Published in final edited form as:

Health Promot Pract. 2011 November ; 12(6): 876–886. doi:10.1177/1524839909355518.

Development of a Breast and Cervical Cancer Screening Intervention for Vietnamese American Women: A Community-Based Participatory Approach

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Abstract

Community-based participatory research (CBPR) is a collaborative partnership approach to research that combines the efforts of researchers and stakeholders. CBPR can effectively be used to target local community populations in increasing knowledge and improving behaviors in cancer prevention as participants have a voice and active role in the research process. This article describes how CBPR was used in the development, implementation, and evaluation of a pilot intervention for breast and cervical cancer screening among a Vietnamese female population. The authors outline the use of CBPR in three phases: (a) the identification of preventive health topics important in the local Vietnamese community, (b) the development and administration of a survey to gain a deeper understanding of barriers to breast and cancer screening among Vietnamese women, and (c) the development of a culturally appropriate pilot intervention to promote cancer screening behavior among a local Vietnamese population. In Study 1, it was found that Vietnamese women experienced disparities in breast and cervical cancer screening. In Study 2, it was found that having health insurance and a regular physician were predictive of breast and cervical cancer screening. It was also found that participants had low levels of acculturation and lacked cancer screening knowledge. In Study 3, it was found that the culturally relevant intervention used in this study improved cancer screening–related outcomes in knowledge, self-efficacy, intention, and behavior.

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Authors' Note: This study was funded by the University of Richmond's Bonner Center for Civic Engagement and the Virginia Commonwealth University's Institute for Women's Health in small grants to the first author. These studies would not have been possible without their support.

We would also like to thank the Vietnamese Church of Martyrs for their collaborative efforts and invaluable support. Last but certainly not least, we would like to thank all the participants who lent their time, ideas, and voices in developing these projects to help women receive an opportunity to understand the importance of good health.

¹Logit analysis is a uni- and multivariate technique that estimates the probability of an event occurring or not by predicting a binary dependent outcome from a set of categorical independent variables, specifically looking at the distribution of cases in the cross tabulation (Hahn & Soyer, 2005).

Keywords

breast cancer; cervical cancer; women; community psychology; intervention; Vietnamese

In this article, we describe our collaboration with a local Vietnamese community to identify, and then to address, the problem of breast and cervical cancer among women. Breast and cervical cancer are major causes of female morbidity and mortality in the United States. In 2009, there was an estimated 192,000 newly diagnosed and 40,000 mortality cases of breast cancer; for cervical cancer, there was an estimated 11,000 newly diagnosed and 4,000 mortality cases in 2009 (American Cancer Society [ACS], 2009).

The ACS has established cancer screening guidelines and recommends that women older than 40 receive an annual mammogram and clinical breast exam (CBE) and that women between the ages of 20 and 39 receive a CBE every 3 years. The ACS recommends that women receive an annual Pap test 3 years after the initiation of sexual intercourse or by the age of 21 (ACS, 2008). These screening guidelines have contributed to substantial reductions in morbidity, mortality, and health care costs associated with breast and cervical cancer among U.S. women (International Agency for Research on Cancer [IARC], 1986; Otto et al., 2003; Sasieni, Cuzick, & Lynch-Farmery, 1996; Tabar et al., 2003). But this is not the case among all women.

BACKGROUND

Breast and Cervical Cancer Among Vietnamese Women

Reductions in cancer prevalence are not equal across ethnic groups. Asian women, especially Vietnamese women, continue to have high levels of breast and cervical cancer due in part to inconsistent adherence to screening guidelines (U.S. Department of Health for Human Services, 2006). The incidence of cervical cancer is 5 times higher for Vietnamese women than for White American women (ACS, 2002). Vietnamese women experience a lower incidence of breast cancer than their White counterparts (34.8 compared to 130.6 per 100,000; Lin, Phan, & Lin, 2002; Ries et al., 2008). However, research shows that breast cancer risk increases in women who move from countries with low incidence rates to countries with high rates as acculturation may be a factor (John, Phipps, Davis, & Koo, 2005). When Asian women migrate to the United States, breast cancer risk increases not only in subsequent generations (Ziegler et al., 1993) but also in the migrating generation itself (Shimizu et al., 1991).

Higher rates of cervical cancer and increasing rates of breast cancer for Vietnamese women highlight the need for cancer screening among this population. Vietnamese women have very low levels of reported Pap testing compared to other racial or ethnic groups, even among other Asian subgroups (De Alba, Ngo-Metzger, Sweningson, & Hubbell, 2005). Ho and colleagues (2005) surveyed cancer screening among Vietnamese women and found low rates. Sixty-eight percent had never had a Pap test in their lifetime and 45% had never had a breast examination by a doctor. Many other studies support the low rates of cancer screening

among Vietnamese women (Lam et al., 2003; McGarvey et al., 2003; Nguyen et al., 2006; Taylor et al., 2004).

Cultural beliefs and practices influence cancer screening practices (Lee-Lin et al., 2007; Simon, 2006). Although it is important to address socioeconomic barriers such as the lack of health insurance or education, effective interventions will be ones that are tailored to address cultural norms and beliefs. Every culture provides a model of health and illness that influences people's subjective interpretation and experience of illness, risk, and risk reduction. For example, Meana, Bunston, George, Wells, and Rosser (2001) found that prior to arrival in North America, Asian immigrant women had either never heard of breast cancer or considered it a very rare disease. They believed that an individual was more at risk for breast cancer if she had not breast-fed her children. Some believed that the disease was exclusively terminal and that it was God's will. For some women with cancer, religion can lead to feelings of shame because they perceive cancer to be the result of bad karma or divine retribution for past wrongdoings or sins. These beliefs ultimately lead some women to live with the disease privately and secretly (Meana et al., 2001).

Among ethnic-minority populations, strategies for promoting health promotion behaviors such as cancer screening will be more effective if cultural factors are attended to (Kreuter et al., 2003). One cultural factor, acculturation, is the process in which a minority individual adopts attitudes, values, and behaviors of another dominant culture (Robbins et al., 2005). Acculturation may affect cancer screening rates. For example, ethnic-minority women who are more acculturated are more likely to undergo cancer screening than those who are less acculturated (Shah, Zhu, Wu, & Potter, 2006; Tang et al., 2000). In general, Vietnamese individuals tend to be less acculturated than other Asian subgroups (Matsuoka, 1990; Stein, 1979), and this may explain why Vietnamese women do not practice more Westernized health behaviors. Another cultural factor, ethnic identity, is also linked to health-promotive behaviors (Belgrave, Townsend, Cherry, & Cunningham, 1997; Bowen, Christensen, Powers, Graves, & Anderson, 1998). Ethnic identity is one's feelings toward and identification with an ethnic or racial group (Phinney & Kohatsu, 1997). One study found that women with a high cultural identity expressed greater interest in breast cancer testing (Bowen, Singal, Eng, Crystal, & Burke, 2003). This greater interest was in part attributed to a heightened awareness of risk factors associated with one's ethnic groups.

Community-Based Participatory Research (CBPR)

One way to tailor an intervention for an ethnic community is by collaborating fully with the community in identifying the problem and in developing a solution to the problem. CBPR is a collaborative partnership approach that combines the efforts of researchers and stakeholders. These stakeholders can be program participants, other community members, and organizational representatives (Israel et al., 2001). CBPR may be especially useful in identifying and uncovering health issues in ethnic-minority populations that may have been understudied by researchers. We believed that CBPR could be helpful in identifying community health issues and in developing strategies to tackle those issues with the Vietnamese in a local community (Nguyen et al., 2006; Powell et al., 2005; Smith, Christopher, & McCormick, 2004).

This study took place in a mid-size southeastern city in the United States. The Vietnamese population, though growing, is relatively small, and health resources and information are not as accessible and/or well known as in other larger cities and on the West coast. Many of the activities of the local Vietnamese community were centered in a Catholic church. Churches often serve as central meeting grounds for ethnic-minority populations and are the primary dispensers of information and services in health, education, financial advising, and family matters (D. T. Davis et al., 1994; Markens, Fox, Taub, & Gilbert, 2002). The church legitimized this project for the Vietnamese population and was an effective mechanism for recruiting community participants.

We discuss the use of CBPR in first identifying health topics of concern in the Vietnamese community and then in creating a culturally tailored intervention for breast and cervical cancer screening in the local community. We named the project *Suc Khoe La Quan Trong Hon Sac Dep!* (“Health Is More Important Than Beauty!”) because of the success of the Vietnamese Community Health Promotion Project’s use of the Vietnamese proverb *Suc Khoe La Vang!* (“Health Is Gold!”) in their own organization. Along with CBPR, our conceptual framework recognized the role of cultural constructs (e.g., acculturation and ethnic identity) as important factors in cancer screening. The overall goals of this article were to (a) illustrate how we used CBPR approaches in informing the research inquiry and (b) illustrate how cultural barriers must be addressed when attempting to increase screening rates among minority women.

The first study was conducted to identify underlying themes and issues regarding health topics within the local Vietnamese population. At the time of the first study, we were not sure that cancer screening would emerge as an important health topic. The focus of this first study was to examine subjective views of community members on topics such as access and barriers to healthcare services and knowledge and beliefs about preventive and curative health issues. Data from the first study would lead to the development of a culturally sensitive survey. The second study used surveys to gain a deeper understanding of women’s preventive behaviors. The final study was the development and piloting of a culturally sensitive and tailored intervention program for breast and cervical cancer screening for Vietnamese women.

STUDY 1

The initial step was to examine the local Vietnamese community’s knowledge, beliefs, and attitudes on community health services and preventive health issues. This study took place in a Southeastern city where there are sparse health resources and information available for Vietnamese populations, leading to decreased health care utilization. This study was exploratory in nature and designed for community participants to voice their knowledge, beliefs, and attitudes about health and prevention; this would inform us on possible avenues of research to explore next.

Method

Participants.—Community members were recruited from a local Vietnamese Catholic church. Forty-two Vietnamese men ($n = 19$) and women ($n = 23$) participated in one of six

focus group discussions. Ages of participants ranged from 22 to 70. All 42 participants were immigrants from Vietnam and permanent residents of the United States.

Materials and procedure.—First, approval was obtained from the institutional review board. Then, participants were recruited from the local Vietnamese church through referrals and service and bulletin announcements that asked for volunteers for a study that would help identify important health issues and concerns in the community. Two focus group facilitators were trained by the researchers. Focus group discussions were conducted on the church grounds by facilitators who were members of the Vietnamese community. Focus groups were conducted in the Vietnamese language.

Focus group discussions lasted approximately 60 to 90 min and examined attitudes, beliefs, and behaviors in regard to preventive and curative health care. Examples of focus group probes included the following: What unmet health service needs do the Vietnamese face? What barriers interfere with access to these health services? When focusing on health issues, what is more important: preventative or curative health? Are the professionals in the healthcare services effectively communicating and treating the Vietnamese population? What health services available to the Vietnamese population are not used? After the closing of each discussion, participants were thanked and provided a monetary incentive of \$10.

Results

In response to the question asking what unmet health service needs they faced, 28% answered that they received no health services at all. Common reasons for lack of health services were the lack of financial resources and lack of health insurance. Twenty-six percent were not insured. One woman commented that many of the immigrants did not have higher education and worked in places like restaurants and nail salons, where the businesses did not offer insurance. As a result, many were unable to afford visits to physicians and to obtain other health services.

Cultural factors also served as barriers to health services. The lack of English proficiency was a commonly noted cultural barrier. Another barrier was the Vietnamese value of modesty and privacy. Some of the Vietnamese women stated that they felt embarrassed when revealing personal, private health issues to doctors, so some avoided visits to medical professionals. One man said, “The Vietnamese want to keep their private lives from society to avoid embarrassment. If they have [a disease] they don’t want anyone to know because they want to protect their reputation.”

In addition, participants were asked what available health services they tended to underutilize. Forty-three percent of the female participants answered that they ignored Pap tests and mammograms. One woman responded, “The doctor recommends to get a yearly Pap smear for people over 45 years old, but I know in my area that none of the Vietnamese women go for those exams. They don’t like it, they are afraid that if the doctors find out problems or complications then the women will have to face surgery, and it scares them.” This statement suggests that some Vietnamese women do not understand the importance of cancer screening in diagnosing cancer so that it can be treated in early stages. In addition,

34% of participants answered that they did not know where to look or ask for help when searching for health services.

Discussion and Conclusions From Study 1

Study 1's objective was to gather information on beliefs, attitudes, and behaviors of the local population on health issues. We found that the Vietnamese population neglected health-based services because of lack of finances, health insurance, or appropriate knowledge to find these services. Even when some participants desired access to health services such as Pap tests, mammograms, or clinical breast exams, they did not feel they could navigate through the health system to seek out these services. Of particular interest was the low rate of breast and cervical cancer screening among the women because of cultural barriers. These results informed us of the disparities in breast and cervical cancer screening among Vietnamese women.

STUDY 2

Study 1's results informed us that the Vietnamese community perceived breast and cervical cancer screening to be largely neglected issues. We wanted to explore in more depth why these screening rates were so low and subsequently focused primarily on women. The next step was to develop and administer a survey to examine in more detail the barriers found in Study 1 to health care and breast and cervical cancer screening. Our goal was to uncover demographic as well as cultural factors related to cancer screening that would help lead us to the development of a culturally appropriate intervention.

Method

Participants.—This study included 70 Vietnamese female immigrants from a local Catholic church. The method for recruiting and engaging participants was the same as in Study 1. The criteria for participation were that participants must have emigrated from Vietnam to the United States for residency. The age distribution of participants was as follows: 18–24 (11%), 25–36 (36%), 37–45 (20%), 46–59 (20%), and 60+ (12%).

Materials.—Materials included a self-report survey assessing demographic variables such as employment status, education level, income, and health insurance coverage as the findings from Study 1 suggested that these factors influence cancer screening behavior. The survey also included items that measured previous receipt and intention of receiving clinical breast exams (CBEs) and Pap tests as the previous study suggested low screening rates. Previous receipt of a CBE or Pap test was assessed by one-item yes–no question: “Have you ever had a CBE (or Pap test)?” Intention was assessed by a one-item yes–no question: “Do you intend on getting a CBE (or Pap test)?”

Cultural variables such as length of residency in the United States (in years), age when immigrated, and acculturation were also assessed. The acculturation scale was an adapted version by Gupta and Yick (2000) that was validated for Asian samples. Participants were asked to respond to items such as “How do you identify yourself?” with response categories Vietnamese, Vietnamese American, and American. In addition, a question assessing beliefs

about cervical and breast cancer screening was included based on the findings of a study by Yi (1998; e.g., “Do you believe that all married woman should receive a Pap test?”). Yi had found that some Vietnamese women believed screening to be more important for married than for unmarried women, regardless of sexual activity.

Design and procedure.—Surveys were constructed by using the emergent themes from the previous focus groups, and a translator translated the surveys from English to Vietnamese. Community leaders, a panel of priests and nuns from the church, and members from the Vietnamese community reviewed the surveys and provided feedback to make sure that the items were appropriate, respectful, and easy to understand. After the recommendations and acceptance of the community group, the surveys were finalized. Then, community liaisons worked with the researchers to recruit participants through service announcements, church bulletins, and referrals. Participants who met the inclusion criteria were contacted by researchers, who scheduled data collection sessions. Two Vietnamese community members were trained to administer the surveys. Participants met in a community room at the church and were told that they were taking part in a study that examined cancer screening behaviors among Vietnamese women. To protect confidentiality, women were informed that identifying numbers, rather than names, were to be used on the surveys. In addition, males were not allowed in the room while the surveying took place to ensure that the women felt comfortable. Participants then completed the surveys, after which they were debriefed. They were then given materials that included information about incidence rates and the risks associated with breast and cervical cancer. Participants were thanked and given a \$10 incentive for their participation in the study.

Results

The responses to items assessing demographics, cancer behavior and intention, and cultural beliefs are provided in Table 1. The results show the low rates of cancer screening receipt among the sample: 54% had never had a Clinical Breast Exam (CBE) and 41% had never had a Pap test. Logit analysis¹ revealed that women who had health insurance, a regular physician, a male physician, and were married had higher rates of CBE screening in comparison to women who did not have those qualities. The goodness-of-fit tests revealed $G^2 = 2.91$, $p = 1.00$. The entropy value was .35. Logistic regression also revealed that increasing rates of acculturation, increasing length of tenure (years of residency in the United States), and knowledge of where to get a CBE predicted higher intention to get a CBE, $\chi^2 = 12.30$, $p = .05$. The Nagelkerke test yielded $r^2 = .53$.

With regards to Pap testing, logit analysis revealed that women who had health insurance and a regular physician, were married, and were employed had higher probabilities of getting a Pap test in comparison to women who did not have those qualities. The goodness-of-fit tests revealed $G^2 = 8.50$, $p = 1.00$. The entropy value was .24. Results also showed that increasing length of tenure in this country and knowledge of where to get a Pap test predicted higher intention to get a Pap test, $\chi^2 = 31.44$, $p = .05$. The Nagelkerke test yielded $r^2 = .72$.

Discussion and Conclusions From Study 2

The data suggested that the female Vietnamese population engaged in lower rates of breast and cervical cancer screening behavior than the general U.S. population as well as other ethnic populations (De Alba et al., 2005). The findings indicated that having a regular physician and health insurance influenced screening behavior, suggesting that effective interventions should connect Vietnamese women to low-cost providers and to providers who do not require health insurance. In addition, the findings indicated that cancer screening behavior was influenced by a lack of knowledge and information about female cancer topics, suggesting a need for an educational intervention. For example, we found that women with a male physician were more likely to adhere to screening guidelines for CBE. This increased compliance to men is consistent with cultural values of a general reverence to elder and male figures in the Vietnamese population (Kibria, 1990). Lastly, the low rates of English proficiency and acculturation highlighted the importance of developing a culturally sensitive intervention.

STUDY 3

The next step was the development and implementation of a culturally appropriate cancer screening intervention. The findings from Study 2 suggested that an effective intervention would (a) educate and inform women on the importance of breast and cervical cancer screening, (b) consider cultural factors in the development of the intervention, and (c) connect women to low-cost providers or providers who do not require health insurance in the local community. We were also interested in exploring the relationship between cultural factors and screening behavior in this sample.

Method

Participants.—Twenty-one Vietnamese women were recruited from a local Vietnamese church community. These women had not participated in the two earlier studies. The mean age of participants was 41 years ($SD = 12.81$). Additional demographic information on participants is presented in Table 2.

Materials and measures.—Measures included pretest, posttest, and follow-up surveys assessing cancer screening behaviors, intent of cancer screening behaviors, knowledge of female cancers, self-efficacy in cancer screening, and measures of ethnic identity and acculturation. Examples of items measuring cancer screening behavior include yes–no questions such as “Have you ever had a Pap test?” and “Have you had a Pap test within the past 3 years?” Self-efficacy for CBE and Pap test screening was measured using an adapted version of a self-efficacy scale for mammography by Champion, Skinner, and Menon (2005). Participants responded to a Likert-type scale that ranged from *strongly disagree* to *strongly agree* to items such as “You know how to go about getting a Pap test.”

The Suinn-Lew Asian Self-Identity Scale (Suinn, Rickard-Figuero, Lew, & Vigil, 1987) was used to measure acculturation. Participants responded to items such as “How would you rate yourself?” using a Likert-type scale response format where 1 = *very Vietnamese*, 3 = *equally Vietnamese and Westernized*, and 5 = *very Westernized*. Cronbach’s α was .81 for the

sample. The East Asian Ethnic Identity Scale measured ethnic identity (Barry, 2002). Participants responded through a Likert-type scale format where 1 = *strongly disagree* and 5 = *strongly agree* to items such as “Members of my ethnic group do not have much to be proud of.” The Cronbach’s $\alpha = .84$ for the sample.

Intervention materials included PowerPoint presentations that contained educational information on breast and cervical cancer. Information included diagnosis, symptoms, screening guidelines, cancer treatment options, and risk factors for breast and cervical cancer. Results from Study 2 indicated low rates of English proficiency, acculturation, and knowledge of female cancer topics by Vietnamese women, so all educational materials were in the Vietnamese language. The health organization Suc Khoe La Vang! (“Health Is Gold!”), located in California, does prevention work with the Vietnamese population and was contacted for help with intervention materials. The current intervention used a modified form of Vietnamese flip charts on female cancer topics used by Suc Khoe La Vang! (Bird et al., 1998). In addition, intervention materials included take-home reading materials (pamphlets and brochures on breast and cervical cancer) available in the English and Vietnamese language. The reading material reiterated the information presented in the session so that the women could have access to the information at home. All intervention materials were reviewed by community leaders and members to ensure that the materials were culturally appropriate and respectful.

Lastly, participants were presented with information on local low- or no-cost health providers. Findings from Study 2 indicated that an effective intervention would connect Vietnamese women to local low-cost health providers. As a result, government as well as local health organizations (e.g., Social Services, Department of Health, Planned Parenthood, and a Free Clinic) were contacted for information regarding low-cost mammograms, CBEs, and Pap tests. Other organizations with low-cost screening procedures were referred to us through key community informants. Take-home materials were available in English or Vietnamese.

Procedure.—We initially met with community leaders and members to discuss strategies for intervention development. Two community members who could facilitate intervention sessions in the Vietnamese language were identified and trained. Pretest, posttest, and follow-up surveys were constructed and reviewed with community partners. Based on the low levels of knowledge, intent, and actual rates of cancer screening behavior found in Phase 2, these items were selected as the primary outcome measures. After construction of the surveys, a translator translated the items from English to Vietnamese and then back-translated to ensure accuracy in wording. The intervention was offered in both the English and Vietnamese languages, but all participants requested the intervention in their native language, so no English sessions were facilitated.

Women were greeted on arrival and were asked to complete pretest measures. Afterwards, they were invited to serve themselves dinner, which consisted of an ethnic meal ordered from a local Vietnamese restaurant. After the women served themselves and were comfortably seated, facilitators presented educational materials on breast and cervical cancer for 15 min. Afterwards, the women were encouraged to raise concerns, ask questions, and

discuss the topics that they heard in the presentation. At the close of the session, women were thanked, provided a monetary incentive (\$10), and given additional brochures and pamphlets to take home.

Participants were asked to return 3 months after the educational sessions to complete the follow-up surveys as well as to participate in focus groups sessions. In the focus groups sessions, women were asked to share their experiences with the intervention as well as other experiences regarding cancer screening. The results of the focus group sessions will be reported elsewhere.

Results

There was a relationship between cultural factors and cancer screening knowledge. Acculturation was positively related to awareness and knowledge scores, $r(20) = .57, p = .01$. As rates of acculturation increased, cancer screening knowledge also increased. Ethnic identity was found to be negatively related to cancer screening knowledge, $r(20) = -.45, p = .01$. As rates of ethnic identity increased, cancer screening knowledge decreased.

Findings indicated that there were significant increases from baseline scores in knowledge and self-efficacy scores to posttest and follow-up in knowledge and self-efficacy (see Table 3). There was also increased intention to get testing. For CBE screening, intent went from 90% (pretest) to 100% (posttest) and 100% (follow-up). For Pap testing, intent went from 71% (pretest) to 100% (posttest) and 94% (follow-up). For women who had previous receipt of a CBE and Pap test but were not up-to-date, the data showed that 28% and 19% of the participants became up-to-date with their screenings, respectively. Other behaviors remained unchanged. Overall, the limited sample size and a short 3-month time period between the interventions to the follow-up phase possibly contributed to undetectable changes in overall behavior (see Table 4).

GENERAL DISCUSSION

This article discusses the use of a CBPR approach in developing a culturally appropriate intervention for Vietnamese women in the areas of breast and cervical cancer prevention. The project led to a successful community–academic collaboration that addressed an important health issue. CBPR is a way to blend the goals of academia and the community as it enables professionals and nonprofessionals to become coresearchers (Patton, 2002). Under CBPR, there is joint collaboration and a mutually acceptable ethical framework that helps to uncover and address organizational and community problems. Community members are trained to participate in the inquiry process and the community becomes empowered in developing a skill they may not have previously had to address their own health concerns (Fetterman, 2000).

The findings were consistent with previous literature on cancer screening among ethnic-minority populations. Carrasquillo and Pati (2004) found that nearly half of all recent immigrants and a quarter of immigrant women with longer tenure lacked insurance as compared to the 14% of U.S.-born women who lacked health insurance. Similarly, our research found that 26% (Study 1) and 30% (Study 2) of our Vietnamese population lacked

health insurance. In addition, 33% of the participants had incomes that were below poverty level as compared to the 14% national rates for Asian women (U.S. Census Bureau, 2005). The lack of financial resources serves as a barrier to health care in two ways. First, it leads to the inability to afford health insurance, which is one barrier to health service utilization. Second, immigrants with or without insurance cannot afford to pay the high deductibles or other expenses accompanying visits to physicians. Because of these demographic barriers, the educational intervention in Study 3 was developed to connect participants to local health care providers who could accommodate women from low-income backgrounds with no health insurance. The lack of health insurance, access to a regular physician, and income below the poverty level, comprise a cluster of factors that are all related to financial resources that can determine whether one engages in preventive health behaviors (Seow, Huang, & Straughan, 2004; Sox, Swartz, Burstin, & Brennan, 1998). These appear to be necessary (but insufficient conditions) to engaging in screenings and preventive checkups. Cultural barriers may pose additional roadblocks for Vietnamese women to obtain Pap tests and breast examinations.

Previous literature suggests that Vietnamese women experience deficits in knowledge and actual rates of cancer screening behavior. These trends were confirmed in this study. For example, results in Study 3 found that 43% of the participants in our study had previously received a Pap test, which was low compared to national rates for African Americans (86%), Caucasians (84%), and Hispanics or Latinas (78%; ACS, 2006). In addition, the Vietnamese women in our study displayed lower rates of awareness and knowledge about cancer topics, so it was important to include an educational component that would increase awareness about cancer and prevention.

In addition, we discovered that our Vietnamese participants had low rates of English proficiency and acculturation. Because of these factors, it was important to develop an intervention that was culturally tailored and respectful to their language. Our intervention materials were adapted from those developed for a Vietnamese population, and the educational sessions were held in a setting that fostered comfort and cultural familiarity. In addition, the use of community members as facilitators fostered trust and mutual respect. Our findings are consistent with others that have suggested that using a CBPR model and culturally tailored interventions can be effective for the promotion of cancer screening for a Vietnamese population (Bird et al., 1998; Burke et al., 2004; Jenkins et al., 1999; Lam et al., 2003; Ma, Fleisher, Gonzalez, & Edwards, 2004).

We also found that cultural factors were related to cancer screening knowledge. Acculturation was positively related to cancer screening knowledge. This finding is consistent with findings such as those of Shah and colleagues (2006) who found that as Hispanic women become increasingly acculturated, their rates of cervical cancer knowledge and screening behavior increase.

We found that ethnic identity was negatively related to cancer screening knowledge, which contrasts findings in the literature that suggests that ethnic identity can be promotive of cancer screening health behaviors (Bowen et al., 1998) and abstinence from drug use (Belgrave et al., 1997). Although unexpected, it is not surprising considering that higher

levels of acculturation were linked to increased cancer screening. In addition, traditional unidimensional models of acculturation show that acculturation may be negatively linked to ethnic identity among ethnic minorities (Gordon, 1964). These mixed findings may be reconciled when considering a moderating effect of normative beliefs in the relationship between ethnic identity and acculturation and health behaviors. That is, ethnic identity may lead to healthy behaviors only when healthy beliefs and attitudes are normative in a specific ethnic population. If negative health behaviors are normative, then ethnic identity may contribute to negative health behaviors. Similarly, acculturation may lead to healthy behaviors only when healthy beliefs and attitudes are normative in the majority population. This may explain why increasing levels of Vietnamese ethnic identity are related to less cancer screening knowledge and, ultimately, behavior. Further research needs to investigate the role of normative health beliefs in the relationship between ethnic identity, acculturation, and health behaviors.

There were some study limitations. In Study 1, male and female participants were not separated into different focus groups. Although some females commented on issues concerning breast and cervical cancer, the lack of separate focus groups for men and women may have affected the nature of the information that they were willing to disclose as gender, modesty, and patriarchal beliefs have been shown to hinder the ability for Asian females to pursue female cancer topics (Rajaram & Rashidi, 1999). In addition, because of the reverence of community and church leaders, participants may have felt motivated to respond to questions in ways that made them look more socially desirable. Similarly, participants may have answered in ways that were more socially acceptable as their facilitators were community members. Although participants were assured of confidentiality, they may have believed that their responses might be revealed to outsiders, and this might have led them to answer the questions in a way that was more self-enhancing.

The studies also had a limited sample size, and efforts for future interventions will address this by using a larger sample. The study also did not use random sampling as the majority of the participants were recruited from the local Catholic Church community. However, this convenience sampling can be justified because of the involvement of the church in CBPR. Future studies will address this limitation by recruiting participants from different faith-based communities as well as non-religious-based organizations. In addition, although our samples in Study 1 and 2 had lower rates of health insurance in comparison to the general U.S. population, the insurance coverage was still relatively high: 74% (Study 1), 70% (Study 2), and 84% (Study 3). This may affect the generalization of our findings to a noninsured population. Future intervention studies should attempt to control for whether participants have health insurance and a regular physician, as these may influence how effective cancer screening interventions are.

The project is unique in a few ways. First, it addresses *both* cervical and breast cancer topics for a Vietnamese population. Second, it demonstrates the effectiveness of a CBPR approach in the development and implementation of a culturally tailored intervention for a Vietnamese immigrant population. Lastly, it examines the influence of cultural factors on cancer prevention behaviors for the Vietnamese population. In addition, we believe this research contributes to the literature by providing support that health information, specifically in

breast and cervical cancer topics, is transmitted effectively via informal routes and networks such as those found in faith-based communities among minority populations. We also believe this research illustrates that Western ideals of health can coexist with Eastern ideals of health, but sometimes cultural refinement is needed. For example, our intervention placed emphasis on staying healthy to be able to provide and care for others, such as family members, a value that is found in collectivistic cultures such as the Vietnamese culture (Chung & Bemak, 1998; R. E. Davis, 2000; Triandis, 1995).

In summary, CBPR is an effective approach in identifying and in developing interventions that will be culturally sensitive to local ethnic-minority community populations. It was successfully used in developing a cancer screening educational intervention for a local community of Vietnamese women. Future studies should consider using CBPR methods to address other preventive health issues for Vietnamese populations such as dieting, exercise, or smoking cessation.

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TABLE 1

Participant Responses

	<i>Answered "Yes," %</i>
Demographics	
Married	73
Have health insurance	70
Employed	80
Income below poverty line	33
High school education	54
Behavior and intention	
Previous receipt of CBE	46
Intention to get a CBE	54
Previous receipt of a Pap test	59
Intention to get a Pap test	64
Knowledge and beliefs	
Knew where to get a CBE	57
Believe that all married women should get a CBE	84
Believe that all virginal women should get a CBE	69
Knew where to get a Pap test	61
Believe that all married women should get a Pap test	80
Believe that all virginal women should get a Pap test	69

NOTE: CBE = clinical breast exam.

TABLE 2

Participant Responses to Demographic Items

	<i>Yes, %</i>	<i>No, %</i>
Are you employed?	81	19
Are you currently married?	52	43
Do you have children?	58	42
Do you have health insurance?	86	14
Do you have a regular physician?	76	24
Have you ever had a Clinical Breast Exam (CBE)?	48	52
Have you had a CBE within the past 3 years?	43	57
Have you ever had a Pap test?	47	53
Have you had a Pap test within the past year?	37	63

TABLE 3

<i>Changes in Outcomes</i>	<i>Pretest (M)</i>	<i>Posttest (M)</i>	<i>Follow-Up (M)</i>
Cancer knowledge	11.19	18.52 *	15.79 *
Self-efficacy for CBE screening	45.05	47.33 *	45.15
Self-efficacy for Pap testing	43.56	47.5 *	45.77 *

NOTE: CBE = clinical breast exam.

*
p < .05 (denotes significant changes from baseline [pretest] rates).

TABLE 4

Changes in Cancer Screening Intention and Behavior

	%
CBE	
1 of 18 women scheduled for a CBE	5
5 of 18 women received a CBE	28
Pap test	
1 of 18 women scheduled for a Pap Test	5
4 of 19 received a CBE	19

NOTE: CBE = clinical breast exam.