEARCH Q 1.8
Ordinal, treat as continuous

82. What is your religion? (Please choose one)

____Buddhist
____Catholic
____Other (please specify) _____
____Do not identify with a religion
____Not sure/Do not know

AIM 1, RESEARCH Q 1.9
Nominal (categorical)

83. What is your current marital status? (Please choose one)

____Married
____Not married, living with a partner
____Single
____Separated
____Divorced
____Widowed

AIM 1, RESEARCH Q 1.9
Nominal (categorical)

84. What is your highest level of formal education? (Please choose one)

____No formal schooling (0)

____Elementary School (Kindergarten to 5th grade)
____Middle School (6th to 8th grade)
____Some high school (9th to 11th grade)
____High School/Graduate Equivalent Degree (G.E.D.)
____Some College (less than 2 years)/vocational or technical school
____Associate's Degree (2-3 years)
____Bachelor's Degree (4 years)
____Master's Degree
____Doctoral Degree

AIM 1, RESEARCH Q 1.9
ordinal

85. What is your current employment status? (Please choose one)

____Not employed
____Employed less than part-time
____Employed part-time
____Employed full-time

AIM 1, RESEARCH Q 1.9
Ordinal, treat as continuous

86. What is your occupation? (Please choose one)

____Homemaker
____Student
____Retired
____Other, please specify_____

RESEARCH Q 1.8

87. What is your total annual household income before taxes? (Please choose one)

____Less than $15,000
____Between $15,000 and $29,999
____Between $30,000 and $44, 999
____Between $45, 000 and $59,999
____Between $60,000 and $74, 999
____Between $75,000 and $89,000
____Greater than or equal to $90,000
____Not sure/Do not know

AIM 1, RESEARCH Q 1.9
Ordinal, treat as continuous

88. Do you have any kind of health care coverage (including health care insurance, preferred provider organizations (PPOs), health maintenance organization (HMO), Oregon Health Plan (OHP), Medicare)?

____No

____Yes
____Not sure/Do not know

AIM 1, RESEARCH Q 1.9
Lee-Lin et al., 2007

89. Does your health care plan cover cancer screening tests such as a Pap test?

____No
____Yes
____Not sure/Do not know

Aim 1, RESEARCH Q 1.9
Lee-Lin et al., 2007

90. Do you prefer to see a female health care provider for a Pap test?

____No
____Yes
____Does not matter to me
____Not sure/Do not know

AIM 1, RESEARCH Q 1.9
Lee-Lin et al., 2007, modified response by adding "not sure/do not know"

91. Do you know anyone who had cervical cancer?

____No
____Yes
____Not sure/Do not know

AIM 1, RESEARCH Q 1.9
Lee-Lin et al., 2007

92. Has anyone in your immediate family (mother, sister, daughter) had cervical cancer?

____No (You are done with the survey)
____Yes
____Not sure/Do not know (You are done with the survey)

AIM 1, RESEARCH Q 1.9
Lee-Lin et al., 2007

a. Please check all that apply:

____Yes, mother
____Yes, sister(s)
____Yes, daughter(s)

RESEARCH Q 1.8
Lee-Lin et al., 2007

You have completed the survey. We greatly appreciate your time and effort in participating. Your willingness to do this may help other Vietnamese immigrant women with their health.

We would like to know how you felt about participating in this study and if you have any suggestions for how we can improve. Please write your comments below. If you need more space, then please feel welcome to use the back of this page.

Appendix C

Translation Testing Form

Name:_____ Date:_____

(please print your full name)

Testing English-Vietnamese and Vietnamese-English Written Language Skills

Instructions: Please translate the below information into Vietnamese. Please use this paper. If you need more paper, please feel welcome to use the back of this paper.

Translate into Vietnamese: Cervical cancer beliefs and Pap test screening among Vietnamese immigrant women living in the Portland Metropolitan area of Oregon. The information you provide will be kept confidential and only the research staff will be able to view your information.

Instructions: Please translate the below information into English. Please use this paper. If you need more paper, please feel welcome to use the back of this paper.

Translate into English: Để đủ điều kiện tham dự vào chương trình nghiên cứu, bạn phải có những tiêu chuẩn sau đây:

1. Ít nhất bạn phải là18 tuổi
2. Bạn là phụ nữ sinh đẻ ở Việt Nam

Appendix D

Individual Translation Testing

Name:__Lê thị Tường Vy_____ Date: June 14, 2009
(please print your full name)

Testing English-Vietnamese and Vietnamese-English Written Language Skills

Instructions: Please translate the below information into Vietnamese. Please use this paper. If you need more paper, please feel welcome to use the back of this paper.

Translate into Vietnamese: Cervical cancer beliefs and Pap test screening among Vietnamese immigrant women living in the Portland Metropolitan area of Oregon. The information you provide will be kept confidential and only the research staff will be able to view your information.

Dịch sang tiếng Việt: Sự tin tưởng bệnh ung thư cổ tử cung và sự khám bệnh phụ khoa của những di dân phụ nữ Việt Nam đang sống trong địa phận Portland của Oregon. Những thông tin mà bạn cung cấp sẽ được gìn giữ cẩn mật và chỉ có những nghiên cứu viên mới được quyền xem những thông tin của bạn.

Instructions: Please translate the below information into English. Please use this paper. If you need more paper, please feel welcome to use the back of this paper.

Translate into English: Để đủ điều kiện tham dự vào chương trình nghiên cứu, bạn phải có những tiêu chuẩn sau đây:

1. Ít nhất bạn phải là18 tuổi
2. Bạn là phụ nữ sinh đẻ ở Việt Nam

Translate into English: In order to take part in this study, you have to meet the following criteria.

1. You are at least 18 years old
2. You were born in Vietnam.

Name: ☺ Zora Tu Date: 9/8/8

(please print your full name)

pap smear

Testing English-Vietnamese and Vietnamese-English Written Language Skills

Instructions: Please translate the below information into Vietnamese. Please use this paper. If you need more paper, please feel welcome to use the back of this paper.

hiểu biết - knowledge

kiểm tra Pap.

Translate into Vietnamese: Cervical cancer beliefs and Pap test screening among Vietnamese immigrant women living in the Portland Metropolitan area of Oregon. The information you provide will be kept confidential and only the research staff will be able to view your information.

Quan niệm, ~~thông~~ trong ung thư đường vú (?) và kiểm tra Pap trong cư dân phủ nữ người VN trong thành phố Portland. ở khu vựt Oregon. Những + gì bạn ~~cho~~ ~~mi~~ cung cấp sẽ được giữ bí mật và chỉ có những viên ~~trong~~ nghiên cứu sẽ xem được.

của chương trình này

Instructions: Please translate the below information into English. Please use this paper. If you need more paper, please feel welcome to use the back of this paper.

Translate into English: Để đủ điều kiện tham dự vào chương trình nghiên cứu, bạn phải có những tiêu chuẩn sau đây:

1. Ít nhất bạn phải là 18 tuổi
2. Bạn là phụ nữ sinh đẻ ở Việt Nam

In order to be qualified for research, You must meet the following condition:

1. At least 18 YO.
2. A woman born in VN.

Name: TUYEN TRAN Date: 6/15/09
(please print your full name)

Testing English-Vietnamese and Vietnamese-English Written Language Skills

Instructions: Please translate the below information into Vietnamese. Please use this paper. If you need more paper, please feel welcome to use the back of this paper.

Translate into Vietnamese: Cervical cancer beliefs and Pap test screening among Vietnamese immigrant women living in the Portland Metropolitan area of Oregon. The information you provide will be kept confidential and only the research staff will be able to view your information.

Sự quan niệm về Ung thư cổ tử cung và xét nghiệm ung thư cổ tử cung (Pap test) của những người Phụ Nữ Việt Nam di dân đang cư ngụ / sống trong khu vực trung tâm thành phố Porltand, Oregon. Những thông tin quý vị cung cấp sẽ được giữ bảo mật và chỉ riêng những nhân viên trong chương trình nghiên cứu mới có thể tham khảo tài liệu của quý vị.

Instructions: Please translate the below information into English. Please use this paper. If you need more paper, please feel welcome to use the back of this paper.

Translate into English: Để đủ điều kiện tham dự vào chương trình nghiên cứu, bạn phải có những tiêu chuẩn sau đây:

1. Ít nhất bạn phải là18 tuổi
2. Bạn là phụ nữ sinh đẻ ở Việt Nam

To be qualified / eligible to participate in this research study, you must meet the following criterias as you are:

1. 18 years old and above / AT LEAST 18 YEARS OLD
2. A Vietnam-born woman

Or

2. An immigrant Vietnamese woman

Appendix E

Translation Decision and Question Log

Question Number (#)	Original Question	Issue	D/Q	Specify Decision or Question

Appendix F

English and Vietnamese Version Pilot Participant Invitation and Screening Script

OHSU eIRB study #5467

Pilot Participant Invitation and Screening Script

[Read opening statement]
Hello, my name is Connie Nguyen-Truong and I am currently a PhD Candidate from Oregon Health & Science University School of Nursing. Thank you very much for your time in hearing me talk about an opportunity to participate in a research study and for meeting me.

The purpose of this study is to learn more about Vietnamese immigrant women living in the United States about their awareness, knowledge, confidentiality, beliefs, Pap testing practices, and community resources regarding cervical cancer screening, and thoughts about the quality of care from the health care system. This information will help us better understand how to promote screening in the community.

I would like to invite Vietnamese women who were not born in the United States and have immigrated to the United States, at least 21-99 years of age, have never been diagnosed with cervical cancer, and are able to read and speak English or Vietnamese to participate in this study. Your participation is entirely voluntary. This is a one-time, self-administered survey and will take about 30 minutes to complete. Then I will ask for your advice and opinion about the survey questions. This second part of the study will take about 1 hour. The information you provide will be kept confidential. The data will not contain any information that will identify you.

You will be given a $20 Fred Meyer gift card as an appreciation for your participation at the completion of the survey.

[If participant agrees to participate, then proceed with the screening. If the participant declines to participate, then read closing statement.]

Are you a Vietnamese immigrant woman who has never been diagnosed with cervical cancer? ☐ Yes ☐ No

How old are you? ____

Are you able to read and speak English or Vietnamese? ☐ Yes ☐ No

[Closing statement]

Again, thank you very much for your time.

OHSU eIRB study #5467

Văn Bản Kiểm Tra và Thư Mời Tham Dự Viên Pilot

[Lời mở đầu]

Xin chào quý vị, tôi tên là Connie Nguyễn-Trường và tôi hiện là thí sinh đang làm luận án tiến sĩ tại trường Oregon Health & Science University School of Nursing. Cám ơn quý vị rất nhiều vì đã dành thời gian đẻ đến dự buổi nói chuyện về những điều kiện tham dự vào chương trình nghiên cứu.

Mục đích của cuộc nghiên cứu này là để tìm hiểu thêm về nhận thức, sự hiểu biết, sự bảo mật, và quan niệm, việc thực hành thử nghiệm Pap của những phụ nữ Việt Nam di dân, và các cơ sở cộng đồng có liên quan đến việc xét nghiệm ung thư cổ tử cung, và những suy nghĩ về chất lượng chăm sóc sức khỏe của hệ thống y tế. Thông tin này sẽ giúp chúng tôi hiểu rõ hơn trong việc làm sao thúc đẩy việc xét nghiệm ung thư cổ tử cung trong cộng đồng.

Xin mời những phụ nữ Việt Nam mà không phải sanh ra trên nước Mỹ và đã nhập cư vào nước Mỹ, ít nhất 21-99 tuổi, mà chưa bao giờ được chẩn đoán bị ung thư cổ tử cung, và có khả năng đọc và nói được tiếng Anh hoặc tiếng Việt tham gia vào chương trình nghiên cứu này. Sự tham gia của quý vị là hoàn toàn tự nguyện.

Sự tham khảo chỉ thực hiện một lần và quý vị tự làm bản tham khảo ý kiến và sẽ mất vào khoảng 30 phút để hoàn thành. Sau đó, tôi sẽ yêu cầu quý vị về những đống góp ý kiến về những câu hỏi trong bản thăm dò ý kiến và ý kiến của qúy vị. Phần thứ hai của nghiên cứu này sẽ mất khoảng 1 giờ. Thông tin qúy vị cung cấp sẽ được giữ bảo mật. Dữ liệu sẽ không chứa bất kỳ thông tin nào để có thể nhận dạng qúy vị.

Quý vị sẽ nhận một thẻ mua quà $20 tại chợ Fred Meyer như lời cám ơn của chương trình đến sự tham gia và hoàn thành bản tham khảo ý kiến của quý vị.

[Nếu người tham dự đồng ý tham gia, thì tiến hành việc xét nghiệm. Nếu người tham dự từ chối tham gia, thì đọc lời tuyên bố kết thúc.]

Quý vị có phải là phụ nữ di dân Việt Nam chưa từng chẩn đoán bị ung thư cổ tử cung?

☐ Có ☐ Không

Quý vị bao nhiêu tuổi? ____

Quý vị có thể đọc và nói được tiếng Anh hoặc tiếng Việt không? ☐ Có ☐ Không

[Lời kết thúc]

Lần nữa, xin chân thành cảm ơn thời gian của quý vị đã giành cho chương trình.

Appendix G

English and Vietnamese Version Pilot Participant Information Sheet

Pilot Participant Information Sheet

OHSU eIRB study #5467

OREGON HEALTH & SCIENCE UNIVERSITY (OHSU)

Information Sheet

TITLE: Pap Testing Practices Among Vietnamese Immigrant Women Living in the United States: An Ecological Collaborative Approach

PRINCIPAL INVESTIGATOR: Vivian Gedaly-Duff, DNSc, RN; (503) 494-3866

CO-INVESTIGATORS: Connie Kim Yen Nguyen-Truong, BSN, RN, PCCN; (503) 998-6929
Frances Lee-Lin, PhD, RN, OCN, CNS; 503-494-3725
Lillian Nail, PhD, RN, FAAN; 503-494-5618
Michael Leo, PhD; 503-494-1137

SPONSOR: American Cancer Society

PURPOSE OF STUDY: The purpose of this study is to learn more about your awareness, knowledge, confidentiality, and beliefs towards cervical cancer and Pap testing, Pap testing practices, your thoughts regarding the quality of care from the health care system, and community resources regarding cervical cancer screening. We also want to know how Vietnamese immigrant women's characteristics and other influences such as a doctor or nurse practitioner, family, and friends having recommended Pap testing and if they are related to Pap testing practices. This information will help us better understand how to promote cervical cancer screening in the community. The information you provide will help us make the survey understandable.

PROCEDURES: If you agree to participate in this study, you will be asked to complete a one-time, self-administered survey about your awareness, knowledge, confidentiality, and beliefs towards cervical cancer and Pap testing, Pap testing practices, community resources, and quality of care from the health care system. The survey will take about 30 minutes to complete.

Then, the researcher will interview you. The researcher will be asking you to give your advice and opinion about the survey questions. We would like to ask you if the instructions were clear, if you had any trouble following the order of the questions or the skip patterns, if

the questions made sense, if you had any problems understanding what kinds of answers were expected, if there were any questions that irritated you or made you feel uncomfortable, and if there are questions we have missed or changes we should make. This second part of the study will take about 1 hour.

RISKS AND DISCOMFORTS: There are no known risks and discomforts in participating in this study.

BENEFITS: You will not personally benefit from participating in this study. However, the information you contribute may benefit others in the future.

ALTERNATIVES: Being in this study is voluntary. You can choose not to participate in this study.

CONFIDENTIALITY: The data does not contain any information that will identify you. Your identity cannot be disclosed.

COSTS: There is no cost to you for participating in this study. You will be given a $20 Fred Meyer gift card as an appreciation for your participation at the completion of the survey and interview.

CONTACTS: If you have questions about the study, please contact Vivian Gedaly-Duff at (503) 494-3866 or Frances Lee-Lin at 503-494-3725. If you have questions regarding your rights as a research participant, you may contact the OHSU Research Integrity Office at (503) 494-7887.

By returning the completed survey form and participating in the interview, it shows that you have agreed to participate in this study.

Thông Tin Cho Người Tham Dự Pilot

OHSU eIRB study #5467

OREGON HEALTH & SCIENCE UNIVERSITY (OHSU)

Tờ Thông Tin

CHỦ ĐỀ: Thực Hành Khám Nghiệm Phụ Khoa của Di Dân Phụ Nữ Việt Nam Đang Sinh Sống tại Hoa Kỳ: Phương Pháp Cộng Tác Giữa Xã Hội và Môi Trường Sống.

NGƯỜI NGHI ÊN CỨU CHÍNH: Vivian Gedaly-Duff, DNSc, RN; (503) 494-3866

NHỮNGNGƯỜI PHỤ TÁ NGHIÊN CỨU: Connie Kim Yen Nguyen-Truong, BSN, RN, PCCN; (503) 998-6929
Frances Lee-Lin, PhD, RN, OCN, CNS; 503-494-3725
Lillian Nail, PhD, RN, FAAN; 503-494-5618
Michael Leo, PhD; 503-494-1137

BẢO TRỢ: American Cancer Society

MỤC ĐÍCH NGHIÊN CỨU: Mục đích của chương trình nghiên cứu này là để tìm hiểu thêm về nhận thức, sự hiểu biết, sự bảo mật, và quan niệm về ung thư cổ tử cung và thử nghiệm Pap, thực hành thử nghiệm Pap, những suy nghĩ của qúi vị về chất lượng chăm sóc sức khỏe của hệ thống y tế, và các cơ sở cộng đồng có liên quan đến việc xét nghiệm ung thư cổ tử cung. Chúng tôi cũng muốn được biết về những đặc điểm của di dân phụ nữ Việt Nam và sự ảnh hưởng của bác sĩ hay chuyên viên y tá [có quyền chẩn đoán bệnh và được viết toa thuốc], gia đình, và bạn bè mà họ có đề nghị về thử nghiệm Pap và những yếu tố đó có liên quan như thế naò đến việc thực hành thử nghiệm Pap. Thông tin này sẽ giúp chúng tôi hiểu rõ hơn về cách thúc đẩy việc thử nghiệm ung thư cổ tử cung trong cộng đồng. Những thông tin của quý vị sẽ giúp chúng tôi làm rõ ràng bản tham khảo ý kiến.

CÁCH THỨC: Nếu quý vị đồng ý tham gia vào chương trình nghiên cứu này, quý vị sẽ phải tự mình hoàn tất bản tham khảo ý kiến về sự nhận thức, hiểu biết, bảo mật, và quan niệm của quý vị về ung thư cổ tử cung và thử nghiệm Pap, thực hành thử nghiệm Pap, cơ sở y tế trong cộng đồng và chất lượng của hệ thống y tế. Bản tham khảo ý kiến sẽ mất khoảng 30 phút để hoàn thành.

Sau đó, người nghiên cứu sẽ phỏng vấn quý vị. Người nghiên cứu sẽ hỏi quý vị đóng góp ý kiến về những câu hỏi trong bản tham khảo ý kiến này. Chúng tôi muốn biết rằng lời hướng dẫn có rõ ràng không, quý vị có gặp khó khăn về việc làm theo trình tự của những câu hỏi hay là cách bỏ câu hỏi, câu hỏi có hợp lý hay là quý vị có gặp khó khăn trong việc đoán được câu trả lời, có những câu hỏi nào làm quý vị thấy khó chịu hay làm quý vị cảm thấy không thỏai mái, có những câu hỏi chúng tôi đã bỏ sót hay là có những điểm cần nên thay đổi. Phần thứ hai của nghiên cứu này sẽ mất khoảng một giờ.

SỰ RỦI RO VÀ BĂN KHOĂN: Không có sự rũi ro và băn khoăn khi tham gia vào chương trình nghiên cứu này.

LỢI ÍCH: Chương trình nghiên cứu này sẽ không mang lại lợi ích riêng cho một cá nhân nào, nhưng những thông tin quí vị cung cấp cho chương trình có thể sẽ giúp ích cho những người khác trong tương lại.

SỰ LỰA CHỌN: Sự tham dự của quý vị vào chương trình nghiên cứu này là tự nguyện. Quý vị có thể lựa chọn không tham dự vào chương trình nghiên cứu này.

SỰ BẢO MẬT: Dữ liệu sẽ không chứa bất kỳ thông tin nào để có thể nhận dạng qúy vị. Thông tin cá nhân của quý vị sẽ không được tiết lộ.

CHI PHÍ : Quý vị sẽ không phải trả lệ phí nào để tham gia vào chương trình này. Quý vị sẽ được nhận thẻ mua quà $20 tại chợ Fred Meyer như lời cám ơn của chương trình về sự tham gia và hoàn thành bản tham khảo ý kiến của quý vị cuộc phỏng vấn.

SỰ LIÊN LẠC: Nếu quý vị có thắc mắc gì về chương trình nghiên cứu, xin liên lạc Vivian Gedaly-Duff ở số (503) 494-3866 hoặc Frances Lee-Lin ở số 503-494-3725. Nếu quý vị có thắc mắc gì về quyền lợi của người tham dự vào chương trình nghiên cứu, quý vị có thể liên lạc với văn phòng OHSU Research Integrity ở số (503) 494-7887.

Khi quý vị hoàn thành bản tham khảo ý kiến và nộp lại cho chương trình và tham gia vào cuộc phỏng vấn, có nghĩa là qúy vị đã đồng ý tham dự vào chương trình nghiên cứu này.

Appendix H

English and Vietnamese Version Participant Invitation and Screening Script

Participant Invitation and Screening Script

OHSU eIRB study #5467

[If Co-Investigator Connie Nguyen-Truong is making announcement, then read opening statement below:]
Hello, my name is Connie Nguyen-Truong and I am currently a PhD Candidate from Oregon Health & Science University School of Nursing. Thank you very much for your time in hearing me talk about an opportunity to participate in a research study.
[If Organization Leader is making announcement, then read opening statement below:]
I would like to introduce Connie Nguyen-Truong who is currently a PhD Candidate from Oregon Health & Science University School of Nursing. She is here regarding an opportunity to participate in a research study.
[Body]
This study focus is to learn more about Vietnamese immigrant women living in the United States' health and screening practices. This information will help us better understand how to promote screening in the community.

I [She] would like to invite Vietnamese women who were not born in the United States and have immigrated to the United States, at least 21-99 years of age, have never been diagnosed with cervical cancer, and are able to read and speak English or Vietnamese to participate in this study. Your participation is entirely voluntary. This is a one-time, self-administered survey and will take about 30 minutes to complete. You will be able to take this survey here at this organization [say name of organization] on [date] at [time]. The information you provide will be kept confidential. The data will not contain any information that will identify you.

You will be given a $10 Fred Meyer gift card as an appreciation for your participation at the completion of the survey. Light food and drinks will also be provided.

[For Co-Investigator Connie Nguyen-Truong. If participant agrees to participate, then proceed with the screening. If the participant declines to participate, then read closing statement.]
Are you a Vietnamese immigrant woman who has never been diagnosed with cervical cancer? ☐ Yes ☐ No

How old are you? ____

Are you able to read and speak English or Vietnamese? ☐ Yes ☐ No

[Closing statement]
Again, thank you very much for your time.

Văn Bản Kiểm Tra và Thư Mời Tham Dự Viên

OHSU eIRB study #5467

[Nếu phụ tá nghi ên cứu Connie Nguyễn-Trương đọc thông báo này, thì đọc lời mở đầu dưới đây:]
Xin chào quý vị, tôi tên là Connie Nguyễn-Trương và tôi hiện là thí sinh đang làm luận án tiến sĩ tại trường Oregon Health & Science University School of Nursing. Cám ơn quý vị rất nhiều vì đã dành thời gian đẻ đến dự buổi nói chuyện về những điều kiện tham dự vào chương trình nghiên cứu.
[Nếu người lãnh đạo của một tổ chức đọc thong báo này, thì đọc lời mở đầu dưới đây:]
Tôi xin giới thiệu cùng quí vị, Connie Nguyễn-Trương hiện là thí sinh với văn bằng Tiến Sĩ của trường Oregon Health & Science University School of Nursing. Cô ấy có mặt nơi đây như là để tạo ra một cơ hội tham gia vào chương trình nghiên cứu này.
[Thân bài]Trọng tâm của chương trình nghiên cứu này là để tìm hiểu thêm về sức khỏe và việc khám nghiệm bệnh của những di dân phụ nữ Việt Nam đang sinh sống tại Hoa Kỳ. Thông tin này sẽ giúp chúng tôi hiểu rõ hơn trong việc làm sao để khuyến khích việc xét nghiệm trong cộng đồng.

Chương trình xin [Cô ấy] mời những phụ nữ Việt Nam mà không phải sanh ra trên nước Mỹ và đã nhập cư vào nước Mỹ, ít nhất 21-99 tuổi, mà chưa bao giờ được chẩn đoán bị ung thư cổ tử cung, và có khả năng đọc và nói được tiếng Anh hoặc tiếng Việt tham gia vào chương trình nghiên cứu này. Sự tham gia của quý vị là hoàn toàn tự nguyện. Sự tham khảo chỉ thực hiện một lần và quý vị tự làm bản tham khảo ý kiến và sẽ mất vào khoảng 30 phút để hoàn thành. Quý vị thực hiện bản tham khảo ý kiến tại cơ sở này [tên của cơ sở] vào [ngày] lúc [giờ]. Thông tin qúy vị cung cấp sẽ được giữ bảo mật. Dữ liệu sẽ không chứa bất kỳ thông tin nào để có thể nhận dạng qúy vị.

Quý vị sẽ nhận một thẻ mua quà $10 tại chợ Fred Meyer như lời cám ơn của chương trình đến sự tham gia và hoàn thành bản tham khảo ý kiến của quý vị. Sẽ có thức ăn nhẹ và nước giải khát trong buổi hợp.

[Cho phụ tá nghiên cứu Connie Nguyễn-Trương. Nếu người tham dự đồng ý tham gia, thì tiến hành việc xét nghiệm. Nếu người tham dự từ chối tham gia, thì đọc lời tuyên bố kết thúc.]

Quý vị có phải là phụ nữ di dân Việt Nam chưa từng chẩn đoán bị ung thư cổ tử cung?
☐ Có ☐ Không

Quý vị bao nhiêu tuổi? ____

Quý vị có thể đọc và nói được tiếng Anh hoặc tiếng Việt không? ☐ Có ☐ Không

[Lời kết thúc]
Lần nữa, xin chân thành cảm ơn thời gian của quý vị đã giành cho chương trình.

Appendix I

English and Vietnamese Version Newsletter Advertisement

Newsletter Advertisement

OHSU eIRB study #5467

Pap Testing Practices Among Vietnamese Immigrant Women Living in the United States

Connie Nguyen-Truong, Nurse, is a PhD Candidate from Oregon Health & Science University School of Nursing, who is working with Dr. Vivian Gedaly-Duff, Dr. Frances Lee-Lin, Dr. Lillian Nail, and Dr. Michael Leo at OHSU and with Community Consultant Tuong Vy Le and Community Advisors Zora Le Tu and Tuyen Tran, is doing a research study to learn more about Vietnamese immigrant women's awareness, knowledge, beliefs, Pap testing practices, and community resources regarding cervical cancer screening, and thoughts about the quality of care from the health care system. This information will aid in understanding more about how to promote screening in the community. Persons who volunteer will answer a set of questions that will take about 30 minutes. This questionnaire will take place at [name of organization] on [date] at [time]. Your information will be kept confidential. Women who are Vietnamese who immigrated to the United States, at least 21 years of age or older, have never been diagnosed with cervical cancer, and are able to read and speak Vietnamese or English are invited to contact Connie Nguyen-Truong at (503) 998-6929 or email nguyenc@ohsu.edu for more information. Participants will receive a $10 Fred Meyer gift card. Light food and drinks will also be provided. Volunteer Community Members including Quynh-Anh Phan, Anthony Truong, Tri Tran, Nga-My Vuong, and Ken Truong are appreciated for helping with the study.

Thông Báo

OHSU eIRB study #5467

Thử Nghiệm Khám Pap Cho Di Dân Phụ Nữ Việt Nam Đang Sinh Sống Tại Nước Mỹ Y Tá Nguyễn-Trương Connie là một thí sinh đang làm luận án tiến sĩ tại Oregon Health & Science University School of Nursing với sự cộng tác của tiến sĩ Vivian Gadaly-Duff, tiến sĩ Frances Lee-Lin, tiến sĩ Lillian Nail, và tiến sĩ Michael Leo ở trường OHSU cùng với sự cộng tác của những cố vấn trong cộng đồng như Lê Tường Vy, Lê Tú Zora, và Trần Tuyên để thực hiện chương trình nghiên cứu nhằm để tìm hiểu thêm về sự nhận thức, hiểu biết, quan niệm, việc thử nghiệm Pap của những di dân phụ nữ Việt Nam cũng như những cơ sở trong cộng đồng có cung cấp xét nghiệm ung thư cổ tử cung và những suy nghĩ về chất lượng chăm sóc sức khỏe của hệ thống y tế. Những thông tin này sẽ giúp để hiểu biết thêm về vấn đề làm sao thúc đẩy việc xét nghiệm trong cộng đồng có hiệu quả cao hơn. Những người tự nguyện tham dự vào chương trình sẽ trả lời một số những câu hỏi trong khoảng 30 phút. Buổi tham khảo ý kiến này sẽ được tổ chức tại [tên nơi tổ chức] vào [ngày] lúc [giờ]. Thông tin quý vị cung cấp sẽ được giữ bảo mật. Những phụ nữ Việt Nam từ 21 tuổi trở lên, đang định cư tại Hoa Kỳ, chưa bao giờ chẩn đoán bị ung thư cổ tử cung và có thể đọc, nói được tiếng Việt hoặc tiếng Anh có thể liên lạc cô Nguyễn-Trương Connie ở số (503) 998-6929 hay email nguyenc@ohsu.edu để biết thêm chi tiết. Người tham dự sẽ nhận được một thẻ mua quà $10 của Fred Meyer. Sẽ có thức ăn nhẹ và nước giải khát trong buổi tham khảo ý kiến. Toàn thể nghiên cứu viên của chương trình xin cám ơn sự giúp đỡ của những thiện nguyện viên đã giúp chương trình nghiên cứu này bao gồm Phạn Quỳnh-Anh, Trương Anthony, Trần Trí, Vường Nga-Mỹ, và Trương Ken.

Appendix J

English and Vietnamese Version Participant Information Sheet

Participant Information Sheet

OHSU eIRB study #5467

OREGON HEALTH & SCIENCE UNIVERSITY (OHSU)

Information Sheet

TITLE: Pap Testing Practices Among Vietnamese Immigrant Women Living in the United States: An Ecological Collaborative Approach

PRINCIPAL INVESTIGATOR: Vivian Gedaly-Duff, DNSc, RN; (503) 494-3866

CO-INVESTIGATORS: Connie Kim Yen Nguyen-Truong, BSN, RN, PCCN; (503) 998-6929
Frances Lee-Lin, PhD, RN, OCN, CNS; 503-494-3725
Lillian Nail, PhD, RN, FAAN; 503-494-5618
Michael Leo, PhD; 503-494-1137

SPONSOR: American Cancer Society

PURPOSE OF STUDY: The purpose of this study is to learn more about your awareness, knowledge, confidentiality, and beliefs towards cervical cancer and Pap testing, Pap testing practices, your thoughts regarding the quality of care from the health care system, and community resources regarding cervical cancer screening. We also want to know how Vietnamese immigrant women's characteristics and other influences such as a doctor or nurse practitioner, family, and friends having recommended Pap testing and if they are related to Pap testing practices. This information will help us better understand how to promote cervical cancer screening in the community. About 200 Vietnamese immigrant women will participate in this study.

PROCEDURES: If you agree to participate in this study, you will be asked to complete a one-time, self-administered survey about your awareness, knowledge, confidentiality, and beliefs towards cervical cancer and Pap testing, Pap testing practices, community resources, and quality of care from the health care system. The survey will take about 30 minutes to complete.

RISKS AND DISCOMFORTS: There are no known risks and discomforts in participating in this study. Because this survey takes place in a group setting, there is a risk of loss of confidentiality.

BENEFITS: You will not personally benefit from participating in this study. However, the information you contribute may benefit others in the future.

ALTERNATIVES: Being in this study is voluntary. You can choose not to participate in this study.

CONFIDENTIALITY: The data does not contain any information that will identify you. Your identity cannot be disclosed.

COSTS: There is no cost to you for participating in this study. You will be given a $10 Fred Meyer gift card as an appreciation for your participation at the completion of the survey.

CONTACTS: If you have questions about the study, please contact Vivian Gedaly-Duff at (503) 494-3866 or Co-Investigator Frances Lee-Lin at 503-494-3725. If you have questions regarding your rights as a research participant, you may contact the OHSU Research Integrity Office at (503) 494-7887.

By returning the completed survey form, it shows that you have agreed to participate in this study.

Thông Tin Cho Người Tham Dự

OHSU eIRB study #5467

OREGON HEALTH & SCIENCE UNIVERSITY (OHSU)

Tờ Thông Tin

CHỦ ĐỀ: Thực Hành Khám Nghiệm Phụ Khoa của Di Dân Phụ Nữ Việt Nam Đang Sinh Sống tại Hoa Kỳ: Phương Pháp Cộng Tác Giữa Xã Hội và Môi Trường Sống.

NGƯỜI NGHI ÊN CỨU CHÍNH: Vivian Gedaly-Duff, DNSc, RN; (503) 494-3866

NHỮNGNGƯỜI PHỤ TÁ NGHIÊN CỨU: Connie Kim Yen Nguyen-Truong, BSN, RN, PCCN; (503) 998-6929
Frances Lee-Lin, PhD, RN, OCN, CNS; 503-494-3725
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Michael Leo, PhD; 503-494-1137

BẢO TRỢ: American Cancer Society

MỤC ĐÍCH NGHIÊN CỨU: Mục đích của chương trình nghiên cứu này là để tìm hiểu thêm về nhận thức, sự hiểu biết, sự bảo mật, và quan niệm về ung thư cổ tử cung và thử nghiệm Pap, thực hành thử nghiệm Pap, những suy nghĩ của qúi vị về chất lượng chăm sóc sức khỏe của hệ thống y tế, và các cơ sở cộng đồng có liên quan đến việc xét nghiệm ung thư cổ tử cung. Chúng tôi cũng muốn được biết về những đặc điểm của di dân phụ nữ Việt Nam và sự ảnh hưởng của bác sĩ hay chuyên viên y tá [có quyền chẩn đoán bệnh và được viết toa thuốc], gia đình, và bạn bè mà họ có đề nghị về thử nghiệm Pap và những yếu tố đó có liên quan như thế naò đến việc thực hành thử nghiệm Pap. Thông tin này sẽ giúp chúng tôi hiểu rõ hơn về cách thúc đẩy việc thử nghiệm ung thư cổ tử cung trong cộng đồng. Khoảng 200 di dân phụ nữ Việt Nam sẽ tham gia vào chương trình nghiên cứu này.

CÁCH THỨC: Nếu quý vị đồng ý tham gia vào chương trình nghiên cứu này, quý vị sẽ phải tự mình hoàn tất bản tham khảo ý kiến về sự nhận thức, hiểu biết, bảo mật, và quan niệm của quý vị về ung thư cổ tử cung và thử nghiệm Pap, thực hành thử nghiệm Pap, cơ sở y tế trong cộng đồng và chất lượng của hệ thống y tế. Bản tham khảo ý kiến sẽ mất khoảng 30 phút để hoàn thành.

SỰ RŨI RO VÀ BĂN KHOĂN: Không có sự rũi ro và băn khoăn khi tham gia vào chương trình nghiên cứu này. Bởi vì bản tham khảo ý kiến này sẽ tổ chức theo những nhóm họp, cho nên có những rũi ro có thể ảnh hưởng đến sự bảo mật của quí vị.

LỢI ÍCH: Chương trình nghiên cứu này sẽ không mang lại lợi ích riêng cho một cá nhân nào, nhưng những thông tin quí vị cung cấp cho chương trình có thể sẽ giúp ích cho những người khác trong tương lai.

SỰ LỰA CHỌN: Sự tham dự của quý vị vào chương trình nghiên cứu này là tự nguyện. Quý vị có thể lựa chọn không tham dự vào chương trình nghiên cứu này.

SỰ BẢO MẬT: Dữ liệu sẽ không chứa bất kỳ thông tin nào để có thể nhận dạng qúy vị. Thông tin cá nhân của quý vị sẽ không được tiết lộ.

CHI PHÍ : Quý vị sẽ không phải trả lệ phí nào để tham gia vào chương trình này. Quý vị sẽ được nhận thẻ mua quà $10 tại chợ Fred Meyer như lời cám ơn của chương trình về sự tham gia và hoàn thành bản tham khảo ý kiến của quý vị.

SỰ LIÊN LẠC: Nếu quý vị có thắc mắc gì về chương trình nghiên cứu, xin liên lạc Vivian Gedaly-Duff ở số (503) 494-3866 hoặc Frances Lee-Lin ở số 503-494-3725. Nếu quý vị có thắc mắc gì về quyền lợi của người tham dự vào chương trình nghiên cứu, quý vị có thể liên lạc với văn phòng OHSU Research Integrity ở số (503) 494-7887.

Khi quý vị hoàn thành bản tham khảo ý kiến và nộp lại cho chương trình, có nghĩa là qúy vị đã đồng ý tham dự vào chương trình nghiên cứu này.

Appendix K

English and Vietnamese Version Pap Testing Information Sheet

Pap Testing (Pap smear screening) Information Sheet

What are the Pap testing guidelines?

- Women should have a Pap test at least once every 3 years, beginning by age 21.
- Women who have sex before age 21 should get a Pap test approximately 3 years after the first time having sex.
- If a woman turns 21 years old and has not had sex yet, she should still get a Pap test, and should continue to have Pap tests at least once every 3 years throughout her life.
- Depending on the results, the doctor or nurse practitioner may recommend a woman to have the Pap test more often.

Who Needs a Pap test?

- **Do virgins need Pap tests?**
  Yes. Every woman should begin to have regular Pap tests at least by the time she is 21 years old.
- **Do older women need Pap tests?**
  If you are 65 years or older, ask your doctor if you should continue to get Pap tests. Your doctor will tell you how often you should get one, based on your previous test results.
- **Do women with no symptoms need Pap tests?**
  Yes. Women may have cervical cancer without knowing it because there are no symptoms at first.
- **Does a woman need Pap tests after a hysterectomy?**
  Women who had their uterus removed because of cervical pre-cancer or other cancer may still need to get regular Pap tests. You should talk to your doctor if you are not sure about this issue.
- **Do women who have gone through menopause need Pap tests?**
  Yes, because cervical cancer can appear after menopause.

What are the risk factors for developing cervical cancer? Some of these are:

- Human papilloma virus (HPV) infection
- Smoking
- Immuosuppression, human immunodeficiency virus (HIV) infection
- Chlamydia infection
- Diets low in fruits and vegetables, being overweight
- Taking oral contraceptives (birth control pills) for longer than 5 years was suggested to place women at 2 times the risk for developing cervical cancer, but the risk decreased 10 years after they were stopped. A woman should talk with her doctor about the benefits and risks of using oral contraceptives.
- Poverty, not having access to adequate health care services
- Family history of cervical cancer, hereditary

Resources

- National Cancer Institute http://www.cancer.gov/cancertopics/cervical-screening-vietnamese
- American Cancer Society http://www.cancer.org/docroot/CRI/content/CRI_2_4_2X_What_are_the_risk_factors_for_cervical_cancer_8.asp

PLEASE NOTE: This information is not a substitute or replacement of professional medical advice you receive from your health care provider. It was not for diagnosing or treating a health problem or disease. Please consult with your health care provider with any questions or concerns you may have about your health care.
(January 2010)

Thông Tin về Thử Nghiệm Pap (thử nghiệm Pap smear)

Những nguyên tắc về thử nghiệm Pap?

- Bắt đầu 21 tuổi phụ nữ nên đi thử Pap ít nhất 3 năm một lần.
- Nếu phụ nữ có quan hệ tình dục trước 21 tuổi, thì nên đi thử nghiệm Pap khoảng 3 năm sau lần quan hệ tình dục đầu tiên.
- Nếu phụ nữ đã 21 tuổi mà chưa có quan hệ tình dục, thì cũng nên đi thử nghiệm Pap và tiếp tục đi thử nghiệm Pap ít nhất là 3 năm một lần trong suốt cuộc đời.
- Tùy thuộc vào kết quả thử nghiệm bác sĩ hay chuyên viên y tá [người được quyền chẩn đoán và được viết toa thuốc] có thể đệ nghị người phụ nữ nên đi thử nghiệm thường xuyên hơn.

Ai là những người cần thử nghiệm Pap?

- **Những người phụ nữ còn trinh có cần đi thử nghiệm Pap không?**
  Có. Mọi phụ nữ đều nên bắt đầu đi thử nghiệm Pap định kỳ, ít nhất là khi đã được 21 tuổi.
- **Những người phụ nữ lớn tuổi có cần đi thử nghiệm Pap không?**
  Phụ nữ từ 65 tuổi trở lên nên hỏi bác sĩ hay chuyên viên y tá nếu cần tiếp tục đi thử nghiệm Pap. Tùy thuộc vào các kết quả thử nghiệm Pap trước mà bác sĩ hay chuyên viên y tá sẽ cho biết bao lâu thì nên đi thử nghiệm Pap.
- **Những phụ nữ không có triệu chứng gì thì có cần đi thử nghiệm Pap không?**
  Có. Có những phụ nữ có thể mắc bệnh ung thư cổ tử cung mà không biết bởi vì lúc đầu không có một triệu chứng gì.
- **Sau khi cắt bỏ tử cung người phụ nữ có cần đi thử nghiệm Pap không?**
  Những phụ nữ đã bị cắt bỏ tử cung trước khi ung thư hoặc là bị hoặc là bị những ung thư khác vẫn cần thử nghiệm Pap định kỳ. Nên hỏi bác sĩ hay chuyên viên y tá nếu không chắc về điều này.
- **Những phụ nữ đang ở thời kỳ mãn kinh có cần đi thử nghiệm Pap không?**
  Có, vì ung thư cổ tử cung vẫn có thể xảy ra sau khi mãn kinh.

Những nguy cơ gây ra ung thư cổ tử cung là cái gì?
Đây là một số nguy cơ:

- Nhiễm trùng siêu vi khuẩn Human papilloma virus (HPV)
- Hút thuốc
- Khả năng chống bệnh rất yếu, nhiễm trùng siêu vi khuẩn human immunodeficiency virus (HIV)
- Nhiễm trùng siêu vi khuẩn Chlamydia
- Ít ăn trái cây và rau cải, béo mập
- Phụ nữ uống thuốc ngừa thai 5 năm trở lên thì nguy cơ bị ung thư cổ tử cung cao gấp 2 lần, nhưng nguy cơ đó sẽ giảm xuống 10 năm kể từ khi lúc ngưng uống thuốc ngừa thai. Phụ nữ nên thảo luận với bác sĩ của mình về những lợi ích và nguy hiểm trong việc sử dụng thuốc ngừa thai.
- Nghèo, không có cơ hội chăm sóc sức khỏe đầy đủ
- Gia đình có di truyền về ung thư cổ tử cung

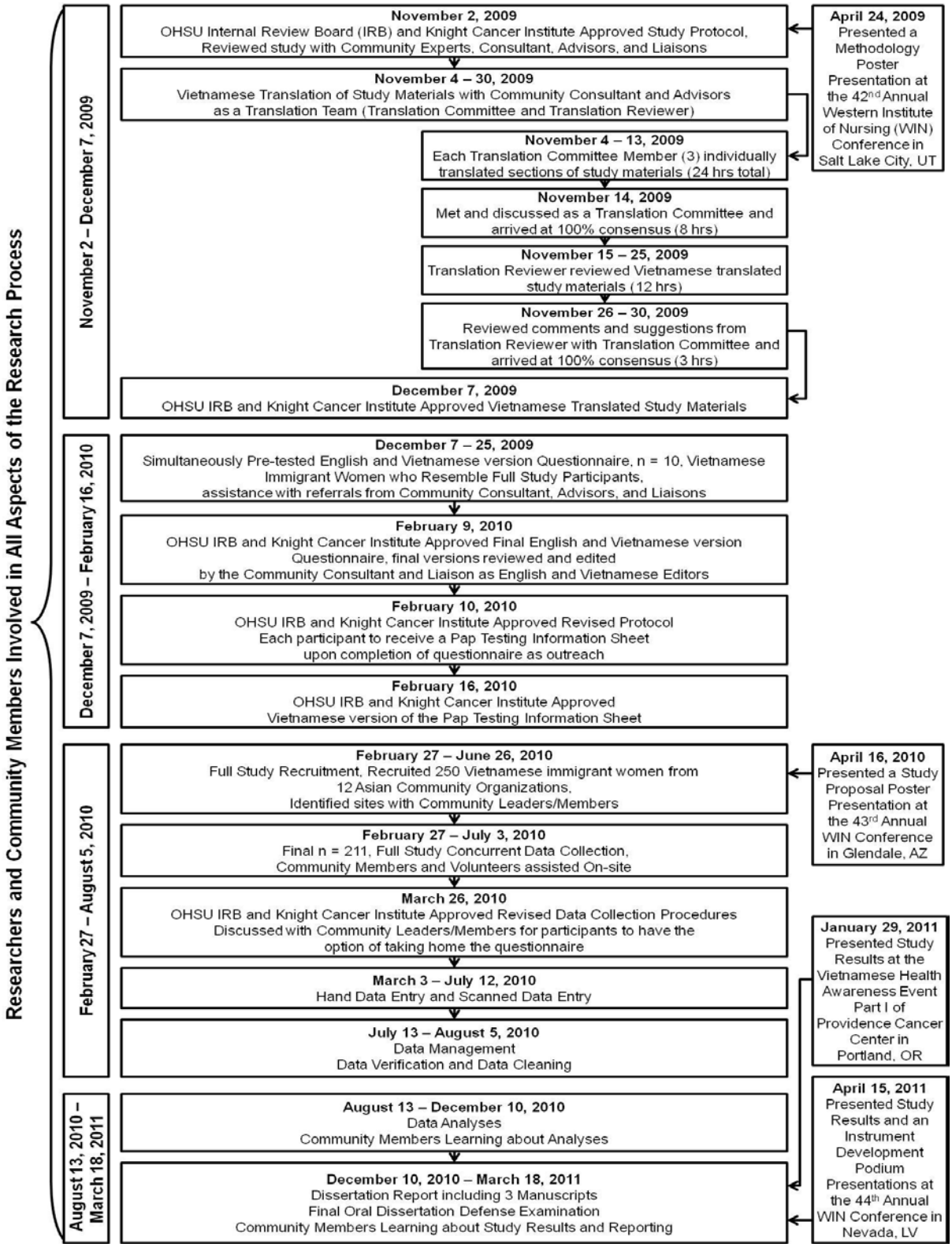
Tài liệu

- National Cancer Institute http://www.cancer.gov/cancertopics/cervical-screening-vietnamese
- American Cancer Society http://www.cancer.org/docroot/CRI/content /CRI_2_4_2X_What_are_the_risk_factors_for_cervical_cancer_8.asp

XIN LƯU Ý: Thông tin này không thể thay thế cho những hướng dẫn mà bác sĩ hay chuyên viên y tá đã đề nghị. Thông tin này không dùng để chẩn đoán hoặc điều trị về vấn đề sức khỏe hay là bệnh tật. Xin vui lòng tham khảo với bác sĩ hay chuyên viên y tá nếu quý vị có bất cứ câu hỏi hoặc băn khoăn về việc chăm sóc sức khỏe của quý vị.
(January 2010)

Appendix L

Dissertation Research Timeline



Appendix M

Table 1. Comparison of Descriptive Statistics of Variables on the Observed Data and Imputed Data

	n (%) Observed Data	n (%) Imputed Data	Notations
DEPENDENT VARIABLES			
Pap test receipt (ever had)	**n = 202, 9 (4.3%) missing [of which 7 not sure/do not know]**	n = 211	
mean ± SD	.76 ± .43	.73 ± .44	
Yes	154 (73%)	157 (74.4%)	similar mean standard deviation similar percentages
No	48 (22.7%)	54 (25.6%)	
Pap test adherence (within past 3 yrs)	**n = 147, 7 (4.5%) missing**	n = 157	
mean ± SD	.92 ± .28	.92 ± .27	
Yes	135 (64%)	145 (68.7%)	similar mean standard deviation similar percentages
No	12 (5.7%)	12 (5.7%)	
PART OF PRIMARY AIM 1			
Cervical cancer awareness	**n = 200, 11 (5.2%)missing [of which 9 not sure/do not know]**	n = 211	
mean ± SD	.84 ± .37	.84 ± .37	
Yes	168 (79.6%)	177 (83.9%)	similar mean standard deviation similar percentages
No	32 (15.2%)	34 (16.1%)	
Pap test awareness	**n = 200, 11 (5.2%)missing [of which 8 not sure/do not know]**	n = 211	
mean ± SD	.74 ± .40	.73 ± .44	

	n (%) Observed Data	n (%) Imputed Data	Notations
Yes	148 (70.1%)	155 (73.5%)	similar mean standard deviation similar percentages
No	52 (24.6%)	56 (26.5%)	
Knowing Pap tests are necessary for women who are asymptomatic, sexually inactive, or postmenopausal (% correct/100%)	**n = 211 (no missing data)** 0/3 correct, 17 (8.1%) 1/3 correct, 18 (8.5%) 2/3 correct, 33 (15.6%) 3/3 correct, 143 (67.8%)		No missing data in observed data set
mean ± SD	0.81 ± .32 (range = 0 – 100%)		
Confidentiality issues (score 2-10)	**n = 207, 4 (1.9%) missing**	n = 211	
mean ± SD	3.61 ± 1.59	3.61 ± 1.57	similar mean standard deviation
Beliefs			
Perceived susceptibility (score 3-15)	**n = 205, 6 (2.8%) missing**	n = 211	
mean ± SD	6.67 ± 2.67	6.66 ± 2.63	similar mean standard deviation
Perceived benefits (score 5-25)	**n = 205, 6 (2.8%) missing**	n = 211	
mean ± SD	19.32 ± 3.36	19.35 ± 3.32	similar mean standard deviation
Perceived common barriers (score 10-50)	**n = 205, 6 (2.8%) missing**	n = 211	
mean ± SD	21.83 ± 7.21	21.89 ± 7.14	similar mean standard deviation
Perceived cultural barriers Utilization of eastern medicine (score 3-15)	**n = 205, 6 (2.8%) missing**	n = 211	
mean ± SD	8.03 ± 2.53	8.06 ± 2.52	similar mean standard deviation
Modesty (score 5-50)	**n = 205, 6 (2.8%) missing**	n = 211	
mean ± SD	11.93 ± 4.22	12.01 ± 4.24	similar mean standard deviation
Crisis orientation (score 4-20)	**n = 207, 4 (1.9%) missing**	n = 211	
mean ± SD	7.65 ± 2.40	7.66 ± 2.38	similar mean standard deviation

	n (%) Observed Data	n (%) Imputed Data	Notations
Lack of family support (score 5-25)	**n = 202, 9 (4.3%) missing**	n = 211	
mean ± SD	11.68 ± 4.47	11.66 ± 4.39	similar mean standard deviation
Individual influencing factors			
Self-empowerment in ever having requested a doctor or nurse practitioner for a Pap test	**n = 201, 10 (4.7%) missing [10 not sure/do not know]**	n = 211	
mean ± SD	.54 ± .50	.53 ± .50	
Yes	108 (51.2%)	111 (52.6%)	similar mean standard deviation
No	93 (44.1%)	100 (47.4%)	similar percentages
Age, years, mean ± SD	**n = 208, 3 (1.4%) missing**	n = 211	
mean ± SD	49.85 ± 13.96 (range = 21-87 years)	49.85 ± 13.89 (range = 21-87 years)	similar mean standard deviation
Adaption to the U.S. Age, years, immigrated to U.S.	**n = 205, 6 (2.8%) missing**	n = 211	
mean ± SD	34.93 ± 14.63 (range = 1-87 years)	35.04 ± 14.50 (range = 1-87 years)	similar mean standard deviation
Years lived in the U.S.	**n = 205, 6 (2.8%) missing**	n = 211	
mean ± SD	15.29 ± 9.15 (range = .08-35 years)	15.24 ± 9.06 (range = .08-35 years)	similar mean standard deviation
English speaking ability	**n = 204, 7 (3.3%) missing**	n = 211	
mean ± SD	2.61 ± .98	2.61 ± .97	
None at all	29 (13.7%)	29 (13.7%)	
Poorly	56 (26.5%)	60 (28.4%)	
Average	93 (44.1%)	96 (45.5%)	
Well	17 (8.1%)	17 (8.1%)	
Fluently	9 (4.3%)	9 (4.3%)	similar mean standard deviation similar percentages

	n (%) Observed Data	n (%) Imputed Data	Notations
Identifies with a religion	**n = 205, 6 (2.8%) missing [of which 4 not sure/ do not know]**	n = 211	
mean ± SD	.97 ± .17	.97 ± .17	
Yes	199 (94.3%)	205 (97.2%)	similar mean standard deviation similar percentages
No	6 (2.8%)	6 (2.8%)	
Marital status	**n = 208, 3 (1.4%) missing**	n = 211	
mean ± SD	2.11 ± 1.69	2.11 ± 1.7	
Single	31 (14.7%)	31 (14.7%)	
Married	134 (63.5%)	136 (64.5%)	
Not married, living with a partner	5 (2.4%)	5 (2.4%)	
Separated	6 (2.8%)	6 (2.8%)	
Divorced	15 (7.1%)	16 (7.6%)	
Widowed	17 (8.1%)	17 (8.1%)	similar mean standard deviation similar percentages
Highest Educational Level	**n = 209, 2 (0.9%) missing**	n = 211	
mean ± SD	5.01 ± 1.94	5.03 ± 1.95	
No formal schooling, 0	2 (.9%)	2 (.9%)	
Elementary school, kindergarten to 5th grade	21 (10%)	21 (10%)	
Middle school, 6th to 8th grade	30 (14.2%)	30 (14.2%)	
Some high school, 9th to 11th grade	29 (13.7%)	29 (13.7%)	
High school, 12th grade, G.E.D.	51 (24.2%)	51 (24.2%)	
Some college, less than 2 years, vocational or technical school	24 (11.4%)	24 (11.4%)	
Associate's degree, 2-3 years	23 (10.9%)	24 (11.4%)	
Bachelor's degree, 4 years	25 (11.8%)	26 (12.3%)	
Master's degree	3 (1.4%)	3 (1.4%)	
Doctoral degree	1 (.5%)	1 (.5%)	similar mean standard deviation similar percentages
Having someone in the	**n = 205, 6 (2.8%) missing**	n = 211	

	n (%) Observed Data	n (%) Imputed Data	Notations
immediate family who had cervical cancer	**[of which 4 not sure/ do not know]**		
mean ± SD	.05 ± .22	.05 ± .21	
Yes	10 (4.7%)	10 (4.7%)	similar mean standard deviation similar percentages
No	195 (92.4%)	201 (95.3%)	
External influencing factors			
Doctor or nurse practitioner ever having recommended Pap testing	**n = 192, 19 (9%) missing [of which 15 not sure/do not know]**	n = 211	
mean ± SD	.69 ± .46	.67 ± .47	
Yes	132 (62.6%)	142 (67.3%)	similar mean standard deviation similar percentages
No	60 (28.4%)	69 (32.7%)	
Family member(s) ever having suggested Pap testing	**n = 205, 6 (2.8%) missing [6 not sure/do not know]**	n = 211	
mean ± SD	.50 ± .50	.50 ± .50	
Yes	102 (48.3%)	106 (50.2%)	similar mean standard deviation similar percentages
No	103 (48.8%)	105 (49.8%)	
Friend(s) ever having suggested Pap testing	**n = 203, 8 (3.8%) missing [of which 6 not sure/do not know]**	n = 211	
mean ± SD	.56 ± .50	.56 ± .50	
Yes	114 (54%)	119 (56.4%)	similar mean standard deviation similar percentages
No	89 (42.2%)	92 (43.6%)	

	n (%) Observed Data	n (%) Imputed Data	Notations
Having a regular place of care	**n = 194, 17 (8.1%) missing [of which 13 not sure/do not know]**	n = 211	
mean ± SD	.81 ± .40	.78 ± .42	
Yes	157 (74.4%)	164 (77.7%)	similar mean standard deviation similar percentages
No	37 (17.5%)	47 (22.3%)	
Having a regular primary health care provider	**n = 197, 14 (6.6%) missing [of which 10 not sure/do not know]**	n = 211	
mean ± SD	.81 ± .40	.80 ± .40	
Yes	160 (75.8%)	169 (80.1%)	similar mean standard deviation similar percentages
No	37 (17.5%)	42 (19.9%)	
Having health care insurance coverage	**n = 203, 8 (3.8%) missing [of which 6 not sure/do not know]**	n = 211	
mean ± SD	.77 ± .42	.76 ± .43	
Yes	156 (73.9%)	161 (76.3%)	similar mean standard deviation similar percentages
No	47 (22.3%)	50 (23.7%)	
Quality of care from the health care system (score 5-25) mean ± SD	**n = 204, 7 (3.3%) missing** 19.02 ± 2.8	n = 211 19 ± 2.76	similar mean standard deviation
PART OF PRIMARY AIM 2			
Having ever heard of the HPV vaccine	**n = 186, 25 (11.8%) missing [of which 20 not sure/do not know]**	n = 211	
mean ± SD	.37 ± .48	.38 ± .49	
Yes	68 (32.2%)	80 (37.9%)	similar mean standard deviation

	n (%) Observed Data	n (%) Imputed Data	Notations
No	118 (55.9%)	131 (62.1%)	somewhat similar percentages
Would recommend the HPV vaccine to others who would qualify	**n = 164, 47 (22.3%) missing [of which 36 not sure/do not know]**	n = 211	
mean ± SD	.69 ± .46	.68 ± .47	
Yes	113 (53.6%)	144 (68.2%)	similar mean standard deviation somewhat similar percentages
No	51 (24.2%)	67 (31.8%)	
PART OF PRIMARY AIM 3			
Know where to go to get a free or low-cost Pap test	**n = 188, 23 (10.9%) missing [of which 18 not sure/do not know]**	n = 211	
mean ± SD	.13 ± .33	.11 ± .32	
Yes	24 (11.4%)	24 (11.4%)	similar mean standard deviation somewhat similar percentages
No	164 (77.7%)	187 (88.6%)	
SECONDARY AIM 4			
Exposure to media regarding cervical cancer and Pap testing (heard of, read, or seen anything for example on the television, radio, newspaper, booklet, brochure, internet)	**n = 195, 16 (7.6%) missing [of which 15 not sure/do not know]**	n = 211	
mean ± SD	.68 ± .47	.67 ± .47	
Yes	132 (62.6%)	141 (66.8%)	similar mean standard deviation similar percentages
No	63 (29.9%)	70 (33.2%)	

Note. n, sample; %, percentage; Pap, Papanicolaou; ± SD, plus or minus standard deviation; U.S., United States; HPV, human papilloma virus.
Missing is defined as a no response, two or more responses, and not sure/do not know responses. Data were determined to be missing at random and the extent of missing responses were primarily attributed to not sure/do not know marked responses. Thirty-three variables were used for the maximum likelihood imputation method of which knowing Pap tests are necessary for women who are asymptomatic, sexually inactive, or postmenopausal was the only variable with complete data across cases. The hot-deck imputation method was performed to impute missing data for marital status and highest educational level which presented with minimal missing data using a pattern matching approach in that scores from a group of similar cases were matched on primarily five background characteristics/variables and imputing a score from that group to impute missing data (matching variables: having a regular place of care, regular primary health care provider, a doctor or nurse practitioner ever having recommended Pap testing, a family member(s) ever having suggested Pap testing, and self-empowerment [ever having a friend(s) suggested Pap testing was an additional matching variable that helped guide interpretation of a score for one of the missing cases for educational level]). Maximum likelihood as an imputation method was performed to impute missing data for the dependent variable, Pap test adherence.

Appendix N

Table 2. Correlation Matrix on the Observed Data

Observed Data		Pap test receipt	Cervical cancer awareness	Pap test awareness	% Knowledge score	Confidentiality issues	Perceived susceptibility	Perceived benefits	Perceived common barriers	Utilization of eastern medicine	Modesty	Crisis orientation	Lack of family support	Self-empowerment	Age, years	Age, years, immigrated to U.S.
Pap test receipt	Pearson Correlation	1														
	Sig. (2-tailed)															
	n	202														
Cervical cancer awareness	Pearson Correlation	.120	1													
	Sig. (2-tailed)	.098														
	n	193	200													
Pap test awareness	Pearson Correlation	.570**	.219**	1												
	Sig. (2-tailed)	.000	.002													
	n	196	191	200												
% Knowledge	Pearson Correlation	.232**	.099	.294**	1											

Observed Data		Pap test receipt	Cervical cancer awareness	Pap test awareness	% Knowledge score	Confidentiality issues	Perceived susceptibility	Perceived benefits	Perceived common barriers	Utilization of eastern medicine	Modesty	Crisis orientation	Lack of family support	Self-empowerment	Age, years	Age, years, immigrated to U.S.
score	Sig. (2-tailed)	.001	.163	.000												
	n	202	200	200	211											
Confidentia-ity issues	Pearson Correlation	-.101	-.040	-.236**	-.184**	1										
	Sig. (2-tailed)	.157	.578	.001	.008											
	n	198	196	197	207	207										
Perceived susceptibility	Pearson Correlation	.006	-.026	-.051	.008	.163*	1									
	Sig. (2-tailed)	.938	.722	.480	.906	.020										
	n	196	194	195	205	204	205									
Perceived benefits	Pearson Correlation	.100	.025	.030	.112	.001	.176*	1								
	Sig. (2-tailed)	.164	.733	.676	.109	.987	.012									
	n	196	194	195	205	204	202	205								
Perceived common	Pearson Correlation	-.204**	-.167*	-.305**	-.187**	.621**	.166*	.051	1							

Observed Data		Pap test receipt	Cervical cancer awareness	Pap test awareness	% Knowledge score	Confidentiality issues	Perceived susceptibility	Perceived benefits	Perceived common barriers	Utilization of eastern medicine	Modesty	Crisis orientation	Lack of family support	Self-empowerment	Age, years	Age, years, immigrated to U.S.
barriers	Sig. (2-tailed)	.004	.020	.000	.007	.000	.018	.473								
	n	196	194	195	205	205	203	202	205							
Utilization of eastern medicine	Pearson Correlation	-.249**	-.146*	-.253**	-.218**	.287**	.195**	.209**	.347**	1						
	Sig. (2-tailed)	.000	.042	.000	.002	.000	.005	.003	.000							
	n	196	194	195	205	204	203	204	202	205						
Modesty	Pearson Correlation	-.186**	-.161*	-.283**	-.207**	.513**	.223**	.059	.641**	.437**	1					
	Sig. (2-tailed)	.009	.025	.000	.003	.000	.001	.405	.000	.000						
	n	196	194	195	205	204	203	204	202	205	205					
Crisis orientation	Pearson Correlation	-.120	-.082	-.161*	-.174*	.246**	-.082	-.450**	.244**	-.003	.108	1				
	Sig. (2-tailed)	.091	.251	.024	.012	.000	.243	.000	.000	.960	.125					
	n	198	196	196	207	205	203	205	203	205	205	207				
Lack of family	Pearson Correlation	-.229**	-.050	-.032	-.225**	-.046	-.170*	-.445**	-.054	-.190**	-.082	.392**	1			

Observed Data		Pap test receipt	Cervical cancer awareness	Pap test awareness	% Knowledge score	Confidentiality issues	Perceived susceptibility	Perceived benefits	Perceived common barriers	Utilization of eastern medicine	Modesty	Crisis orientation	Lack of family support	Self-empowerment	Age, years	Age, years, immigrated to U.S.
support	Sig. (2-tailed)	.001	.492	.657	.001	.521	.016	.000	.448	.007	.244	.000				
	n	194	191	193	202	201	202	201	200	202	202	202	202			
Self-empower-ment	Pearson Correlation	.433**	.087	.228**	.181**	-.065	.056	.168*	-.105	-.089	-.112	-.166*	-.208**	1		
	Sig. (2-tailed)	.000	.231	.001	.010	.361	.437	.019	.146	.216	.120	.020	.004			
	n	195	191	191	201	197	195	195	195	195	195	197	192	201		
Age, years	Pearson Correlation	.191**	-.096	-.028	.090	.074	.066	.042	.109	.035	.093	.033	-.338**	.052	1	
	Sig. (2-tailed)	.007	.179	.699	.196	.289	.350	.555	.120	.616	.185	.644	.000	.469		
	n	200	198	199	208	205	203	204	203	204	204	205	201	198	208	
Age, years, immigrated to U.S.	Pearson Correlation	-.021	-.103	-.208**	-.026	.117	.040	-.020	.148*	.142*	.102	.121	-.257**	-.023	.733**	1
	Sig. (2-tailed)	.764	.149	.003	.712	.098	.575	.781	.037	.045	.150	.085	.000	.749	.000	
	n	197	196	196	205	202	200	201	200	201	201	202	198	195	205	205
Years lived in the U.S.	Pearson Correlation	.381**	.026	.280**	.087	-.117	.048	.101	-.124	-.119	-.014	-.141*	-.092	.183*	.296**	-.306**

Observed Data		Pap test receipt	Cervical cancer awareness	Pap test awareness	% Knowledge score	Confidentiality issues	Perceived susceptibility	Perceived benefits	Perceived common barriers	Utilization of eastern medicine	Modesty	Crisis orientation	Lack of family support	Self-empowerment	Age, years	Age, years, immigrated to U.S.
	Sig. (2-tailed)	.000	.723	.000	.215	.096	.503	.155	.081	.094	.848	.046	.197	.010	.000	.000
	n	197	196	196	205	202	200	201	200	201	201	202	198	195	205	205
English speaking ability	Pearson Correlation	.152*	.110	.320**	.045	-.247**	.024	.056	-.345**	-.194**	-.216**	-.255**	.156*	.141*	-.475**	-.604**
	Sig. (2-tailed)	.034	.129	.000	.524	.000	.736	.425	.000	.006	.002	.000	.028	.049	.000	.000
	n	196	194	194	204	201	199	202	199	201	201	202	198	195	203	200
Identifies with a religion	Pearson Correlation	-.027	.003	-.038	-.073	-.101	-.096	-.019	.024	-.012	.023	.058	-.044	.017	-.007	-.012
	Sig. (2-tailed)	.711	.963	.593	.298	.152	.175	.794	.734	.863	.741	.413	.535	.809	.924	.868
	n	196	194	195	205	202	200	201	200	201	201	202	198	195	204	201
Marital status	Pearson Correla-tion	-.156*	.020	-.035	-.053	-.107	.016	-.105	.006	.055	.046	.007	-.005	-.062	.132	.069
	Sig. (2-tailed)	.028	.783	.620	.451	.127	.824	.134	.938	.437	.512	.918	.942	.385	.057	.326
	n	199	197	198	208	205	203	204	203	204	204	205	201	199	207	204
Highest education level	Pearson Correla-tion	.198**	.185**	.337**	.118	-.182**	.104	.089	-.392**	-.173*	-.241**	-.288**	.132	.129	-.420**	-.410**

Observed Data		Pap test receipt	Cervical cancer awareness	Pap test awareness	% Knowledge score	Confidentiality issues	Perceived susceptibility	Perceived benefits	Perceived common barriers	Utilization of eastern medicine	Modesty	Crisis orientation	Lack of family support	Self-empowerment	Age, years	Age, years, immigrated to U.S.
	Sig. (2-tailed)	.005	.009	.000	.090	.009	.139	.203	.000	.013	.001	.000	.061	.069	.000	.000
	n	200	198	199	209	206	204	205	204	205	205	206	202	199	208	205
Someone in the immediate family who had cervical cancer	Pearson Correlation	-.003	.089	-.016	-.031	-.099	.191**	-.037	-.064	-.076	.005	.007	.077	-.066	.002	.003
	Sig. (2-tailed)	.966	.219	.825	.662	.162	.007	.603	.371	.285	.943	.917	.279	.362	.983	.964
	n	197	194	196	205	202	200	201	200	201	201	202	199	195	204	201
Doctor or nurse practitioner ever having recommend-ed Pap testing	Pearson Correlation	.661**	.153*	.492**	.222**	-.119	.030	.190**	-.205**	-.096	-.121	-.157*	-.234**	.363**	.092	-.122
	Sig. (2-tailed)	.000	.039	.000	.002	.104	.687	.009	.005	.189	.099	.031	.001	.000	.209	.097
	n	188	183	184	192	189	187	189	188	188	188	190	186	185	190	187
Family member(s) ever having suggested Pap testing	Pearson Correlation	.234**	.100	.136	.244**	-.014	-.002	.132	.074	-.027	.011	-.009	-.307**	.338**	.269**	.158*
	Sig. (2-tailed)	.001	.163	.058	.000	.847	.980	.063	.302	.700	.872	.901	.000	.000	.000	.026
	n	196	195	194	205	201	199	200	199	200	200	202	197	196	202	199
Friend(s) ever having suggested	Pearson Correlation	.341**	.133	.330**	.163*	-.125	.079	.229**	.014	-.017	-.064	-.028	-.370**	.340**	.176*	.005

Observed Data		Pap test receipt	Cervical cancer awareness	Pap test awareness	% Knowledge score	Confidentiality issues	Perceived susceptibility	Perceived benefits	Perceived common barriers	Utilization of eastern medicine	Modesty	Crisis orientation	Lack of family support	Self-empowerment	Age, years	Age, years, immigrated to U.S.
Pap testing	Sig. (2-tailed)	.000	.065	.000	.020	.079	.271	.001	.846	.811	.370	.698	.000	.000	.013	.946
	n	196	193	194	203	199	197	197	197	197	197	199	194	194	201	198
Regular place of care	Pearson Correlation	.348**	.042	.242**	.117	-.076	.035	.006	-.204**	-.143	-.159*	-.087	-.115	.352**	.186**	.005
	Sig. (2-tailed)	.000	.572	.001	.105	.300	.633	.931	.005	.050	.028	.232	.119	.000	.010	.944
	n	187	184	186	194	190	189	188	188	189	189	190	186	185	192	189
Regular primary health care provider	Pearson Correlation	.268**	.105	.141	.033	-.060	.039	-.044	-.149*	-.167*	-.118	-.064	-.068	.184*	.155*	-.077
	Sig. (2-tailed)	.000	.153	.052	.648	.405	.594	.548	.039	.021	.103	.379	.352	.011	.030	.285
	n	192	188	190	197	193	191	192	192	192	192	194	190	189	195	192
Health care insurance coverage	Pearson Correlation	.275**	.004	.213**	.140*	-.103	-.002	-.002	-.182*	-.166*	-.130	-.116	-.011	.299**	.043	-.123
	Sig. (2-tailed)	.000	.953	.003	.047	.148	.973	.978	.010	.019	.067	.103	.879	.000	.546	.083
	n	194	192	193	203	200	198	199	198	199	199	200	196	193	202	199
Quality of care from the health	Pearson Correlation	-.011	.024	.176*	.121	-.401**	-.022	.285**	-.292**	-.085	-.207**	-.362**	-.082	.095	-.126	-.109

Observed Data		Pap test receipt	Cervical cancer awareness	Pap test awareness	% Knowledge score	Confidentiality issues	Perceived susceptibility	Perceived benefits	Perceived common barriers	Utilization of eastern medicine	Modesty	Crisis orientation	Lack of family support	Self-empowerment	Age, years	Age, years, immigrated to U.S.
care system	Sig. (2-tailed)	.876	.741	.014	.085	.000	.760	.000	.000	.231	.003	.000	.246	.189	.073	.125
	n	195	193	194	204	204	202	203	203	202	202	203	200	194	203	200
Ever heard of the HPV vaccine	Pearson Correlation	.197**	.155*	.365**	.154*	-.064	.083	.190**	-.187*	-.132	-.077	-.151*	-.039	.093	-.049	-.150*
	Sig. (2-tailed)	.008	.039	.000	.036	.388	.266	.010	.012	.074	.301	.040	.606	.219	.511	.043
	n	179	177	177	186	183	181	184	181	183	183	184	181	176	185	182
Would recommend the HPV vaccine to others who would qualify	Pearson Correlation	.228**	.013	.229**	.196*	.035	.055	.217**	-.224**	-.044	-.107	-.156*	-.098	.312**	-.095	-.150
	Sig. (2-tailed)	.004	.870	.004	.012	.658	.486	.005	.004	.574	.175	.046	.214	.000	.226	.058
	n	158	155	156	164	163	162	163	163	163	163	164	162	157	163	160
Know where to go to get a free or low-cost Pap test	Pearson Correlation	.063	.118	.082	-.034	.056	.119	.109	.011	.056	.044	-.137	-.125	.009	-.020	-.090
	Sig. (2-tailed)	.394	.119	.274	.646	.447	.107	.138	.880	.450	.551	.063	.093	.909	.781	.223
	n	183	177	182	188	187	184	186	185	185	185	186	182	179	187	184
Exposure to media	Pearson Correlation	.120	.366**	.324**	.230**	-.104	.048	.197**	-.130	.018	-.105	-.202**	-.320**	.176*	-.041	-.080

Observed Data		Pap test receipt	Cervical cancer awareness	Pap test awareness	% Knowledge score	Confidentiality issues	Perceived susceptibility	Perceived benefits	Perceived common barriers	Utilization of eastern medicine	Modesty	Crisis orientation	Lack of family support	Self-empowerment	Age, years	Age, years, immigrated to U.S.
	Sig. (2-tailed)	.102	.000	.000	.001	.152	.515	.006	.076	.808	.149	.005	.000	.016	.573	.272
	n	187	186	185	195	191	189	190	189	190	190	192	188	185	193	190

Correlation Matrix on the Observed Data continued

Observed Data		Years lived in the U.S.	English speaking proficiency	Identifies with a religion	Marital Status	Highest Educa-tion level	Someone in the immediate family who had cervical cancer	Doctor or nurse practitioner ever having recommend ed Pap testing	Family ever having suggested Pap testing	Friend(s) ever having suggested Pap testing	Regular place of care	Regular primary health care provider	Health care insurance coverage	Quality of care from the health care system	Ever heard of the HPV vaccine	Would recommend the HPV vaccine to others who would qualify	Know where to go to get a free or low-cost Pap test	Exposure to media
Years lived in the U.S.	Pearson Correlation	1																
	Sig. (2-tailed)																	
	n	205																
English speaking proficiency	Pearson Correlation	.332**	1															
	Sig. (2-tailed)	.000																
	n	200	204															
Identifies with a religion	Pearson Correlation	.011	-.038	1														
	Sig. (2-tailed)	.876	.596															
	n	201	200	205														

Observed Data		Years lived in the U.S.	English speaking proficiency	Identifies with a religion	Marital Status	Highest Educa-tion level	Someone in the immediate family who had cervical cancer	Doctor or nurse practitioner ever having recommend ed Pap testing	Family ever having suggested Pap testing	Friend(s) ever having suggested Pap testing	Regular place of care	Regular primary health care provider	Health care insurance coverage	Quality of care from the health care system	Ever heard of the HPV vaccine	Would recommend the HPV vaccine to others who would qualify	Know where to go to get a free or low-cost Pap test	Exposure to media
Marital status	Pearson Correla-tion	.057	-.096	-.005	1													
	Sig. (2-tailed)	.420	.173	.943														
	n	204	203	204	208													
Highest education level	Pearson Correla-tion	.115	.645**	-.104	-.104	1												
	Sig. (2-tailed)	.100	.000	.138	.133													
	n	205	204	205	208	209												
Someone in the immediate family who had cervical cancer	Pearson Correlation	-.012	-.004	.040	-.009	.021	1											
	Sig. (2-tailed)	.869	.961	.572	.901	.763												
	n	201	200	201	204	205	205											
Doctor or nurse practitioner	Pearson Correlation	.358**	.182*	-.038	-.026	.163*	-.025	1										

Observed Data		Years lived in the U.S.	English speaking proficiency	Identifies with a religion	Marital Status	Highest Educa-tion level	Someone in the immediate family who had cervical cancer	Doctor or nurse practitioner ever having recommend ed Pap testing	Family ever having suggested Pap testing	Friend(s) ever having suggested Pap testing	Regular place of care	Regular primary health care provider	Health care insurance coverage	Quality of care from the health care system	Ever heard of the HPV vaccine	Would recommend the HPV vaccine to others who would qualify	Know where to go to get a free or low-cost Pap test	Exposure to media
ever having recommended Pap testing	Sig. (2-tailed)	.000	.013	.603	.726	.025	.739											
	n	187	188	186	189	190	187	192										
Family member(s) ever having suggested Pap testing	Pearson Correlation	.146*	-.109	.033	.047	-.096	-.023	.425**	1									
	Sig. (2-tailed)	.039	.125	.644	.506	.172	.746	.000										
	n	199	199	199	202	203	199	189	205									
Friend(s) ever having suggested to Pap testing	Pearson Correlation	.217**	.072	.055	-.025	.022	.023	.549**	.517**	1								
	Sig. (2-tailed)	.002	.315	.443	.724	.754	.744	.000	.000									
	n	198	196	197	200	201	197	187	197	203								
Regular place of care	Pearson Correlation	.305**	.169*	-.007	-.175*	.130	-.019	.280**	.093	.257**	1							
	Sig. (2-tailed)	.000	.021	.927	.015	.073	.799	.000	.206	.000								
	n	189	188	188	191	192	190	177	188	187	194							

Observed Data		Years lived in the U.S.	English speaking proficiency	Identifies with a religion	Marital Status	Highest Educa-tion level	Someone in the immediate family who had cervical cancer	Doctor or nurse practitioner ever having recommended Pap testing	Family ever having suggested Pap testing	Friend(s) ever having suggested Pap testing	Regular place of care	Regular primary health care provider	Health care insurance coverage	Quality of care from the health care system	Ever heard of the HPV vaccine	Would recommend the HPV vaccine to others who would qualify	Know where to go to get a free or low-cost Pap test	Exposure to media
Regular primary health care provider	Pearson Correlation	.383**	.199**	-.005	-.028	.145*	.045	.237**	.013	.106	.813**	1						
	Sig. (2-tailed)	.000	.006	.942	.699	.044	.536	.001	.856	.143	.000							
	n	192	192	191	194	195	194	184	192	191	189	197						
Health care insurance coverage	Pearson Correlation	.278**	.299**	-.023	-.109	.236**	-.092	.228**	.141*	.113	.623**	.556**	1					
	Sig. (2-tailed)	.000	.000	.746	.122	.001	.196	.002	.048	.114	.000	.000						
	n	199	198	199	202	203	199	184	197	195	186	189	203					
Quality of care from the health care system	Pearson Correlation	.020	.172*	.096	-.046	.088	.064	.142	-.021	.050	.006	-.044	.087	1				
	Sig. (2-tailed)	.782	.015	.177	.518	.209	.368	.053	.765	.488	.939	.551	.222					
	n	200	200	200	203	204	200	187	198	196	187	190	198	204				
Ever heard of the HPV	Pearson Correlation	.225**	.306**	-.119	.039	.289**	-.036	.230**	.091	.118	.127	.102	.163*	.048	1			

Observed Data		Years lived in the U.S.	English speaking proficiency	Identifies with a religion	Marital Status	Highest Educa-tion level	Someone in the immediate family who had cervical cancer	Doctor or nurse practitioner ever having recommended Pap testing	Family ever having suggested Pap testing	Friend(s) ever having suggested Pap testing	Regular place of care	Regular primary health care provider	Health care insurance coverage	Quality of care from the health care system	Ever heard of the HPV vaccine	Would recommend the HPV vaccine to others who would qualify	Know where to go to get a free or low-cost Pap test	Exposure to media
vaccine	Sig. (2-tailed)	.002	.000	.111	.600	.000	.632	.002	.224	.116	.100	.179	.029	.520				
	n	182	183	182	185	186	183	171	182	179	170	174	181	182	186			
Would recommend the HPV vaccine to others who would qualify	Pearson Correlation	.087	.160*	-.120	-.067	.244**	-.129	.214**	.076	.134	.173*	.047	.288**	.077	.391**	1		
	Sig. (2-tailed)	.274	.044	.127	.395	.002	.103	.008	.344	.095	.033	.557	.000	.329	.000			
	n	160	160	163	163	164	161	154	159	157	153	157	159	162	150	164		
Know where to go to get a free or low-cost Pap test	Pearson Correlation	.044	.031	-.056	.042	.056	.062	.043	.076	.147*	.007	.072	-.041	-.080	.047	.041	1	
	Sig. (2-tailed)	.553	.674	.447	.564	.446	.400	.571	.305	.048	.931	.341	.579	.279	.537	.619		
	n	184	184	184	187	188	185	173	183	181	172	175	183	186	171	147	188	
Exposure to media	Pearson Correlation	.074	.150*	-.024	.116	.184*	-.089	.169*	.116	.234**	-.003	-.064	.082	.049	.293**	.251**	.198**	1
	Sig. (2-tailed)	.311	.040	.744	.107	.010	.221	.024	.111	.001	.973	.390	.261	.499	.000	.002	.008	

Observed Data	Years lived in the U.S.	English speaking proficiency	Identifies with a religion	Marital Status	Highest Educa-tion level	Someone in the immediate family who had cervical cancer	Doctor or nurse practitioner ever having recommend ed Pap testing	Family ever having suggested Pap testing	Friend(s) ever having suggested Pap testing	Regular place of care	Regular primary health care provider	Health care insurance coverage	Quality of care from the health care system	Ever heard of the HPV vaccine	Would recommend the HPV vaccine to others who would qualify	Know where to go to get a free or low-cost Pap test	Exposure to media
n	190	189	190	193	194	192	179	190	188	180	184	188	189	178	157	177	195

Note. Pap, Papanicolaou; %, percentage; U.S., United States; Sig., significance; n, sample size; HPV, human papilloma virus.
* $p < .05$. ** $p < .01$.

Appendix O

Table 3. Correlation Matrix on the Imputed Data

Imputed Data (n = 211)		Pap test receipt	Cervical cancer awareness	Pap test awareness	% Knowledge score	Confidentiality issues	Perceived susceptibility	Perceived benefits	Perceived common barriers	Utilization of eastern medicine	Modesty	Crisis orientation	Lack of family support	Self-empowerment	Age, years	Age, years, immigrated to U.S.
Pap test receipt	Pearson Correlation	1														
	Sig. (2-tailed)															
	n	211														
Cervical cancer awareness	Pearson Correlation	.097	1													
	Sig. (2-tailed)	.158														
	n	211	211													
Pap test awareness	Pearson Correlation	.582**	.233**	1												
	Sig. (2-tailed)	.000	.001													
	n	211	211	211												
% Knowledge score	Pearson Correlation	.267**	.091	.307**	1											
	Sig. (2-tailed)	.000	.190	.000												
	n	211	211	211	211											

Imputed Data (n = 211)		Pap test receipt	Cervical cancer awareness	Pap test awareness	% Knowledge score	Confidentiality issues	Perceived susceptibility	Perceived benefits	Perceived common barriers	Utilization of eastern medicine	Modesty	Crisis orientation	Lack of family support	Self-empowerment	Age, years	Age, years, immigrated to U.S.
Confidentia-lity issues	Pearson Correlation	-.154*	-.021	-.239**	-.184**	1										
	Sig. (2-tailed)	.026	.762	.000	.007											
	n	211	211	211	211	211										
Perceived susceptibility	Pearson Correlation	.008	-.014	-.032	.007	.162*	1									
	Sig. (2-tailed)	.911	.845	.645	.925	.018										
	n	211	211	211	211	211	211									
Perceived benefits	Pearson Correlation	.149*	.001	.086	.096	.018	.187**	1								
	Sig. (2-tailed)	.030	.985	.212	.164	.794	.006									
	n	211	211	211	211	211	211	211								
Perceived common barriers	Pearson Correlation	-.236**	-.154*	-.290**	-.196**	.620**	.168*	.067	1							
	Sig. (2-tailed)	.001	.025	.000	.004	.000	.014	.333								
	n	211	211	211	211	211	211	211	211							
Utilization of eastern medicine	Pearson Correlation	-.251**	-.172*	-.254**	-.238**	.306**	.195**	.216**	.363**	1						
	Sig. (2-tailed)	.000	.012	.000	.000	.000	.004	.002	.000							

Imputed Data (n = 211)		Pap test receipt	Cervical cancer awareness	Pap test awareness	% Knowledge score	Confidentiality issues	Perceived susceptibility	Perceived benefits	Perceived common barriers	Utilization of eastern medicine	Modesty	Crisis orientation	Lack of family support	Self-empowerment	Age, years	Age, years, immigrated to U.S.
	n	211	211	211	211	211	211	211	211	211						
Modesty	Pearson Correlation	-.189**	-.143*	-.285**	-.239**	.534**	.219**	.069	.655**	.449**	1					
	Sig. (2-tailed)	.006	.038	.000	.000	.000	.001	.319	.000	.000						
	n	211	211	211	211	211	211	211	211	211	211					
Crisis orientation	Pearson Correlation	-.165*	-.051	-.194**	-.175*	.251**	-.083	-.447**	.249**	.003	.115	1				
	Sig. (2-tailed)	.017	.459	.005	.011	.000	.227	.000	.000	.971	.097					
	n	211	211	211	211	211	211	211	211	211	211	211				
Lack of family support	Pearson Correlation	-.264**	-.037	-.076	-.218**	-.042	-.167*	-.442**	-.052	-.190**	-.073	.391**	1			
	Sig. (2-tailed)	.000	.594	.272	.001	.542	.015	.000	.453	.006	.291	.000				
	n	211	211	211	211	211	211	211	211	211	211	211	211			
Self-empower-ment	Pearson Correlation	.444**	.100	.246**	.191**	-.112	.047	.169*	-.141*	-.118	-.134	-.178**	-.215**	1		
	Sig. (2-tailed)	.000	.146	.000	.005	.106	.501	.014	.041	.087	.052	.010	.002			
	n	211	211	211	211	211	211	211	211	211	211	211	211	211		
Age, years	Pearson Correlation	.191**	-.113	-.034	.095	.078	.066	.045	.112	.034	.093	.015	-.338**	.025	1	

Imputed Data (n = 211)		Pap test receipt	Cervical cancer awareness	Pap test awareness	% Knowledge score	Confidentiality issues	Perceived susceptibility	Perceived benefits	Perceived common barriers	Utilization of eastern medicine	Modesty	Crisis orientation	Lack of family support	Self-empowerment	Age, years	Age, years, immigrated to U.S.
	Sig. (2-tailed)	.005	.102	.619	.170	.259	.342	.512	.105	.620	.179	.826	.000	.716		
	n	211	211	211	211	211	211	211	211	211	211	211	211	211	211	
Age, years, immigrated to U.S.	Pearson Correlation	-.032	-.119	-.228**	-.044	.121	.029	-.032	.152*	.135*	.096	.127	-.240**	-.055	.733**	1
	Sig. (2-tailed)	.641	.084	.001	.521	.079	.677	.647	.027	.049	.163	.066	.000	.425	.000	
	n	211	211	211	211	211	211	211	211	211	211	211	211	211	211	211
Years lived in the U.S.	Pearson Correlation	.373**	.020	.294**	.099	-.112	.055	.113	-.125	-.113	-.003	-.156*	-.097	.184**	.299**	-.304**
	Sig. (2-tailed)	.000	.771	.000	.151	.106	.429	.101	.070	.101	.967	.023	.160	.007	.000	.000
	n	211	211	211	211	211	211	211	211	211	211	211	211	211	211	211
English speaking ability	Pearson Correlation	.166*	.102	.345**	.056	-.248**	.022	.063	-.349**	-.197**	-.222**	-.262**	.149*	.164*	-.472**	-.602**
	Sig. (2-tailed)	.016	.140	.000	.419	.000	.754	.365	.000	.004	.001	.000	.031	.017	.000	.000
	n	211	211	211	211	211	211	211	211	211	211	211	211	211	211	211
Identifies with a religion	Pearson Correlation	-.035	.003	-.038	-.073	-.097	-.098	-.017	.029	-.007	.027	.060	-.046	.009	-.010	-.011
	Sig. (2-tailed)	.613	.970	.581	.294	.159	.157	.810	.672	.917	.693	.387	.508	.897	.884	.869
	n	211	211	211	211	211	211	211	211	211	211	211	211	211	211	211

Imputed Data (n = 211)		Pap test receipt	Cervical cancer awareness	Pap test awareness	% Knowledge score	Confidentiality issues	Perceived susceptibility	Perceived benefits	Perceived common barriers	Utilization of eastern medicine	Modesty	Crisis orientation	Lack of family support	Self-empowerment	Age, years	Age, years, immigrated to U.S.
Marital status	Pearson Correlation	-.097	.013	-.063	-.068	-.088	.000	-.112	.014	.058	.063	.012	.002	-.017	.126	.065
	Sig. (2-tailed)	.160	.851	.364	.328	.201	.996	.104	.843	.398	.362	.867	.980	.802	.068	.348
	n	211	211	211	211	211	211	211	211	211	211	211	211	211	211	211
Highest education level	Pearson Correlation	.222**	.187**	.331**	.108	-.164*	.093	.080	-.377**	-.170*	-.230**	-.282**	.126	.143*	-.404**	-.400**
	Sig. (2-tailed)	.001	.007	.000	.118	.017	.180	.248	.000	.014	.001	.000	.069	.038	.000	.000
	n	211	211	211	211	211	211	211	211	211	211	211	211	211	211	211
Someone in the immediate family who had cervical cancer	Pearson Correlation	-.074	.098	-.068	-.031	-.101	.190**	-.037	-.065	-.076	.000	.003	.076	-.056	-.015	.009
	Sig. (2-tailed)	.287	.157	.326	.656	.145	.006	.596	.345	.269	.994	.961	.273	.416	.825	.900
	n	211	211	211	211	211	211	211	211	211	211	211	211	211	211	211
Doctor or nurse practitioner ever having recommend Pap testing	Pearson Correlation	.679**	.052	.496**	.253**	-.142*	.001	.194**	-.241**	-.114	-.146*	-.175*	-.252**	.411**	.070	-.122
	Sig. (2-tailed)	.000	.455	.000	.000	.039	.985	.005	.000	.100	.034	.011	.000	.000	.314	.078
	n	211	211	211	211	211	211	211	211	211	211	211	211	211	211	211
Family member(s) ever having	Pearson Correlation	.263**	.105	.153*	.243**	-.033	-.022	.117	.071	-.043	.012	-.003	-.296**	.327**	.259**	.144*

Imputed Data (n = 211)		Pap test receipt	Cervical cancer awareness	Pap test awareness	% Knowledge score	Confidentiality issues	Perceived susceptibility	Perceived benefits	Perceived common barriers	Utilization of eastern medicine	Modesty	Crisis orientation	Lack of family support	Self-empowerment	Age, years	Age, years, immigrated to U.S.
suggested Pap testing	Sig. (2-tailed)	.000	.128	.026	.000	.638	.747	.091	.304	.532	.860	.964	.000	.000	.000	.036
	n	211	211	211	211	211	211	211	211	211	211	211	211	211	211	211
Friend(s) ever having suggested Pap testing	Pearson Correlation	.338**	.135	.316**	.148*	-.134	.071	.217**	.009	-.028	-.095	-.012	-.359**	.371**	.171*	.000
	Sig. (2-tailed)	.000	.051	.000	.032	.051	.302	.002	.892	.688	.170	.867	.000	.000	.013	.996
	n	211	211	211	211	211	211	211	211	211	211	211	211	211	211	211
Regular place of care	Pearson Correlation	.312**	.013	.246**	.123	-.076	.052	.018	-.206**	-.147*	-.170*	-.113	-.118	.313**	.132	-.071
	Sig. (2-tailed)	.000	.849	.000	.074	.273	.456	.799	.003	.033	.013	.100	.088	.000	.055	.304
	n	211	211	211	211	211	211	211	211	211	211	211	211	211	211	211
Regular primary health care provider	Pearson Correlation	.279**	.072	.184**	.127	-.125	.021	-.079	-.207**	-.192**	-.172*	-.070	-.076	.216**	.142*	-.066
	Sig. (2-tailed)	.000	.297	.007	.066	.071	.765	.256	.003	.005	.013	.313	.272	.002	.039	.340
	n	211	211	211	211	211	211	211	211	211	211	211	211	211	211	211
Health care insurance coverage	Pearson Correlation	.312**	-.032	.220**	.136*	-.061	.006	.027	-.157*	-.156*	-.108	-.106	-.074	.297**	.093	-.110
	Sig. (2-tailed)	.000	.644	.001	.049	.377	.932	.701	.023	.023	.117	.124	.283	.000	.179	.110
	n	211	211	211	211	211	211	211	211	211	211	211	211	211	211	211

Imputed Data (n = 211)		Pap test receipt	Cervical cancer awareness	Pap test awareness	% Knowledge score	Confidentiality issues	Perceived susceptibility	Perceived benefits	Perceived common barriers	Utilization of eastern medicine	Modesty	Crisis orientation	Lack of family support	Self-empowerment	Age, years	Age, years, immigrated to U.S.
Quality of care from the health care system	Pearson Correlation	.050	.026	.201**	.130	-.404**	-.015	.279**	-.299**	-.101	-.226**	-.365**	-.076	.122	-.120	-.112
	Sig. (2-tailed)	.473	.708	.003	.060	.000	.825	.000	.000	.142	.001	.000	.271	.078	.083	.106
	n	211	211	211	211	211	211	211	211	211	211	211	211	211	211	211
Ever heard of the HPV vaccine	Pearson Correlation	.234**	.210**	.359**	.201**	-.119	.096	.160*	-.263**	-.141*	-.143*	-.165*	-.063	.116	-.018	-.126
	Sig. (2-tailed)	.001	.002	.000	.003	.085	.164	.020	.000	.040	.038	.016	.366	.094	.800	.069
	n	211	211	211	211	211	211	211	211	211	211	211	211	211	211	211
Would recommend the HPV vaccine to others who would qualify	Pearson Correlation	.300**	-.022	.236**	.192**	-.047	-.021	.148*	-.308**	-.147*	-.188**	-.113	-.023	.352**	-.076	-.157*
	Sig. (2-tailed)	.000	.750	.001	.005	.495	.766	.032	.000	.033	.006	.101	.739	.000	.273	.022
	n	211	211	211	211	211	211	211	211	211	211	211	211	211	211	211
Know where to go to get a free or low-cost Pap test	Pearson Correlation	.073	.116	.080	-.021	.023	.103	.107	-.005	.059	.066	-.114	-.111	.011	-.021	-.088
	Sig. (2-tailed)	.289	.092	.247	.759	.740	.137	.120	.945	.390	.340	.099	.108	.872	.763	.205
	n	211	211	211	211	211	211	211	211	211	211	211	211	211	211	211
Exposure to media	Pearson Correlation	.163*	.376**	.352**	.246**	-.143*	.044	.181**	-.155*	-.016	-.116	-.215**	-.335**	.198**	.011	-.064
	Sig. (2-tailed)	.018	.000	.000	.000	.038	.529	.009	.024	.813	.092	.002	.000	.004	.872	.358

Imputed Data (n = 211)	Pap test receipt	Cervical cancer awareness	Pap test awareness	% Knowledge score	Confidentiality issues	Perceived susceptibility	Perceived benefits	Perceived common barriers	Utilization of eastern medicine	Modesty	Crisis orientation	Lack of family support	Self-empowerment	Age, years	Age, years, immigrated to U.S.
n	211	211	211	211	211	211	211	211	211	211	211	211	211	211	211

Correlation Matrix on the Imputed Data continued

Imputed Data (n = 211)		Years lived in the U.S.	English speaking proficiency	Identifies with a religion	Marital Status	Highest Educa-tion level	Someone in the immediate family who had cervical cancer	Doctor or nurse practitioner ever having recommend Pap testing	Family member(s) ever having suggested Pap testing	Friend(s) ever having suggested Pap testing	Regular place of care	Regular primary health care provider	Health care insurance coverage	Quality of care from the health care system	Ever heard of the HPV vaccine	Would recommend the HPV vaccine to others who would qualify	Know where to go to get a free or low-cost Pap test	Exposure to media
Years lived in the U.S.	Pearson Correlation	1																
	Sig. (2-tailed)																	
	n	211																
English speaking proficiency	Pearson Correlation	.320**	1															
	Sig. (2-tailed)	.000																
	n	211	211															
Identifies with a religion	Pearson Correlation	.006	-.040	1														
	Sig. (2-tailed)	.936	.561															
	n	211	211	211														
Marital status	Pearson Correlation	.061	-.099	-.006	1													

Imputed Data (n = 211)		Years lived in the U.S.	English speaking proficiency	Identifies with a religion	Marital Status	Highest Educa-tion level	Someone in the immediate family who had cervical cancer	Doctor or nurse practitioner ever having recommend Pap testing	Family member(s) ever having suggested Pap testing	Friend(s) ever having suggested Pap testing	Regular place of care	Regular primary health care provider	Health care insurance coverage	Quality of care from the health care system	Ever heard of the HPV vaccine	Would recommend the HPV vaccine to others who would qualify	Know where to go to get a free or low-cost Pap test	Exposure to media
	Sig. (2-tailed)	.375	.154	.933														
	n	211	211	211	211													
Highest education level	Pearson Correlation	.125	.634**	-.100	-.093	1												
	Sig. (2-tailed)	.070	.000	.149	.177													
	n	211	211	211	211	211												
Someone in the immediate family who had cervical cancer	Pearson Correlation	-.038	-.002	.038	-.014	.019	1											
	Sig. (2-tailed)	.584	.982	.581	.836	.782												
	n	211	211	211	211	211	211											
Doctor or nurse practitioner ever having recommended Pap testing	Pearson Correlation	.332**	.208**	-.058	-.033	.194**	-.082	1										
	Sig. (2-tailed)	.000	.002	.398	.637	.005	.234											
	n	211	211	211	211	211	211	211										

Imputed Data (n = 211)		Years lived in the U.S.	English speaking proficiency	Identifies with a religion	Marital Status	Highest Educa-tion level	Someone in the immediate family who had cervical cancer	Doctor or nurse practitioner ever having recommend Pap testing	Family member(s) ever having suggested Pap testing	Friend(s) ever having suggested Pap testing	Regular place of care	Regular primary health care provider	Health care insurance coverage	Quality of care from the health care system	Ever heard of the HPV vaccine	Would recommend the HPV vaccine to others who would qualify	Know where to go to get a free or low-cost Pap test	Exposure to media
Family member(s) ever having suggested Pap testing	Pearson Correlation	.148*	-.101	.058	.053	-.071	-.001	.397**	1									
	Sig. (2-tailed)	.032	.143	.403	.445	.306	.988	.000										
	n	211	211	211	211	211	211	211	211									
Friend(s) ever having suggested Pap testing	Pearson Correlation	.209**	.097	.080	-.005	.015	.061	.508**	.520**	1								
	Sig. (2-tailed)	.002	.159	.250	.937	.828	.377	.000	.000									
	n	211	211	211	211	211	211	211	211	211								
Regular place of care	Pearson Correlation	.325**	.219**	-.023	-.114	.173*	-.041	.331**	.105	.195**	1							
	Sig. (2-tailed)	.000	.001	.739	.100	.012	.550	.000	.128	.004								
	n	211	211	211	211	211	211	211	211	211	211							
Regular primary health care provider	Pearson Correlation	.336**	.215**	-.014	-.003	.180**	.055	.285**	.050	.112	.817**	1						
	Sig. (2-tailed)	.000	.002	.841	.966	.009	.424	.000	.471	.104	.000							

Imputed Data (n = 211)		Years lived in the U.S.	English speaking proficiency	Identifies with a religion	Marital Status	Highest Educa-tion level	Someone in the immediate family who had cervical cancer	Doctor or nurse practitioner ever having recommend Pap testing	Family member(s) ever having suggested Pap testing	Friend(s) ever having suggested Pap testing	Regular place of care	Regular primary health care provider	Health care insurance coverage	Quality of care from the health care system	Ever heard of the HPV vaccine	Would recommend the HPV vaccine to others who would qualify	Know where to go to get a free or low-cost Pap test	Exposure to media
	n	211	211	211	211	211	211	211	211	211	211	211						
Health care insurance coverage	Pearson Correlation	.315**	.293**	-.028	-.109	.222**	-.086	.301**	.159*	.117	.639**	.588**	1					
	Sig. (2-tailed)	.000	.000	.683	.114	.001	.216	.000	.021	.090	.000	.000						
	n	211	211	211	211	211	211	211	211	211	211	211	211					
Quality of care from the health care system	Pearson Correlation	.026	.181**	.093	-.049	.078	.065	.156*	-.014	.060	.048	.007	.075	1				
	Sig. (2-tailed)	.702	.008	.179	.481	.257	.344	.023	.842	.383	.486	.914	.275					
	n	211	211	211	211	211	211	211	211	211	211	211	211	211				
Ever heard of the HPV vaccine	Pearson Correlation	.217**	.329**	-.101	-.021	.303**	-.036	.232**	.094	.136*	.184**	.145*	.137*	.069	1			
	Sig. (2-tailed)	.002	.000	.142	.757	.000	.599	.001	.174	.049	.008	.035	.047	.319				
	n	211	211	211	211	211	211	211	211	211	211	211	211	211	211			
Would recommend the HPV	Pearson Correlation	.117	.218**	-.117	-.131	.253**	-.135*	.306**	.136*	.139*	.295**	.144*	.386**	.142*	.365**	1		

Imputed Data (n = 211)		Years lived in the U.S.	English speaking proficiency	Identifies with a religion	Marital Status	Highest Educa-tion level	Someone in the immediate family who had cervical cancer	Doctor or nurse practitioner ever having recommend Pap testing	Family member(s) ever having suggested Pap testing	Friend(s) ever having suggested Pap testing	Regular place of care	Regular primary health care provider	Health care insurance coverage	Quality of care from the health care system	Ever heard of the HPV vaccine	Would recommend the HPV vaccine to others who would qualify	Know where to go to get a free or low-cost Pap test	Exposure to media
vaccine to others who would qualify	Sig. (2-tailed)	.089	.001	.091	.058	.000	.050	.000	.049	.043	.000	.036	.000	.039	.000			
	n	211	211	211	211	211	211	211	211	211	211	211	211	211	211	211		
Know where to go to get a free or low-cost Pap test	Pearson Correlation	.042	.022	-.029	.047	.055	.061	.027	.058	.134	.012	.029	-.046	-.055	.058	-.044	1	
	Sig. (2-tailed)	.547	.747	.680	.493	.424	.381	.697	.402	.051	.858	.675	.506	.429	.398	.523		
	n	211	211	211	211	211	211	211	211	211	211	211	211	211	211	211	211	
Exposure to media	Pearson Correlation	.132	.130	.061	.146*	.126	-.080	.174*	.124	.253**	.010	-.024	.033	.080	.322**	.146*	.189**	1
	Sig. (2-tailed)	.056	.059	.377	.033	.068	.249	.011	.072	.000	.887	.734	.629	.247	.000	.034	.006	
	n	211	211	211	211	211	211	211	211	211	211	211	211	211	211	211	211	211

Note. Pap, Papanicolaou; %, percentage; U.S., United States; Sig., significance; n, sample size; HPV, human papilloma virus.
A detailed examination has been done to identify differences in correlated variables on the observed and imputed data set for 31 variables of which one variable, knowing Pap tests are necessary for asymptomatic, sexually inactive, and post-menopausal women had complete data for the observed data set. Five correlated paired variables had a difference > than .10. Among those that were different, there was a common trend in that each respective correlated variables contained either the variable 'would recommend the HPV vaccine to others who would qualify' or 'exposure to media' and in which one of the correlated variables contained both. The difference in magnitude was likely attributed to these particular variables because of having had imputed data for 47 missing responses of which 36 were not sure/do not know responses for 'would recommend the HPV vaccine to others who would qualify' and 16 missing responses of which 15 were not sure/do not know responses for 'exposure to media'.
* $p < .05$. ** $p < .01$.

Appendix P

Table 4. Association of Categorical Influencing Factors with Pap Test Receipt on the Observed Data and Imputed Data

Variables	Pap Test Receipt On the Observed Data (df = 1)					Pap Test Receipt On the Imputed Data (n = 211) (df = 1)				
	n (%)	Ever Been Screened %	χ^2	Phi	p-value	n (%)	Ever Been Screened %	χ^2	Phi	p-value
Cervical cancer awareness										
Yes	162 (84)	78	2.76	.12	.097	177 (84)	76	2.00	.10	.157
No	31 (16)	65				34 (16)	65			
Pap test awareness										
Yes	147 (75)	91	**63.67**	**.57**	**<.001*** **	155 (74)	90	**71.51**	**.58**	**<.001*** **
No	49 (25)	35				56 (26)	32			
Self-empowerment in ever having requested a doctor or nurse practitioner for a Pap test										
Yes	107 (55)	94	**36.52**	**.43**	**<.001*** **	111 (53)	93	**41.47**	**.44**	**<.001*** **
No	88 (45)	57				100 (47)	54			
Identifies with a religion										
Yes	190 (97)	77	– †	-.03	1.000	205 (97)	74	– †	-.04	1.000
No	6 (3)	83				6 (3)	83			
Marital status	–	–	**26.44**	**.37**	**< .001*** **	–	–	**20.13**	**.31**	**< .001*** **
Currently married or living with a partner	132 (66)	84	–	–	–	141 (67)	80	–	–	–
Previously married	37 (19)	78	–	–	–	39 (19)	80	–	–	–

Variables	Pap Test Receipt On the Observed Data (df = 1)					Pap Test Receipt On the Imputed Data (n = 211) (df = 1)				
	n (%)	Ever Been Screened %	χ^2	Phi	p-value	n (%)	Ever Been Screened %	χ^2	Phi	p-value
Never been married	30 (15)	40	–	–	–	31 (14)	42	–	–	-
Educational level	–	–	2.63	.12	.269	–	–	**4.71**	**.15**	**.095***
Some college or a graduate degree	76 (38)	82	–	–	–	78 (37)	82	–	–	-
High school or G.E.D. equivalent	50 (25)	76	–	–	–	51 (24)	75	–	–	-
Less than high school	74 (37)	70	–	–	–	82 (40)	67	–	–	–
Having someone in the immediate family who has been diagnosed with cervical cancer										
Yes	8 (4)	75	– †	-.00	1.000	10 (5)	60	– †	-.07	.282
No	189 (96)	76				201 (95)	75			
Doctor or nurse practitioner ever having recommended Pap testing										
Yes	131 (70)	95	**82.04**	**.66**	**<.001*****	142 (67)	95	**97.36**	**.68**	**<.001*****
No	57 (30)	33				69 (33)	32			

Variables	Pap Test Receipt On the Observed Data (df = 1)					Pap Test Receipt On the Imputed Data (n = 211) (df = 1)				
	n (%)	Ever Been Screened %	χ^2	Phi	p-value	n (%)	Ever Been Screened %	χ^2	Phi	p-value
Family member(s) ever having suggested Pap testing										
Yes	101 (52)	86	**10.71**	**.23**	**.001****	106 (50)	86	**14.64**	**.26**	**<.001*****
No	95 (48)	66				105 (50)	63			
Friend(s) ever having suggested Pap testing										
Yes	113 (58)	89	**22.78**	**.34**	**<.001*****	119 (56)	87	**24.17**	**.34**	**<.001*****
No	83 (42)	50				92 (44)	58			
Having a regular primary health care provider	155 (81)	83	**13.76**	**.27**	**<.001*****	169 (80)	81	**16.41**	**.28**	**<.001*****
Yes	37 (19)	54				42 (20)	50			
No										
Having health care insurance coverage										
Yes	152 (78)	83	**14.62**	**.28**	**<.001*****	161 (76)	82	**20.50**	**.31**	**<.001*****
No	42 (22)	55				50 (24)	50			
Knowing where to get a free or low-cost Pap test										
Yes	23 (13)	83	.74	.06	.391	24 (11)	83	1.13	.07	.29
No	160 (87)	74				187 (89)	73			

Variables	Pap Test Receipt On the Observed Data (df = 1)					Pap Test Receipt On the Imputed Data (n = 211) (df = 1)				
	n (%)	Ever Been Screened %	χ^2	Phi	p-value	n (%)	Ever Been Screened %	χ^2	Phi	p-value
Having ever heard of the HPV vaccine										
Yes	68 (38)	85	**6.94**	**.20**	**.008****	80 (38)	88	**11.60**	**.23**	**.001****
No	111 (62)	68				131 (62)	66			
Would recommend the HPV vaccine to others who would qualify										
Yes	112 (71)	84	**8.25**	**.23**	**.004****	144 (68)	83	**18.97**	**.30**	**<.001*****
No	46 (29)	63				67 (32)	55			
Exposure to media regarding cervical cancer and Pap testing										
Yes	128 (68)	79	2.69	.12	.101	141 (67)	79	**5.64**	**.16**	**.018****
No	59 (32)	68				70 (33)	64			

Note. Pap, Papanicolaou test; df, degrees of freedom; n, sample size; %, percentage; χ^2, chi-square; Phi, Phi coefficient; †, a Fisher's exact test was conducted for an expected count(s) of less than five in a cell; G.E.D., graduate equivalent degree; HPV, human papilloma virus vaccine.
* p < .10. ** p < .05. *** p < .001.

Appendix Q

Table 5. Association of Continuous Influencing Factors with Pap Test Receipt using Simple Logistic Regressions on the Observed Data and Imputed Data

Variables	Pap Test Receipt on the Observed Data			Pap Test Receipt on the Imputed Data (n = 211)		
	B	SE	OR (90% CI)	B	SE	OR (90% CI)
Knowing that Pap tests are necessary for women who are asymptomatic, sexually inactive, or postmenopausal	**1.56**	**.49**	**4.75 (2.11-10.70)***	**1.74**	**.47**	**5.67(2.62-12.29)***
Confidentiality issues	-.14	.10	.87 (.73-1.03)	**-.21**	**.10**	**.81 (.69-.95)***
Pap testing health beliefs						
Perceived susceptibility	.01	.06	1.01 (.91-1.11)	.01	.06	1.01 (.91-1.11)
Perceived benefits	.07	.05	1.07 (.99-1.16)	.10	.05	1.10 (1.02-1.19)
Perceived common barriers	**-.069**	**.025**	**.93 (.90-.97)***	**-.08**	**.02**	**.93 (.90-.96)***
Perceived cultural barriers						
Utilization of eastern medicine	**-.25**	**.08**	**.78 (.69-.88)***	**-.25**	**.07**	**.78 (.70-.88)***
Modesty	**-.11**	**.04**	**.90 (.84-.96)***	**-.10**	**.04**	**.90 (.85-.96)***
Crisis orientation	-.12	.07	.886 (.79-1.00)	**-.15**	**.07**	**.86 (.77-.96)***
Lack of family support	**-.11**	**.04**	**.89 (.84-.95)***	**-.13**	**.04**	**.88 (.83-.93)***
Adaption to the U.S.						
Age immigrated to the U.S.	-.00	.01	1.00 (.98-1.02)	-.01	.10	(.98-1.01)
Years lived in the U.S.	**.12**	**.02**	**1.13 (1.08-1.17)***	**.11**	**.02**	**1.12 (1.08-1.16)***
English speaking ability	**.38**	**.18**	**1.46 (1.09-1.95)***	**.41**	**.17**	**1.51 (1.14-2.01)***
Quality of care from the health care system	-.01	.06	.99 (.90-1.10)	.04	.06	1.04 (.95-1.15)

Note. Pap, Papanicolaou test; B, regression coefficient; SE, standard error; OR, odds ratio; CI, confidence interval; U.S., United States.
* $p < .10$.

Appendix R

Table 6. Association of Categorical Influencing Factors with Pap Test Adherence on the Observed Data and Imputed Data

Variables	Pap Test Adherence On the Observed Data (df = 1)					Pap Test Adherence On the Imputed Data (n = 157) (df = 1)				
	n (%)	Screened Past Three Years %	χ^2	Phi	p-value	n (%)	Screened Past Three Years %	χ^2	Phi	p-value
Cervical cancer awareness										
Yes	123 (87)	91	– †	-.04	1.000	135 (86)	92	– †	-.05	1.000
No	18 (13)	94				22 (14)	96			
Pap test awareness										
Yes	128 (89)	93	– †	.13	.133	139 (89)	94	– †	.12	.144
No	16 (11)	81				18 (11)	83			
Self-empowerment in ever having requested a doctor or nurse practitioner for a Pap test										
Yes	95 (66)	96	– †	**.21**	**.021† ****	103 (66)	96	– †	**.20**	**.024****
No	48 (34)	83				54 (34)	85			
Identifies with a religion										
Yes	139 (97)	92	– †	.08	.357	152 (97)	93	– †	.08	.332
No	5 (3)	80				5 (3)	80			
Marital status	–	–	2.13	.12	.344	–	–	1.62	.10	.445
Currently married or living with a partner	107 (74)	94	–	–	–	113 (72)	94	–	–	–
Previously married	27 (19)	89	–	–	–	31 (20)	90	–	–	–

Variables	Pap Test Adherence On the Observed Data (df = 1)					Pap Test Adherence On the Imputed Data (n = 157) (df = 1)				
	n (%)	Screened Past Three Years %	χ^2	Phi	p-value	n (%)	Screened Past Three Years %	χ^2	Phi	p-value
Never been married	11 (7)	82	–	–	–	13 (8)	85	–	–	–
Educational level	–	–	**6.84**	**.22**	**.033****	–	–	**5.86**	**.19**	**.054***
Some college or a graduate degree	59 (41)	95	–	–	–	64 (41)	95	–	–	–
High school or G.E.D. equivalent	38 (26)	97	–	–	–	38 (24)	97	–	–	–
Less than high school	48 (33)	83	–	–	–	55 (35)	86	–	–	–
Having someone in the immediate family who has been diagnosed with cervical cancer										
Yes	5 (3)	100	– †	.06	1.000	6 (4)	100	– †	.06	1.000
No	137 (97)	91				151 (96)	92			
Doctor or nurse practitioner ever having recommended Pap testing										
Yes	120 (88)	94	– †	**.28**	**.008****	135 (86)	95	– †	**.23**	**.014****
No	17 (12)	71				22 (14)	77			

Variables	Pap Test Adherence On the Observed Data (df = 1)					Pap Test Adherence On the Imputed Data (n = 157) (df = 1)				
	n (%)	Screened Past Three Years %	χ^2	Phi	p-value	n (%)	Screened Past Three Years %	χ^2	Phi	p-value
Family member(s) ever having suggested Pap testing										
Yes	83 (58)	93	– †	.05	.555	91 (58)	93	.34	.05	.561
No	60 (42)	90				66 (42)	91			
Friend(s) ever having suggested Pap testing										
Yes	96 (68)	94	– †	.08	.335	104 (66)	94	– †	.10	.222
No	46 (32)	89				53 (34)	89			
Having a regular primary health care provider										
Yes	122 (86)	94	– †	**.24**	**.014****	136 (87)	95	– †	**.24**	**.011****
No	20 (14)	75				21 (13)	76			
Having health care insurance coverage										
Yes	119 (84)	95	– †	**.28**	**.005****	132 (84)	96	– †	**.27**	**.004****
No	23 (16)	74				25 (16)	76			
Knowing where to get a free or low-cost Pap test										
Yes	19 (14)	95	– †	.06	1.000	20 (13)	95	– †	.63	1.000
No	112 (86)	90				137 (87)	92			

Variables	Pap Test Adherence On the Observed Data (df = 1)					Pap Test Adherence On the Imputed Data (n = 157) (df = 1)				
	n (%)	Screened Past Three Years %	χ^2	Phi	p-value	n (%)	Screened Past Three Years %	χ^2	Phi	p-value
Having ever heard of the HPV vaccine										
Yes	56 (44)	95	– †	.11	.343	70 (45)	94	.67	.07	.414
No	70 (56)	89				87 (55)	91			
Would recommend the HPV vaccine to others who would qualify										
Yes	91 (77)	92	– †	.10	.271	120 (76)	94	– †	.12	.155
No	27 (23)	85				37 (24)	87			
Exposure to media regarding cervical cancer and Pap testing										
Yes	98 (73)	91	– †	-.06	.727	112 (71)	92	– †	-.02	1.000
No	37 (27)	95				45 (29)	93			

Note. Pap, Papanicolaou test; df, degrees of freedom; n, sample size; %, percentage; χ^2, chi-square; Phi, Phi coefficient;
†, a Fisher's exact test was conducted for an expected count(s) of less than 5 in a cell; G.E.D., graduate equivalent degree; HPV, human papilloma virus vaccine.
* p < .10. ** p < .05. *** p < .001.

Appendix S

Table 7. Association of Continuous Influencing Factors with Pap Test Adherence using Simple Logistic Regressions on the Observed Data and Imputed Data

Variables	Pap Test Adherence on the Observed Data			Pap Test Adherence on the Imputed Data (n = 157)		
	B	SE	OR (90% CI)	B	SE	OR (90% CI)
Knowing that Pap tests are necessary for women who are asymptomatic, sexually inactive, or postmenopausal	-1.06	1.48	.35 (.03-3.90)	-1.14	1.48	.32 (.03-3.66)
Confidentiality issues	-.29	.19	.75 (.55-1.01)	**-.32**	**.19**	**.72 (.53-.98)***
Pap testing health beliefs						
Perceived susceptibility	.05	.12	1.06 (.87-1.28)	.04	.12	1.04 (.86-1.26)
Perceived benefits	-.10	.11	.91 (.75-1.09)	-.11	.11	.90 (.75-1.08)
Perceived common barriers	**-.09**	**.04**	**.91 (.85-.98)***	**-.08**	**.04**	**.92 (.87-.99)***
Perceived cultural barriers						
Utilization of eastern medicine	**-.31**	**.15**	**.73 (.58-.93)***	**-.27**	**.13**	**.77 (.61-.95)***
Modesty	**-.17**	**.07**	**.85 (.75-.95)***	**-.15**	**.07**	**.86 (.77-.96)***
Crisis orientation	-.10	.11	.91 (.75-1.10)	-.09	.12	.92 (.76-1.11)
Lack of family support	.03	.08	1.03 (.91-1.17)	.03	.079	1.03 (.91-1.18)
Adaptation to the U.S.						
Age, years, immigrated to the U.S.	**-.06**	**.02**	**.95 (.91-.98)***	**-.06**	**.02**	**.95 (.91-.98)***
Years lived in the U.S.	.07	.04	1.08 (1.01-1.15)	.076	.039	1.08 (1.01-1.15)
English speaking ability	**1.06**	**.38**	**2.89 (1.55-5.37)***	**1.11**	**.38**	**3.04 (1.62-5.71)***
Quality of care from the health care system	.10	.11	1.10 (.92-1.32)	.105	.110	1.11 (.93-1.33)

Note. Pap, Papanicolaou test; B, regression coefficient; SE, standard error; OR, odds ratio; CI, confidence interval; U.S., United States.
* $p < .10$.

Appendix T

Table 8. Tolerance Statistic for Retained Variables in the Exploratory Final Multivariate Logistic Regression Model on the Imputed Data

Variables	Pap Test Receipt	Pap Test Adherence
	Tolerance	Tolerance
Pap test awareness	.55	–
Knowing Pap tests are necessary for women who are asymptomatic, sexually inactive, or postmenopausal	.75	–
Confidentiality issues	.50	.57
Perceived common barriers	.35	.44
Perceived cultural barriers		
Utilization of Eastern medicine	.70	.78
Modesty	.46	.50
Crisis orientation	.61	–
Lack of family support	.50	–
Self-empowerment in ever having requested a doctor or nurse practitioner for a Pap test	.68	.93
Adaption to the U.S.		
Age immigrated to the U.S.	–	.67
Years lived in the U.S.	.71	–
English speaking ability	.53	.51
Currently married, living with a partner	.87	–
Some college or a graduate degree	.68	.69
Doctor or nurse practitioner ever having recommended Pap testing	.49	.91
Family member(s) ever having suggested Pap testing	.59	–
Friends ever having suggested Pap testing	.48	–

Variables	Pap Test Receipt	Pap Test Adherence
	Tolerance	Tolerance
Having a regular primary health care provider	.56	.73
Having a health care insurance coverage	.50	.70
Having ever heard of the HPV vaccine	.68	–
Would recommend the HPV vaccine to others who qualify	.61	–
Exposure to media about cervical cancer and Pap testing	.65	–

Note. Pap, Papanicolaou test; U.S., United States; HPV, human papilloma virus. Multicollinearity was not indicated, tolerance statistic values > .20.