

# Feasibility of a Multicomponent Breast Health Education Intervention for Vietnamese American Immigrant Women

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This research was supported, in part, by grants from the Oregon Health and Science University School of Nursing Innovation Grants Program and Washington State University in Vancouver (External Mentoring Program and New Faculty Research Start-Up).

Nguyen-Truong, Nguyen, Le, Vy Le, Lau, and Lee-Lin contributed the conceptualization and design. Nguyen-Truong, Nguyen, Le, Vy Le, and Lau completed the data collection. Nguyen-Truong, Pedhiwala, Nguyen, Le, Lau, Lee, and Lee-Lin provided statistical support. Nguyen-Truong, Pedhiwala, Nguyen, Le, Vy Le, Lau, and Lee provided the analysis. All authors contributed to the manuscript preparation.

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Submitted December 2016. Accepted for publication April 4, 2017.

Keywords: Vietnamese; breast; mammography; intervention

ONF, 44(5), 615–625.

doi: 10.1188/17.ONF.615-625

**Purpose/Objectives:** To determine the feasibility and acceptability of an intervention with targeted cultural and health belief messages to increase rates of mammography among Vietnamese American (VA) immigrant women.

**Design:** One-group, pre-/post-test, pilot, quasiexperimental design.

**Setting:** Portland, Oregon, metropolitan area.

**Sample:** 40 VA immigrant women aged 50 years or older.

**Methods:** Participants who had not had a mammogram within the past 12 months were recruited. The intervention consisted of one interactive group teaching session, followed by individual counseling delivered about 10 days later to overcome barriers to screening. Participants completed a baseline survey prior to the group teaching and again at 12 weeks after the session.

**Main Research Variables:** The intervention, guided by the Transtheoretical Model of Change and the Health Belief Model, involved movement in stage of change based on women's readiness, as well as perceived susceptibility, perceived benefits, perceived common barriers, and perceived cultural barriers. Mammogram completion and knowledge of breast cancer and mammography were examined.

**Findings:** The recruitment response rate was 58%. Knowledge about breast cancer, breast cancer susceptibility, and the benefits of mammography as related to breast cancer significantly increased following the intervention.

**Conclusions:** Acceptability of the targeted program, good feasibility, and very low attrition was achieved.

**Implications for Nursing:** This intervention can be adapted for other populations, including other Asian groups, and other cancer screenings.

**B**ecause Asian Americans are diverse, originating from more than 50 different countries and speaking more than 100 languages (Gomez et al., 2013), studying different Asian groups separately is imperative. In particular, the cultural health beliefs and practices of Vietnamese American (VA) immigrant women may differ from those of other racial/ethnic groups, which has the potential to affect cancer risks and outcomes (Solanki, Ko, Qato, & Calip, 2016). Data concerning disparities in breast cancer screening from 1990–2008 demonstrate that breast cancer rates are declining among non-Hispanic American women but increasing among Asian American women (Gomez et al., 2013). In addition, VA immigrant women experienced a statistically significant 1.2% annual increase in breast cancer (95% confidence interval [CI] [0.1, 2.2]) (Gomez et al., 2013). Further, this population's rate of mammography (64%) is below the Healthy People 2020 goal of 81.1% (HealthyPeople

.gov, 2017; Pourat, Kagawa-Singer, Breen, & Sripipatana, 2010). Breast cancer control interventions specific to VA immigrant women are needed.

VA immigrants face language, economic, and cultural barriers when seeking preventive health care. For example, VA immigrant women who do not speak English or have limited English proficiency or have an income of less than 200% below the poverty level were less likely to engage in regular mammography compared to Japanese American women (Chawla, Breen, Liu, Lee, & Kagawa-Singer, 2015). In addition, VA immigrant women with healthcare access barriers (e.g., having only public health insurance, having no usual source of care) were less likely to engage in regular mammography compared to Japanese and Filipino American women (Chawla et al., 2015). VA immigrant women who have infrequent medical visits to a healthcare provider were also less likely to engage in regular mammography compared to Japanese, Filipino, Chinese, and Korean American women (Chawla et al., 2015). Many VA immigrant women believe that only when symptoms arise does breast cancer become a concern and maintain that searching for problems invites them (Nguyen, Barg, Armstrong, Holmes, & Hornick, 2007). Researchers have suggested that, to seek out care from a healthcare provider, VA immigrants first require a compelling reason. In fact, Nguyen et al. (2010) discovered that, compared to Whites and African Americans, VA immigrants were less likely to report engagement in information seeking related to cancer.

Among VA immigrants, multicomponent culturally tailored interventions have been shown to be more effective in increasing mammography rates than singular nontailored interventions (Lu et al., 2012). For example, a lay health outreach worker model combined with a media-based education model was more effective at increasing mammography rates than a media-based education model alone (Nguyen et al., 2009). However, a neighborhood-based educational intervention on screening education for Vietnamese physicians was found to be ineffective in increasing breast cancer screening rates among VA women (Lu et al., 2012). Although multicomponent culturally tailored interventions have been found to be effective, determining intervention intensity is difficult because exposure to each strategy was inconsistently tracked, which makes the long-term sustainability of breast cancer screening questionable (Lu et al., 2012). Past studies designed to measure VA women's knowledge and beliefs about breast cancer and mammography lacked a strong theoretical basis and the incorporation of culturally appropriate components. The current authors previously developed and tested the Early Care for Health intervention (formerly known as

the Targeted Breast Health Educational Program) in a population of Chinese American immigrant women (Lee-Lin, Menon, Leo, & Pedhiwala, 2013; Lee-Lin, Nguyen, Pedhiwala, Dieckmann, & Menon, 2015). The multicomponent culturally targeted approach was framed by the Transtheoretical Model of Change (TTM) and the Health Belief Model (HBM), and it featured the delivery of cultural and health belief messages in an interactive group setting, followed by individual counseling. This intervention was shown to be effective in increasing mammography rates at 3 months (pilot study [Lee-Lin et al., 2013]) and at 12 months (randomized, controlled trial with 150 in the intervention group and 150 in the control group who received only a brochure [Lee-Lin, Pedhiwala, Nguyen, & Menon, 2015]). The purpose of this study is to adapt and test a theoretically tailored, culturally appropriate educational intervention, Early Care for Health–Vietnamese Women's Breast Health Program, created to increase mammography rates among VA immigrant women. The specific aims of this study are (a) to demonstrate the feasibility and acceptability of the multicomponent breast cancer screening education intervention; (b) to examine the association of knowledge and perceived susceptibility, perceived benefits, perceived common barriers, and perceived cultural barriers with mammogram completion; and (c) to examine the association of knowledge and perceived susceptibility, perceived benefits, perceived common barriers, and perceived cultural barriers with improvement in stage of readiness change.

## Theoretical Framework

The current authors' prior research using the Early Care for Health intervention was guided by constructs from the TTM and the HBM. The following terms and definitions were referenced from the current authors' prior research and were also used in the current study. *Precontemplation* is defined as never having had a mammogram or having had one or more mammograms in the past but being off schedule and not thinking or planning to have one within the next six months (Lee-Lin et al., 2013). *Contemplation* is defined as never having had a mammogram or having had one or more mammograms in the past but being off schedule and thinking or planning to have one within the next six months (Lee-Lin et al., 2013). *Action* is defined as having had a mammogram within the past year (Lee-Lin et al., 2013). According to the HBM, with breast cancer as an exemplar, a woman is more likely to participate in breast cancer screening if she believes she is susceptible to breast cancer, believes that cancer is serious, sees positive outcomes

associated with screening (benefits) and few obstacles to screening (barriers), has high confidence in her ability to have a screening test (self-efficacy), and has adequate knowledge (Lee-Lin et al., 2013).

Details of the components of the TTM and the HBM and the integrated content for the intervention, including the current study's adapted conceptual model, have been described in another article (Lee-Lin et al., 2013). Similar to the current authors' previous study of Chinese American immigrant women, the current study's intervention "manipulates the behavioral constructs, which then leads to behavior change" (Lee-Lin et al., 2013, p. 362).

## Methods

### Design

This pilot study is a pre-/post-test, quasiexperimental design to evaluate the feasibility and acceptability of an adapted breast health education intervention program, Early Care for Health–Vietnamese Women's Breast Health Program, which was intended to increase rates of mammography in VA immigrant women. The intervention has two components: an interactive and educational group session with a Microsoft PowerPoint® presentation, followed by an individual counseling session. The current authors adapted similar cultural and health beliefs from the education intervention on Chinese American immigrant women and adjusted them to fit for VA immigrant women. Participants were surveyed at pre- and postintervention on beliefs related to breast cancer and mammograms (i.e., perceived susceptibility, perceived benefits, perceived common barriers, and perceived cultural barriers), stages of readiness, and mammogram completion.

### Instruments, Intervention, and Translation

**Instruments:** The survey used for this study consists of 72 items concerning breast cancer knowledge about risk factors, beliefs, and demographics, and it was adapted from the current authors' previous work with Chinese American immigrant women. The internal reliability of the subscales used for measuring beliefs in this survey (perceived susceptibility, perceived benefits, perceived common barriers, and perceived cultural barriers [crisis orientation, modesty, rely on others, use of Eastern/Asian medicine]) were identified as being adequate (Cronbach alpha = 0.64) to excellent (Cronbach alpha = 0.9) in previous studies (Lee-Lin et al., 2008; Lee-Lin, Pedhiwala, et al., 2015). Subscale item responses are on a five-point Likert-type scale ranging from 1 (strongly disagree) to 5 (strongly agree). Detailed descriptions about the development of this instrument have been reported in other articles (Lee-Lin et al., 2008, 2013).

**Acceptability:** Acceptability of this intervention program was assessed using a 10-item scale containing process questions related to cultural appropriateness of the content, a participant's response to the content, and a participant's intent to change screening behavior. Scale item responses range from 1 (strongly disagree) to 4 (strongly agree). Examples of items include the following: "The colors of the educational program were pleasing to me," "The information was easy to understand," "The content was well organized," and "The length of this educational program was acceptable."

**Intervention outcomes:** The two outcomes were as follows: (a) action after intervention (mammography was completed by the week 12 post-test) and (b) stage of readiness change improvement (precontemplation at baseline and identified as contemplation in post-test, precontemplation at baseline and identified as action in post-test, and contemplation at baseline and identified as action in post-test).

**Intervention:** Face-to-face interactions, question-and-answer discussions, and individual counseling (Lee-Lin et al., 2013; Lee-Lin, Pedhiwala, et al., 2015) or individual telephone counseling (Wu & Lin, 2015) are important for educating and resolving misconceptions among minority populations. The intervention was supported by VA community center partners as culturally appropriate. The co-principal investigator (the first author) delivered a scripted and interactive verbal PowerPoint presentation that served as a guide for discussion. The intervention materials featured graphics that were culturally relevant (e.g., Asian landscapes), multigenerational images of Vietnamese women (e.g., photograph of a conversation among a grandmother, mother, and daughter), and a breast cancer survivor story or testimonial. Topics covered during the intervention included the following: rates of breast cancer incidence and mortality, breast cancer risk factors, how to obtain a mammogram, perceived benefits of obtaining a mammogram, and how to overcome perceived barriers (common and cultural) to obtaining a mammogram.

**Team approach to translation:** A team approach was used to translate the Chinese American immigrant version of the survey and the intervention materials into Vietnamese (Nguyen-Truong et al., 2015). The current authors focused on translating language and culturally relevant content; in regard to the latter, the appropriateness for VA immigrant women was determined. The translation team for the survey and the intervention consisted of seven bilingual and bicultural VAs, including the co-principal investigator, community health workers (third and fourth authors), and a VA community consultant (fifth author). The community health workers translated the survey

and interactive PowerPoint slides into Vietnamese. Next, the materials were independently reviewed by the co-principal investigator and the VA community consultant for accuracy of meaningful translation (e.g., grammar, clarity, logical flow) and for culturally relevant content for VA immigrant women. Then, the co-principal investigator and the VA community consultant met with the community health workers to discuss and resolve ambiguities. The language and cultural context of VA women who immigrated to the United States during the Vietnam War, versus those who immigrated long after the Vietnam War, were considered. To achieve a meaningful translation, the translation team decided to use simple phrasing, which reflects the modern Vietnamese language given the targeted study sample.

Before implementing the pilot study, the survey was pretested with five VA participants from the target population to assess clarity and utility. The English and Vietnamese versions of the survey were available to participants depending on their language preference, and all participants chose the Vietnamese version.

The translation team also reviewed the graphics in the interactive PowerPoint and the relevance of its content to study participants; some of the brighter colors, as well as font style and size, were adjusted to increase readability of Vietnamese alpha characters and accent symbols. The translation team arrived at consensus that the survey and intervention materials were culturally and linguistically appropriate.

## Sample

Based on recruitment data from previous work on Chinese American immigrants by the principal investigator (the last author), the proposed sample size of 40 was estimated to be recruited in two to three months. A sample size of 40 VA women provides a margin of error of 15% (half the width of the 95% CI) for the estimated proportion of women in an action stage at postintervention, as well as for the proportion of women who move upward in stage of readiness. Participants were recruited using convenience sampling from a local Asian American community-based organization (Asian Health & Service Center) and from the VA community in the Portland, Oregon, metropolitan area from April to May 2016. The community-based organization is regarded by the VA community as a trusted place for health information and support services. Community health workers at the community-based organization recruited participants from senior group gatherings and case managements, as well as by telephone with previously encountered VA immigrant women. The following eligibility criteria

were employed: being a VA immigrant woman, being aged 50 years or older, having no personal history of breast cancer, being able to understand and read English or Vietnamese, not having had a mammogram within the past 12 months, and having a telephone. The current authors focused on immigrant women because 54% of VAs are foreign-born, and immigrants are more likely than U.S.-born VAs to have different cultural beliefs about health and health behavior (United States Census Bureau, 2016; U.S. Department of Health and Human Services Office of Minority Health, 2017). In addition, recent immigrants are less likely than immigrants who have resided in the United States for a longer period of time to have had a mammogram (American Cancer Society [ACS], 2015; Wu & Ronis, 2009). The ACS's 2015 breast cancer screening guidelines, which recommend undergoing mammography once a year (Oeffinger et al., 2015), were used because they were the guidelines most commonly followed by healthcare providers at the time of the study (Kwon, Ma, Gold, Atkinson, & Wang, 2013). However, since completion of the current study, controversy has existed over whether mammography should be undergone annually (Oeffinger et al., 2015) or every two years (U.S. Preventive Services Task Force, 2016). Keeping with the quasiexperimental design of the study, eligible participants were enrolled in the interactive group teaching.

## Procedures

Human subjects participation approval for the study was granted by the Oregon Health and Science University Institutional Review Board and the Oregon Health and Science University Knight Cancer Institute. Approval was obtained to have a waiver of signed consent from participants.

Following informed consent, participants (N = 40) were given a card with the date, time, and location of the Early Care for Health interactive group teaching. Prior to the teaching, participants completed a self-administered baseline survey in either English or Vietnamese that measured breast cancer screening knowledge and practices, along with perceived susceptibility, perceived benefits, perceived common barriers, and perceived cultural barriers. Demographic questions were also asked. Survey completion took 20–30 minutes.

One-hour interactive teachings were conducted with each group in May 2016 (a total of three groups participated, with 11, 13, and 15 participants per group). The teaching sessions took place at an Asian American community-based organization located within walking distance of public transportation routes. Although participants were given the option of attending an interactive group teaching conducted

in English or Vietnamese, all preferred Vietnamese; the interactive group teachings were conducted in Vietnamese by the co-principal investigator, who is Vietnamese bilingual and bicultural. Food, as a form of hospitality, was provided during the interactive group teaching, and a \$10 grocery gift card was given to each participant as a token of thanks at the end of the group teaching. At 12 weeks after the interactive group teaching, participants completed the breast health follow-up survey by telephone.

Individual counseling sessions were provided about 10 days after the participants' attendance at the interactive group teaching. Trained VA bilingual and bicultural staff (community health workers) provided individual counseling and services. These community health workers also identified barriers during the counseling session and provided services to help participants overcome barriers to mammography, including language, healthcare access, and cost. For example, if limited English-language ability was a barrier, then staff helped the participant to set up a mammography appointment and provided interpretation service. If access to health care was a barrier, then staff helped the participant to set up a mammography appointment with Oregon ScreenWise Breast and Cervical Cancer Screening Services, which provides financial assistance for low-income and uninsured women (Oregon Health Authority, n.d.). Individual counseling sessions were about one hour in length, with most participants requiring more than one counseling session (range = 1–4).

## Data Analysis

Survey data were hand-entered using a double-entry method in Microsoft Excel. Data were verified for accuracy and then exported to SPSS®, version 24.0. Data analysis was conducted using SPSS. Several paired t tests were implemented to examine statistically significant changes in test scores of knowledge and beliefs (perceived susceptibility, perceived benefits, perceived common barriers, and perceived cultural barriers) on two outcome variables: action after intervention (mammogram completion by week 12 post-test) and stage of readiness change improvement. Independent t tests were conducted to examine the association between sociodemographic characteristics and the outcome variables. To better predict the intervention outcomes, logistic regression analyses followed; because of the small sample size, only statistically significant sociodemographic variables and test scores were included as predictors. In consideration of the exploratory nature of this pilot study, the significance level was set at 0.1 for all analyses.

Test scores including knowledge and beliefs were measured in two different ways: (a) in post-test scores

**TABLE 1. Sample Characteristics (N = 40)**

Characteristic	$\bar{X}$	SD	Range
Age (years)	66.38	8.19	50–80
Age at immigration (years)	52.82	11.7	28–73
Time in the United States (years)	13.9	9.22	1–32

Characteristic	n
<b>Birthplace</b>	
Central Vietnam	10
North Vietnam	8
South Vietnam	21
Other	1
<b>Education (N = 39)</b>	
No formal school	1
Elementary	8
Some middle school	10
Some high school	13
Some college	2
Graduated from college	4
Graduate school or professional degree	1
<b>Employment</b>	
Full-time	4
Part-time	5
Unemployed	31
<b>How well do you speak English?</b>	
Not at all	15
Poorly	13
Average	11
Well	1
<b>Income before taxes (\$) (N = 39)</b>	
Less than 15,000	28
15,000–30,000	2
30,001–50,000	4
Not sure	5
<b>Marital status</b>	
Married	23
Single and never married	3
Separated	2
Divorced	6
Widowed	6

and (b) in the test score difference between the pre- and post-test scores. These two predictors provided different advantages in predicting outcome variables because (a) post-test scores could be examined as the status of participants in post-test that led to outcome variables and (b) test score differences from pre- to post-test could be examined as an outcome measure of intervention effect that resulted in a participant's mammogram completion and stage of readiness change improvement.

## Results

### Sample Demographics

A total of 40 VA immigrant women aged 50–80 years participated in this pilot study (see Tables 1 and 2). Prior to interactive group teaching, each participant identified as many as two major barriers that had

**TABLE 2. Participant Responses Regarding Health Care (N = 40)**

Item	n
<b>Do you have a regular HCP?</b>	
Yes	31
No	9
<b>Do you usually understand everything your HCP says? (N = 32)</b>	
Yes	30
No	2
<b>Do you feel that your HCP usually understands what you say? (N = 32)</b>	
Yes	31
No	1
<b>In the last year or two, has your HCP ever told you that you should have a mammogram? (N = 33)</b>	
Yes	23
No	10
<b>Do you have any kind of healthcare coverage?</b>	
Yes	30
No	10
<b>HCP—healthcare provider</b>	

prevented her from obtaining a mammogram within the past 12 months. The following major barriers to mammography were identified: no reason (e.g., not knowing about mammography, not thinking about mammography) (n = 17), cost of mammography or no insurance (n = 7), perception that mammography was unnecessary because their age was older than 60 years (n = 5), and no symptoms or belief that they would not develop breast cancer (n = 3).

### Feasibility

In April and May 2016, 96 VA immigrant women from a local Asian American community-based organization and the VA community were approached to take part in this study. Twenty-seven women were not eligible, and 29 were not interested in participating. In addition, of the 69 VA women eligible for study participation, 40 consented to participate (response rate of 58%), and 39 attended the interactive group teaching. The attrition rate was low; only one woman was lost to follow-up (completion rate of 98%) (see Figure 1). The good recruitment response rate and very low attrition rate are indicative of good feasibility (Bowen et al., 2009).

### Acceptability

The Early Care for Health program in this pilot study is considered to be acceptable if at least 80% of participants judge the program positively (Wahab, Menon, & Szalacha, 2008). Early Care for Health was judged positively by 35 participants. Anecdotally, most participants also commented on how much they learned and noted that they appreciated the health-related presentation.

### Movement of Stage of Readiness

Of the 39 participants with valid data, 30 reached the action stage by undergoing mammography during the study period; of those who reached the action stage, 8 were in the precontemplation stage and 22 were in the contemplation stage at baseline. Of the nine participants who did not reach the action stage, four were in the precontemplation stage and five were in the contemplation stage at baseline; among these participants, one participant moved up one stage, from precontemplation to contemplation. Eight participants moved up two stages, from precontemplation to action. Twenty-two participants were in the contemplation stage at baseline and moved up one stage, to action. However, one participant moved backward one stage, from contemplation to precontemplation.

### Breast Cancer Knowledge and Beliefs

Breast cancer knowledge ( $t[39] = -14.72, p < 0.001$ ) improved from pre- to postintervention. Perceived breast cancer susceptibility ( $t[39] = -2.69, p < 0.05$ ), mammogram and breast cancer benefits ( $t[39] = -4.05, p < 0.001$ ), and mammogram and breast cancer barriers ( $t[39] = 8.94, p < 0.001$ ) improved from pre- to postintervention. Cultural barrier: crisis orientation ( $t[39] = 4.18, p < 0.001$ ), cultural barrier: modesty ( $t[39] = 5.02, p < 0.001$ ), cultural barrier: rely on others ( $t[39] = 4.98, p < 0.001$ ), and cultural barrier: use of Eastern/Asian medicine ( $t[39] = 5.74, p < 0.001$ ) improved from pre- to postintervention (see Table 3).

### Factors Associated With Mammogram Completion

The most common three reasons for not undergoing mammography within 12 weeks of the intervention were identified as the following: preferring to undergo mammography once every two years, being out of the state or the country, and being of an older age and having a fear of pain.

Independent t tests were conducted among sociodemographic characteristics and belief measures in post-test scores and test score differences (pre-/post-test scores). The sample size was 40 in data analysis on action after intervention except for age (N = 38). The following results include belief measures in post-test scores. Age ( $p < 0.05$ ), mammogram barriers ( $p < 0.01$ ), cultural barrier: crisis orientation ( $p < 0.1$ ), and cultural barrier: modesty ( $p < 0.1$ ) were significantly associated with mammogram completion (action after intervention). Mammogram barriers ( $p < 0.1$ ) and cultural barrier: crisis orientation ( $p < 0.1$ ) were significantly associated with stage of readiness change improvement. The sample size was 39 in data analysis on stage of readiness change improvement

except for age (N = 38). The following includes belief measures in test score differences. Age ( $p < 0.05$ ), mammogram barriers ( $p < 0.1$ ), and cultural barrier: crisis orientation ( $p < 0.05$ ) were significantly associated with mammogram completion. Mammogram barriers ( $p < 0.05$ ) and cultural barrier: crisis orientation ( $p < 0.05$ ) were significantly associated with stage of readiness change improvement. Four separate logistic regression analyses were conducted. Age and post-test scores were significantly and negatively associated with action after intervention (odds ratio [OR] = 0.81, 90% CI [0.7, 0.93]) and stage of readiness change improvement (OR = 0.85, 90% CI [0.73, 0.98]), as well as for test score differences with action after intervention (OR = 0.71, 90% CI [0.57, 0.9]) and stage of readiness change improvement (OR = 0.76, 90% CI [0.62, 0.94]). The test score difference between pre- and post-test on the cultural barrier: crisis orientation toward having a mammogram was significantly and positively associated with action after intervention (OR = 12.59, 90% CI [1.38, 115.16]) and stage of readiness change improvement (OR = 11.03, 90% CI [1.34, 91.05]). However, modesty was significantly and negatively associated with both outcome variables (OR = 0.04, 90% CI [0.00, 0.45]; OR = 0.04, 90% CI [0.00, 0.45], respectively). For mammogram barriers in the test score difference between pre- and post-test action after intervention and stage of readiness change improvement, large CIs were present (OR = 119.4, 90% CI [4.46, 3,197.69]; OR = 87.94, 90% CI [4.18, 1,848.65], respectively), which may be attributed to large variation in responses.

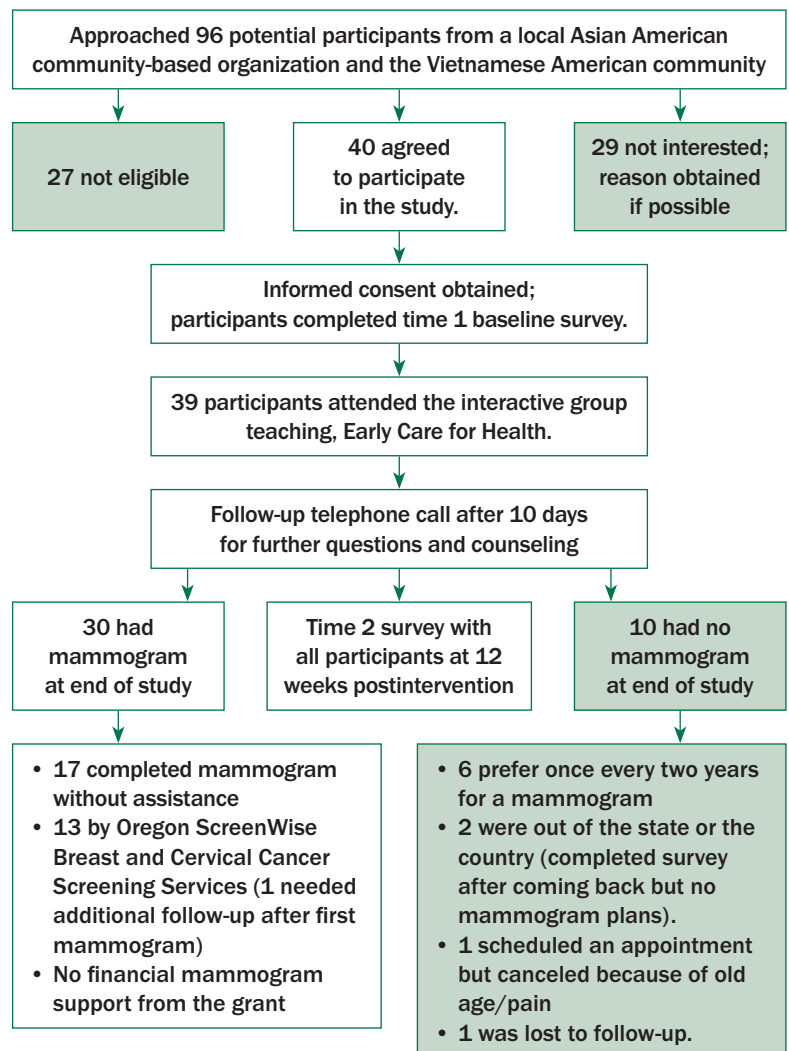
## Discussion

Early Care for Health was well received by VA immigrant women participants in the VA community of the Portland, Oregon, metropolitan area. Similar to the current authors' previous work with Chinese American immigrant women, the program was presented as free health education. Food, which is a form of hospitality as part of a social, cultural gathering, was provided with the interactive group teaching. Overall, VA immigrant women said that although receiving a gift card for their time was nice, they appreciated how much time the co-principal investigator (the first author, who was the presenter) and the principal investigator (the last author, who helped to answer questions) devoted to their learning about breast health. The recruitment response rate (58%) was good, and acceptability of the intervention was

high. One possible explanation is the role played by Vietnamese bilingual and bicultural community health workers in outreach and recruitment, which is similar to previous studies that included lay health workers (Lu et al., 2012; Nguyen et al., 2009). However, one difference between this study and previous studies is that the community health workers also work at a trusted local Asian American community-based organization, which could be another reason why the recruitment response rate and acceptability of the intervention were high.

At baseline, the most prevalent barrier identified by women was that no reason existed to undergo mammography, which was surprising to the current authors. Perhaps VA immigrant women just did not have knowledge of regular mammography and did not view having a mammogram as important. In addition, only 23 participants reported that in the past one or two years their healthcare provider told them that they should have a mammogram. In previous research, VA immigrant

**FIGURE 1. Early Care for Health–Vietnamese Women’s Breast Health Program Single Pilot Study Protocol**



women had infrequent medical visits (fewer than three visits per year), and healthcare providers may have missed the opportunity to counsel women about breast cancer and mammography (Chawla et al., 2015). VA immigrants reported relying on their healthcare providers to tell them what tests or screenings they need and perceived that the healthcare providers did not have time to talk about cancer (Nguyen et al., 2007). Educational content in the interactive group teaching included discussion about healthcare provider recommendations for mammography and overcoming barriers, with emphasis placed on asking the healthcare provider about breast cancer and mammography.

Most VA immigrant women who participated in the pilot study were unemployed (n = 31) and have a total household income of less than \$15,000 (n = 28). Much like the current authors' previous work with Chinese American immigrants, throughout the interactive group teaching in this study, the focus was placed on receiving regular mammograms and the idea that breast cancer is detectable by a mammogram before symptoms develop. Thirteen women in the current pilot study did not know how to make an appointment for a mammogram because of a language barrier.

These same women also required help with financial assistance because of the cost of mammography; appointments were made with Oregon ScreenWise Breast and Cervical Cancer Screening Services. Community health workers helped women overcome this barrier by scheduling appointments and providing interpretation. Logistic assistance is important to immigrant women who often do not know how to access and navigate the U.S. healthcare system (Hou, Sealy, & Kabiru, 2011; Pourat et al., 2010; Wu, Hsieh, & West, 2009). Among the women who did not have a mammogram following the intervention, some reported a preference for having a mammogram once every two years. Given the current controversy regarding undergoing mammography annually (Oeffinger et al., 2015) or every two years (U.S. Preventive Services Task Force, 2016), some women may prefer to think about it every two years.

As with the current authors' previous work involving Chinese American immigrant women, in this study, a culturally and linguistically appropriate interactive group teaching, combined with individual counseling, resulted in 30 participants undergoing mammography within 12 weeks. In the current pilot study, most VA

**TABLE 3. Comparison of Pre- and Poststudy Variables**

Variable	Pretest		Post-Test		% Change	90% Confidence Interval		t test
	$\bar{X}$	SD	$\bar{X}$	SD		Lower	Upper	
Breast cancer knowledge	0.33	1.37	0.63	0.53	-90.91	-0.34	-0.27	-14.72**
Breast cancer susceptibility	2.87	0.83	3.32	0.7	-15.68	-0.74	-0.17	-2.69*
Mammogram and breast cancer barriers	2.22	0.59	1.31	0.47	40.99	0.74	1.08	8.94**
Mammogram and breast cancer benefits	4.51	0.54	4.92	0.25	-9.09	-0.58	-0.24	-4.05**
Cultural barrier: Crisis orientation	1.51	0.58	1.08	0.23	28.48	0.26	0.6	4.18**
Cultural barrier: Modesty	1.84	0.56	1.28	0.46	30.43	0.37	0.75	5.02**
Cultural barrier: Rely on others	3.38	1.05	2.31	1.1	31.66	0.7	1.42	4.98**
Cultural barrier: Use of Eastern/Asian medicine	2.25	0.82	1.38	0.55	38.67	0.61	1.12	5.74**

\* p < 0.05; \*\* p < 0.001

Note. Statistical comparison was conducted using paired t test.

Note. Total sample size in data analysis was 39, unless otherwise noted.

Note. Variables were rated on a five-point Likert-type scale ranging from 1 (strongly disagree) to 5 (strongly agree).



immigrant women moved forward one stage (contemplation to action) or two stages (precontemplation to action) of readiness postintervention, which supports the TTM to some extent. These findings align with the TTM in that behavior change occurs in stages and that it may be easier for people to move up just one stage at a time (Wu et al., 2009). However, in this pilot study, eight women appeared to move from precontemplation to action with ease.

At baseline, VA immigrant women who were in the contemplation or precontemplation stage also had low perceived susceptibility to developing breast cancer, low perceived benefits to obtaining a mammogram, and high common barriers and high cultural barriers to obtaining a mammogram, which aligns with the integrated health behavior models, the TTM and HBM (Champion & Skinner, 2008; Prochaska, Redding, & Evers, 2008). The interactive group teaching employed in this study increased VA immigrant women's knowledge about breast cancer risks. VA immigrant women had high perceived susceptibility, high perceived benefits, low perceived common barriers, and low perceived cultural barriers with completion of a mammogram postintervention; again, this aligns with the TTM and the HBM (Champion & Skinner, 2008; Prochaska et al., 2008). Cultural barrier: crisis orientation toward having a mammogram (prioritization surrounding early detection of breast cancer) predicted a higher likelihood of mammogram completion and improvement in stage of readiness change. The wide CI range warrants cautious interpretation. Based on the findings, VA immigrant women's discomfort toward mammography was likely reduced after having received the Early Care for Health intervention. In addition, women were able to reduce their cultural barriers to mammography and were more likely to improve in stage of readiness and obtain a mammogram. Older age predicted a lower likelihood of mammogram completion and improvement in stage of readiness change, which may explain why one of the participants reported old age as a reason for not obtaining a mammogram postintervention. According to the ACS, women of average risk should start undergoing mammography when aged 45–54 years; women aged 70 years or older should continue to undergo mammography on a regular basis if they are in good health (Oeffinger et al., 2015).

### Limitations

Self-reported measures of mammography were used, which could mean that participants overreported or underreported. Purposeful sampling, a form of convenience sampling, was used; participants may have had more of a desire to get mammograms

## Knowledge Translation

- A strong community-based partnership involving researchers, community health workers, and organizations may facilitate and improve breast cancer screening processes.
- Many Vietnamese American (VA) immigrant women have inadequate knowledge of breast cancer.
- A number of VA immigrant women have low perceived susceptibility to breast cancer.

because most were recruited from the trusted local Asian American community-based organization. The authors were able to establish the feasibility and acceptability of the Early Care for Health intervention with the small sample size of the pilot study. These findings will inform a larger-scale randomized, controlled trial, which will provide information regarding intervention efficacy. The participants were a convenience sample recruited from a local Asian American community-based organization and from the VA community in a northwestern metropolitan city. Therefore, the pilot findings cannot be generalized to the general population of VA immigrant women.

## Implications for Nursing

The role of oncology nurses is essential in community settings when working with VA immigrant women. A culturally targeted multicomponent intervention that aims to increase breast cancer knowledge, improve access, and help women to overcome barriers may be effective in promoting mammography screening among VA immigrant women. When comparing and negotiating differences between Western culture and Vietnamese culture, these women retain their values and beliefs while also incorporating some Western values, as they see fit in their lives (Donnelly, 2006). Nurses can provide targeted culturally and linguistically appropriate health care to help bridge the healthcare divide, which may contribute toward achieving positive health outcomes in this population. Intervention efforts to improve knowledge and address beliefs should consider the creation of a safe and trusting space where power is given to VA immigrant women to say when they feel safe in their interactions with nurses, which may help to promote an open discussion (Doutrich, Arcus, Dekker, Spuck, & Pollock-Robinson, 2012). Nurses should ask about and address beliefs in such a space, which can lead to clarification of misconceptions and myths about breast cancer and mammography.

In the current pilot study, the authors suggest that the Early Care for Health intervention has improved

the rate of mammography in VA immigrant women. As the next step in research, the authors will conduct a larger-scale randomized, controlled trial to examine the effectiveness of the multicomponent intervention across time points (such as at 6 and 12 months). This investigation will also provide important information about sustainability and cost. For nurse researchers who are working with screening for breast and other cancers, the Early Care for Health intervention has the potential to significantly improve rates of mammography and of other cancer screenings and can be used in other Asian American groups. Researchers can adapt the team approach to the translation of study materials (e.g., survey, multicomponent intervention) into other languages; a pretest to ensure clarity and feasibility may also be employed. A translation team would not only focus on the translation of study materials but would also need to discuss the translation of culturally relevant content and determine appropriateness for that particular Asian American group. A focus group study may be needed to explore knowledge and beliefs about breast cancer or other cancers, along with mammography and other cancer screenings. These findings from this current pilot study can also inform changes needed when adapting the study for use with other groups.

## Conclusion

Early Care for Health is a culturally targeted program that aims to increase breast cancer knowledge, as well as improve access and remove barriers to mammography; in addition, it may promote mammography among VA immigrant women. The authors achieved acceptability of the targeted program, good feasibility, and very low attrition. A strong interprofessional team, made up of those from academia and the community, took part in this study. A community-based partnership involves researchers, community workers, and formal stakeholders from organizations to facilitate and improve cancer screening processes. This promising intervention, guided by theories, can be adapted for other Asian American groups and other types of cancer screenings.

*The authors gratefully acknowledge Cynthia Corbett, PhD, RN, FAAN, for her scientific editing and the anonymous peer reviewers for their assistance.*

## References

American Cancer Society. (2015). *Breast cancer facts and figures, 2015–2016*. Retrieved from <https://www.cancer.org/content/dam/cancer-org/research/cancer-facts-and-statistics/breast-cancer-facts-and-figures/breast-cancer-facts-and-figures-2015-2016.pdf>

Bowen, D.J., Kreuter, M., Spring, B., Cofta-Woerpel, L., Linnan, L.,

Weiner, D., . . . Fernandez, M. (2009). How we design feasibility studies. *American Journal of Preventive Medicine, 36*, 452–457. doi:10.1016/j.amepre.2009.02.002

Champion, V.L., & Skinner, C.S. (2008). The Health Belief Model. In K. Glanz, B.K. Rimer, & K. Viswanath (Eds.), *Health behavior and health education: Theory, research, and practice* (4th ed., pp. 45–65). San Francisco, CA: Jossey-Bass.

Chawla, N., Breen, N., Liu, B., Lee, R., & Kagawa-Singer, M. (2015). Asian American women in California: A pooled analysis of predictors for breast and cervical cancer screening. *American Journal of Public Health, 105*, e98–e109. doi:10.2105/AJPH.2014.302250

Donnelly, T.T. (2006). Living “in-between”—Vietnamese Canadian women’s experiences: Implications for health care practice. *Health Care for Women International, 27*, 695–708. doi:10.1080/07399330600817725

Doutrich, D., Arcus, K., Dekker, L., Spuck, J., & Pollock-Robinson, C. (2012). Cultural safety in New Zealand and the United States: Looking at a way forward together. *Journal of Transcultural Nursing, 23*, 143–150. doi:10.1177/1043659611433873

Gomez, S.L., Noone, A.-M., Lichtensztajn, D.Y., Scoppa, S., Gibson, J.T., Liu, L., . . . Miller, B.A. (2013). Cancer incidence trends among Asian American populations in the United States, 1990–2008. *Journal of the National Cancer Institute, 105*, 1096–1110. doi:10.1093/jnci/djt157

HealthyPeople.gov. (2017). C-17: Increase the proportion of women who receive a breast cancer screening based on the most recent guidelines. Retrieved from <https://www.healthypeople.gov/2020/topics-objectives/topic/cancer/objectives>

Hou, S.I., Sealy, D.A., & Kabiru, C.W. (2011). Closing the disparity gap: Cancer screening interventions among Asians—A systematic literature review. *Asian Pacific Journal of Cancer Prevention, 12*, 3133–3139.

Kwon, H.T., Ma, G.X., Gold, R.S., Atkinson, N.L., & Wang, M.Q. (2013). Primary care physicians’ cancer screening recommendation practices and perceptions of cancer risk of Asian Americans. *Asian Pacific Journal of Cancer Prevention, 14*, 1999–2004. doi:10.7314/apjcp.2013.14.3.1999

Lee-Lin, F., Menon, U., Leo, M.C., & Pedhiwala, N. (2013). Feasibility of a targeted breast health education intervention for Chinese American immigrant women. *Oncology Nursing Forum, 40*, 361–372. doi:10.1188/13.ONF.361-372

Lee-Lin, F., Menon, U., Pett, M., Nail, L., Lee, S., & Mooney, K. (2008). Measuring breast cancer and mammography screening beliefs among Chinese American immigrants. *Western Journal of Nursing Research, 30*, 852–868. doi:10.1177/0193945908319247

Lee-Lin, F., Nguyen, T., Pedhiwala, N., Dieckmann, N., & Menon, U. (2015). A breast health educational program for Chinese-American women: 3- to 12-month postintervention effect. *American Journal of Health Promotion, 29*, 173–181. doi:10.4278/ajhp.130228-QUAN-91

Lee-Lin, F., Pedhiwala, N., Nguyen, T., & Menon, U. (2015). Breast health intervention effects on knowledge and beliefs over time among Chinese American immigrants—A randomized controlled study. *Journal of Cancer Education, 30*, 482–489. doi:10.1007/s13187-014-0727-6

Lu, M., Moritz, S., Lorenzetti, D., Sykes, L., Straus, S., & Quan, H. (2012). A systematic review of interventions to increase breast and cervical cancer screening uptake among Asian women. *BMC Public Health, 12*, 413. doi:10.1186/1471-2458-12-413

Nguyen, G.T., Barg, F.K., Armstrong, K., Holmes, J.H., & Hornik, R.C. (2007). Cancer and communication in the health care setting: Experiences of older Vietnamese immigrants, a qualitative study. *Journal of General Internal Medicine, 23*, 45–50. doi:10.1007/s11606-007-0455-2

Nguyen, G.T., Shungu, N.P., Niederdeppe, J., Barg, F.K., Holmes, J.H., Armstrong, K., & Hornik, R.C. (2010). Cancer-related information seeking and scanning behavior of older Vietnamese immigrants. *Journal of Health Communication, 15*, 754–768. doi:10.1080/10810730.2010.514034

- Nguyen, T.T., Le, G., Nguyen, T., Le, K., Lai, K., Gildengorin, G., . . . McPhee, S.J. (2009). Breast cancer screening among Vietnamese Americans: A randomized controlled trial of lay health worker outreach. *American Journal of Preventive Medicine*, *37*, 306–313. doi:10.1016/j.amepre.2009.06.009
- Nguyen-Truong, C.K., Leo, M.C., Lee-Lin, F., Gedaly-Duff, V., Nail, L.M., Gregg, J., . . . Tran, T. (2015). Adaptation and testing of instruments to measure cervical cancer screening factors among Vietnamese immigrant women. *Journal of Transcultural Nursing*, *26*, 244–253. doi:10.1177/1043659614524245
- Oeffinger, K.C., Fontham, E.T., Etzioni, R., Herzig, A., Michaelson, J.S., Shih, Y.-C., . . . Wender, R. (2015). Breast cancer screening for women at average risk: 2015 guideline update from the American Cancer Society. *JAMA*, *314*, 1599–1614. doi:10.1001/jama.2015.12783
- Oregon Health Authority. (n.d.). Breast and cervical cancer screening services. Retrieved from [https://public.health.oregon.gov/HealthyPeopleFamilies/Women/HealthScreening/Pages/Breast\\_and\\_Cervical\\_Cancer\\_Screening.aspx](https://public.health.oregon.gov/HealthyPeopleFamilies/Women/HealthScreening/Pages/Breast_and_Cervical_Cancer_Screening.aspx)
- Pourat, N., Kagawa-Singer, M., Breen, N., & Sripipatana, A. (2010). Access versus acculturation: Identifying modifiable factors to promote cancer screening among Asian American women. *Medical Care*, *48*, 1088–1096. doi:10.1097/MLR.0b013e3181f53542
- Prochaska, J.O., Redding, C.A., & Evers, K.E. (2008). The Transtheoretical Model and stages of change. In K. Glanz, B.K. Rimer, & K. Viswanath (Eds.), *Health behavior and health education: Theory, research, and practice* (4th ed., pp. 97–121). San Francisco, CA: Jossey-Bass.
- Solanki, P.A., Ko, N.Y., Qato, D.M., & Calip, G.S. (2016). Risk of cancer-specific, cardiovascular, and all-cause mortality among Asian and Pacific Islander breast cancer survivors in the United States, 1991–2011. *SpringerPlus*, *5*, 82. doi:10.1186/s40064-016-1726-3
- United States Census Bureau. (2016). 2015 ACS 1-year estimates. Retrieved from <https://www.census.gov/programs-surveys/acs/technical-documentation/table-and-geography-changes/2015/1-year.html>
- U.S. Department of Health and Human Services Office of Minority Health. (2017). Profile: Asian Americans. Retrieved from <https://minorityhealth.hhs.gov/omh/browse.aspx?lvl=3&lvlid=63>
- U.S. Preventive Services Task Force. (2016). *Breast cancer: Screening*. Retrieved from <https://www.uspreventiveservicestaskforce.org/Page/Document/UpdateSummaryFinal/breast-cancer-screening1?ds=1&s=breast%20cancer%20screening>
- Wahab, S., Menon, U., & Szalacha, L. (2008). Motivational interviewing and colorectal cancer screening: A peek from the inside out. *Patient Education and Counseling*, *72*, 210–217. doi:10.1016/j.pec.2008.03.023
- Wu, T.-Y., Hsieh, H.F., & West, B.T. (2009). Stages of mammography adoption in Asian American women. *Health Education Research*, *24*, 748–759. doi:10.1093/her/cyp009
- Wu, T.-Y., & Lin, C. (2015). Developing and evaluating an individually tailored intervention to increase mammography adherence among Chinese American women. *Cancer Nursing*, *38*, 40–49. doi:10.1097/NCC.0000000000000126
- Wu, T.-Y., & Ronis, D. (2009). Correlates of recent and regular mammography screening among Asian American women. *Journal of Advanced Nursing*, *65*, 2434–2446.