Title
Designing culturally and linguistically appropriate health interventions: the "Life Is Precious" Hmong breast cancer study.

Permalink
https://escholarship.org/uc/item/9bf6r6bv

Journal
Health education & behavior : the official publication of the Society for Public Health Education, 34(1)

ISSN
1090-1981

Authors
Tanjasiri, Sora Park
Kagawa-Singer, Marjorie
Foo, Mary Anne
et al.

Publication Date
2007-02-01

DOI
10.1177/1090198105285336

License
CC BY 4.0

Peer reviewed
Cancer is the number one cause of death for Asian American women, yet they have the lowest rates of cancer screening. Contributing factors, particularly for Hmong women, include the lack of culturally and linguistically appropriate educational interventions. This study aimed to develop a culturally and linguistically appropriate intervention to improve the breast cancer screening rates among Hmong women in Fresno and San Diego, California. Intervention elements included the development of a flipchart, brochure, and video that presented basic breast health and screening information, along with the targeting of not only women but men to support their wives’ breast cancer screenings. Analyses of pre- and postworkshop surveys showed increases in knowledge and more positive attitudes among all participants, behavioral intentions for clinical breast examinations and mammograms among women, and support for such exams and possible cancer treatment among men. Implications for further research and practice are discussed.

Keywords: low literacy; non-English speaking; culturally appropriate; language appropriate; breast cancer screening; Hmong; Asian American women; intervention

Despite a productive effort spanning more than 80 years to eliminate the disease, cancer represents the leading cause of mortality for Asian American women in the United States (National Center for Health Statistics, 2003), and their incidence rates for breast cancer are rising (Deapen, Liu, Perkins, Bernstein, & Ross, 2002). Yet, Asian American women have some of the lowest rates of breast cancer screening of all ethnic groups (Kagawa-Singer & Pourat, 2000; Ponce, Gatchell, & Brown, 2003). This lack of progress...
for Asian subgroups has been the focus of increasing study, with research concluding that these groups represent hard-to-reach populations due to a combination of cultural issues (such as different beliefs about the cause and meaning of cancer; Jenkins & Kagawa-Singer, 2003) and structural barriers (primarily low income and lack of health insurance; Babey et al., 2003).

Among the many Asian ethnic subgroups, the Hmong are particularly underserved for cancer control services. The Hmong were originally a rural, tribal population that has endured centuries of persecution and death in China and Southeast Asia, most recently because of their support of the United States during the Vietnam War (Hein, 1995). When the United States lost this war, thousands of Hmong refugees, predominantly from Laos, came to this country as refugees. In 2000, the census enumerated 186,310 (alone or in combination with one or more other races) Hmong living in the United States, with 71,741 in California (U.S. Census Bureau, 2000). Hmong face enormous barriers to health care, due to high poverty rates, few years of formal education, and low literacy (in both English as well as Hmong). Indeed, due to the history of persecution and migration of these peoples, the Hmong were a preliterate society and their language was only oral until the 1950s, when a Romanized written system was developed by Protestant missionary linguists. Hmong culture, however, is strong and their folklore is rich in messages about cultural themes of equilibrium and family solidarity. Society is patriarchal and patrilineal, and organized by clans with common surnames (Cooper, 1984; Frye, 1995; Shadick, 1993). Strong kinship (clan) ties characterize Hmong families (average 6.2 children), and often two or three families live together in one household.

Two important barriers to accessing health care for the Hmong are the lack of culturally and linguistically appropriate health education information and programs. Traditionally, disease is viewed as loss of spirit to the Hmong, and thus illness is treated by a shaman who restores balance between the living and spiritual worlds (Fadiman, 1997; Symonds, 2004). Health programs, therefore, must introduce Western concepts of physical screening for health in meaningful and sensitive ways, particularly for “new” diseases such as cancer (Kagawa-Singer & Chung, 1994). Linguistically, the Hmong have extremely low levels of health literacy, which refers to the ability of individuals to “obtain, process, and understand basic health information and services” and includes not only reading and writing but also “numeracy, listening, speaking, cultural and conceptual knowledge” (Davis, Williams, Marin, Parker, & Glass, 2002; Freimuth & Mettger, 1990; Roter, Rudd, & Comings, 1998). Approximately one in five adults in the United States, of all ethnic groups, has low literacy skills, and almost half of Americans would have difficulty reading health information materials. Low health literate individuals, particularly those with low educational attainment and limited English proficiency (such as the Hmong), are even less likely to understand and manage chronic diseases, resulting in lower health status outcomes (Institute of Medicine, 2004).

Cognizant of the barriers facing this community, we set out to test the effectiveness of a community-based effort to increase breast cancer screening among Hmong in selected regions of California. As suggested by Pasick, Hiatt, and Paskett (2004), we aimed to...
develop “interventions, strategies, messages, and materials to conform with specific cultural characteristics of a population” (p. 1150). For communicating with various cultural groups, Kreuter, Lukwago, Bucholtz, Clark, and Sanders-Thompson (2003) elaborate on five main groups of strategies in health promotion. First, peripheral strategies involve use of colors, fonts, pictures, and other images that increase the appeal of the program to a group. Second, evidential strategies provide data-based information to enhance the relevance of a health issue to the group. Third, linguistic strategies rely on native languages to translate not only information but also concepts that retain consistent meanings in the different cultural context. Fourth, constituent-involving strategies involve members of the group in planning and conducting the program. Finally, sociocultural strategies build on the cultural values, beliefs, and behaviors to promote and reinforce the health program messages.

Past studies that maximized the use of culturally appropriate strategies demonstrated increased relevance of cancer screening programs for Southeast Asian and other ethnic/racial populations in the United States (Banner et al., 1995; Erwin, Spatz, Stotts, Hollenberg, & Deloney, 1996; Kelly et al., 1996; Navarro et al., 1998). Banner et al. (1995) used a participatory process by which trained and trusted peer leaders relied on “Kokua Groups” to discuss and promote the importance of breast and cervical cancer screening for Native Hawaiian women in Hawaii. Similarly, in their intervention to increase breast and cervical cancer screening among Cambodian women in Minnesota, Kelly et al. (1996) used a Cambodian language videotape facilitated by lay leaders at small group informational meetings to increase the relevance of, and trust in, screening messages for participants. Such linguistic, evidential, participatory, and sociocultural strategies resulted in significantly higher rates of clinical breast examination, mammography, and Pap tests at follow-up compared to baseline.

This article describes the culturally and linguistically appropriate strategies we used to improve breast cancer screening knowledge, attitudes, and behaviors within the Hmong communities of Central and Southern California. We detail the processes of, and strategies used by, the research team to develop and implement a behavioral needs assessment and educational intervention. The study involved Hmong men and women and resulted in changes in knowledge and attitudinal and behavioral intentions scores among program participants. A future article will report on the community-wide changes in the larger Hmong populations of these study communities.

**STUDY DESIGN AND EDUCATIONAL METHODS**

**Study Design and Team**

The “Life Is Precious” (Lub Neej Yog Tb Yam Loo Tshaj Plaws) project was a 3-year (1999-2002), quasi-experimental study to develop and test the effectiveness of a low-literacy, culturally appropriate community education intervention to increase breast cancer screening among Hmong women in three California regions (Fresno, Long Beach, and San Diego). The overall goal was to significantly increase the rates of breast self-examination (BSE), clinical breast examination (CBE), and mammography among Hmong women in the intervention sites (Fresno and San Diego) compared with the comparison site (Long Beach). This article, however, reports only on the changes among workshop participants in Fresno and San Diego.
The study involved a collaborative partnership between four community-based organizations (Families in Good Health in Long Beach, the Orange County Asian Pacific Islander Community Alliance in Garden Grove, Stone Soup in Fresno, and the Union of Pan Asian Communities in San Diego) as well as two universities (California State University, Fullerton, and the University of California, Los Angeles). A participatory research approach was used whereby the principal investigator position was shared between two university and three community partners. All partners participated in regular e-mail communications and semiannual face-to-face retreats to design the intervention and evaluation as well as interpret results and conduct community forums to report the findings back to the members of the community. Researchers have found such a collaborative approach to be crucial to the successful conduct of intervention research in ethnically diverse populations (Lindenberg, Solorzano, Vilaro, & Westbrook, 2001; Tanjasiri, Kagawa-Singer, Nguyen, & Foo, 2002).

Needs Assessment

In 1997, we undertook a behavioral and educational needs assessment involving 200 Hmong women in the three regions (Tanjasiri et al., 2001). It is not surprising that we found extremely low rates of ever having performed BSEs (51%) or ever having had a CBE (52%) or mammogram (30%). Poverty, as measured by the proxy of Medicaid insurance, was high. Literacy levels were exceedingly low, with 46% not speaking and 71% not reading any English, 50% not reading Hmong, and 71% not reading Lao. Hmong women indicated that they wanted to have information about breast health shared in a group setting (65.4%) rather than one-on-one (36.6%), and use video (72.1%), pictures (59.8%), and stories (32.6%) to provide the technical information. Nearly half of the women wanted an educational effort to involve men, because they played an important role not only in family/community decision making and use of family resources, but also in providing transportation to, and support during, women’s health services. Based on these findings, we developed an intervention that included culturally and linguistically appropriate techniques to increase women’s breast cancer screening knowledge, attitudes, and behaviors, as well as increase instrumental and emotional support from husbands and other men for these early detection exams.

Theoretical Framework

The development of our intervention was grounded in the theories of social learning, social support, and community empowerment. Social learning theory states that behavior is determined by three influences: environmental events, reinforcement (like the valuing of the behavior), and cognitive mediation (such as beliefs about the consequences of, and competence to perform, the behavior; Bandura, 1985). Behavioral skills development through modeling (such as viewing a video with ethnically and culturally consonant actors and themes) and use of breast models (to simulate BSE to find changes in breast tissue) enhances self-efficacy and brings about changes in personal expectations about their own behavior. Social support theory has been defined as the functional content of relationships (i.e., social networks) that influence behavior through the active provision of emotional, instrument, information, and/or appraisal support (House & Kahn, 1985). Provision of such support can influence beliefs and behaviors of the receiver, particularly if such support occurs within the interpersonal context of caring and trust (such as from spouses, other family members, and trusted community members; Heaney & Israel,
Finally, community empowerment has been generally defined by Israel, Checkoway, Schulz, and Zimmerman (1994) as “the ability of people to gain understanding and control over personal, social, economic and political forces in order to take action to improve their life situations.” Such processes act at the levels of individual, organization, and community and can serve to reinforce the desired health behaviors of people. Taken together, social learning, social support, and community empowerment provide guidance for the development of theoretically sound, interpersonal-based health promotion interventions.

We developed an intervention that relied on bilingual and bicultural community health educators to provide Hmong-appropriate information on breast health and cancer. The intervention included key social learning and social support concepts of modeling (from the educator) and positive support (from male family members) to increase Hmong women’s motivation and the self-efficacy to perform BSE and obtain CBE and mammography. In addition, our strategy was designed to integrate the key screening messages into Hmong women’s existing cultural frameworks of interpersonal communication, relationships, and concepts of health. For instance, one of the main modes of dissemination of information and news for the Hmong is through storytelling at social gatherings (Frye, 1995; Shadick, 1993). Thus, we aimed to maintain cultural consonance between the educators and participants to facilitate the diffusion of information and motivation through familiar channels within the community. The video was also developed in a storytelling mode in the dominant White Hmong language with cultural symbols, icons, and actors. Finally, when interventions are consonant or isomorphic with cultural constructs and values, the community feels validated and supported in their integrity, and this approach acknowledges that they have the skills and strengths to help themselves (Hirayama & Cetingok, 1988; Wallace, 1973). Thus, the concept of empowerment is translated into credible and acceptable actions for the community, which is a core concept of community-based participatory research efforts (Gutierrez & Lewis, 1997; Israel et al., 2003).

Intervention Development

Beginning in 1999, a culturally and linguistically appropriate intervention was developed by the partnership to educate the Hmong community about the importance of breast health and early detection for cancer. Specifically, we designed the following three low-literacy educational materials.

*Flipchart.* A bilingual, Hmong/English “Life Is Precious” flipchart was developed to educate women about the need for breast cancer early detection. Modeled after the National Cancer Institute’s “Spread the Word About Mammograms and Pap Test,” our flipchart was designed as a larger (2’ × 3’), colorful, tabletop educational tool. Translations for all written text were conducted by three project community health educators. Two Hmong outreach workers translated the materials, and two back-translated the information. Differences were resolved by discussion among all translators and through field-testing. The content areas included the following: basic epidemiology related to Hmong women, barriers to screening, risk factors and benefits of early detection, basic information on the three screening exams (BSE, CBE, and mammograms), Pap tests (not a primary message, but an important supplement for cervical cancer prevention), and recommended guidelines for regular screening. Interspersed throughout the flipchart were images of Hmong women and men, images designed to increase the appeal of the materi-
als to the participants. For example, the cover shows Hmong women clothed in traditional dress, and the graphic decorations were taken from Hmong tapestry designs. Words were minimal, with graphics used to depict the examinations with oral explanations provided by the community health educators.

**Video.** Research demonstrates that video is an effective medium to convey basic information about cancer screening to ethnic minority women (Stillwater, Echavarria, & Lanier, 1995; Yancey, Tanjasiri, Klein, & Tunder, 1995). We developed a 21-min video to increase the positive attitudes of Hmong women toward CBE and mammography. A consultant developed the script with extensive input from, and review by, the collaborative partnership, which included four (three female and one male) Hmong health educators from the participating communities. In addition, a Hmong health professional from another state reviewed the final script for accuracy and appropriateness. Translations were conducted by three project community health educators, and some graphics were adapted, with permission, from an existing breast health brochure produced by the Vietnamese Community Health Promotion Project in San Francisco. The entire video was filmed using the White Hmong dialect, with English subtitles added. Funding for the video production was supplemented by the Health Education Council and The California Endowment.

The video, titled “Life Is Precious: Breast Cancer Screening for Hmong Women,” opens with a brief introduction by Dr. Keng Yang, a respected Hmong physician from the University of California, Davis (one of only two known U.S.-trained Hmong physicians in the United States). Next, one young (early 40s) Hmong woman is shown talking about her recent breast cancer with a second woman while engaging in cultural and traditional activities (dressing their teenage daughters in traditional Hmong dresses, Hmong dancing, and cooking at home). The story proceeds to follow the second woman as she talks with her husband about getting screened. The husbands of both women are also shown talking with each other. Then, the couple makes the decision to get a CBE and mammogram. The woman goes with her husband for the examinations where she interacts with her health care provider, receives the examinations, and follows-up with her husband to discuss the results and implications. Intercut between scenes are graphics of the three breast exams with voiceovers describing each of the processes. The video closes with remarks from Dr. Yang as well as Mr. Youa Toua Vang, who is a shaman. Both encourage Hmong women to seek not only traditional cultural methods of healing but also Western medical assistance to maintain breast health.

**Brochure.** Last, two four-fold brochures were developed (one in Hmong and one in English) to remind women of the three breast screening exams (BSE, CBE, and mammogram). Designed to be given in conjunction with the flipchart and video (but also to be a stand-alone material), the brochure reiterates the need for regular screening and provides pictures and graphic depictions of each exam. The English reading level of the brochure is fourth grade. However, pictures depict each examination to convey the steps of each procedure. This brochure was translated into Hmong by one bilingual Hmong community health educator, then reviewed for consistency and accuracy by two other bilingual community health educators and field-tested with 5 to 10 women per site.

The intervention design was based on standard outreach for breast health education programs, such as the American Cancer Society educational format, previous cancer control interventions in Southeast Asian communities (Bird et al., 1998; Jackson et al.,
2000), and our own Asian community experiences in cancer control education. We developed two separate educational interventions, one for Hmong women and one for Hmong men. For women, a 1 to 1 ½ hr workshop was scheduled with small groups of women age 40 years and older. Women were recruited from people known by the community health educators (e.g., existing participants in other programs) as well as opportunistic new contacts (such as recruitment at grocery stores). Each woman was approached by the community health educator and invited to participate in the study, at which time she was told about the study goals and methods, that participation is voluntary and confidential, and that she would receive a total of $45 for involvement in a baseline survey, an educational session (that also included a pretest and posttest), and a follow-up survey. After verbal consent was obtained, each participant was scheduled to attend one educational session. Although the study age criterion was 40 years and older, women who were younger were not turned away from any sessions.

The sessions were held either at the local community-based organization site or another culturally relevant location (e.g., temple) where women could gather in a comfortable and trusted setting. These sessions were led by at least one female Hmong community health educator, who usually started with the flipchart to ease women into the topic of breast health and screening by talking up front about their emotional (e.g., fears about cancer) and logistical barriers (e.g., lack of transportation) to getting screened. Next, the educator introduced the topics of screening exams (BSE, CBE, and mammography) and discussed the importance of early detection for Hmong women. The educator then distributed the brochure and showed the video that portrayed a woman going through all of the steps (from first contemplation to successful completion) of doing BSE and getting a CBE and mammogram. After the video concluded, the educator facilitated a discussion about how and where participants can get screened, as well as revisited the list of barriers generated during the discussion to ensure that each was countered during the workshop. At the conclusion of the session, small key rings with wooden beads were distributed as a “thank you” for each woman’s attendance and participation. The beads were designed to represent the approximate sizes of breast lumps that could be detected by each screening exam: A 1 cm bead represents an average-size lump that can be found by a mammogram, a 2 cm bead represents a lump that can be found by a CBE or regular BSE, and a 3 cm to 4 cm bead represents a lump that can be found by accident (Skinner et al., 1998).

The intervention for men was similar to that for women, but with some notable differences. The goals of these sessions were to increase the instrumental and emotional support that men give to women in their families to get regular breast screening exams. The men were recruited by asking the participating women to bring their spouses, partners, or other male members of their household. While the women participated in their own session, the men attended a different session at the same time, led by a male community health educator (sometimes in partnership with the female educator). The primary message for men was to encourage and support the women in their family to get regular breast screenings. Information included education on breast cancer, the basics of each screening examination, the guidelines for screening, video viewing, and a moderator-led discussion of how men’s attitudes influence women’s health and health care seeking in the Hmong community. These sessions usually lasted for 1 hr and concluded with a certificate given to each man to pass on to the women in their family to encourage them to get screened for breast cancer. All participants were entered into a total of two raffle drawings for cash prizes.
Pre- and postworkshop surveys were used to evaluate the outcomes of the educational sessions on changes in knowledge, attitudes, and behavioral intentions among female and male Hmong workshop participants. These surveys were administered before and immediately after the educational intervention for women and men. The question areas for the surveys included the following: basic demographics (preworkshop surveys only), past behavior (preworkshop surveys only), a knowledge measure that included items on screening exams and risk factors (11 items total with dichotomous yes/no answer categories), an attitudinal measure of attitudes toward screening (6 items total with dichotomous agree/disagree answer categories), behavioral intentions to get screened (for women, with 3-point Likert-type scale answers from not likely to very likely), and behavioral intentions to support women getting screened (among men, with dichotomous agree/disagree answer categories).

Given the exceedingly low literacy rates in the community, we developed large (14” × 24”) colorful pretest and posttest flipcharts that community health educators used to lead participants through each survey question. Each page was a different color and corresponded to the colored pages the women had on their own personal response sheets. The flipcharts had, on average, seven closed-ended questions per page, with answer categories coded in different colors (e.g., “yes” was yellow, “no” was red). The colors used for the various answer category options were selected after discussion with the four Hmong community health educators in order to avoid colors that had significantly different meanings (such as white, which means death among Hmong). Each participant had a smaller version (8” × 12”) of the flipchart as a response sheet along with a set of colored stickers. After each question was read by the community health educator, the participant selected the sticker color that represented his or her answer and affixed it to the corresponding area on the personal response sheet.

Finally, data from the pre- and postworkshop surveys were coded and entered into SPSS version 9.0 by project staff at UCLA (SPSS, 2001). Data analyses included univariate frequencies and one sample t tests for statistically significant differences in means between pre- and postworkshop surveys of participants.

Over the course of the 1-year intervention period, a total of 302 Hmong women (age 40 years and older) and 314 men participated in educational workshops and completed both a pretest and posttest of their knowledge, attitudes, beliefs, and behavioral intentions. As shown in Table 1, the average age of female and male participants was in the late 40s, with very few years of formal education either in the United States or abroad, and they possessed very minimal levels of English and Hmong literacy. The overwhelming majority of participants were married. Whereas the majority of women reported having Medicaid health insurance, the majority of men reported private (with or without Medicare) coverage. This difference may reflect difficulties reporting health insurance type rather than actual differences in access. The overwhelming majority of both females and males, however, reported having a regular doctor, due most probably to Medicaid coverage. Although this demonstrates at least some basic access to health care, we suspect that the quality and frequency of care remains low.
Table 2 shows summations of the knowledge and attitude measures prior to the workshops, as well as behavioral intention measures for the female (to get screened) and male workshop participants (to support women getting screened). The knowledge measures included 11 items concerning breast cancer risk factors, including both known risks (family history, older than age 40, never having children, menopause after the age of 50, first child after the age of 30) as well as known myths (breast injury, breast fondling, worrying too much, breast feeding, milk stuck in breast, and baby sneezing while breastfeeding). The latter two items were identified as possible causes of breast cancer by Hmong women in our formative focus group phase. Before the workshops, both female and male participants correctly identified only about half of these risk factors. The attitude measures

Table 1. Demographic Characteristics of Female and Male Workshop Participants

|                      | Female (n = 302) | Male (n = 314) |
|----------------------|------------------|----------------|
| Age (mean, in years) | 46.4             | 48.6           |
| Years of education in U.S. (mean) | 3.9             | 3.1           |
| Years of education abroad (mean) | 0.7             | 2.3           |
| Marital status       |                  |                |
| % never married      | 2.3              | 4.5            |
| % married            | 83.4             | 90.4           |
| % divorced           | 4.7              | 2.6            |
| % widowed            | 9.7              | 2.6            |
| Health insurance     |                  |                |
| % none               | 3.1              | 5.4            |
| % Medicaid           | 63.7             | 39.9           |
| % private            | 33.2             | 54.6           |
| % with regular doctor| 96.5             | 89.2           |
| Language             |                  |                |
| % speak English “good” or “very well” | 16.3             | 36.0           |
| % read English “good” or “very well” | 16.1             | 35.7           |
| % read Hmong “good” or “very well” | 18.9             | 33.2           |

Table 2. Screening Knowledge, Attitudes, and Behaviors of Female and Male Participants at Pretest

|                        | Female (n = 302) | Male (n = 314) |
|------------------------|------------------|----------------|
| Knowledge measures     |                  |                |
| (mean, max = 11.0)     | 4.3              | 6.2            |
| Attitude measures      |                  |                |
| (mean, max = 6.0)      | 3.4              | 3.5            |
| Intention to get screened (women only) |                  |                |
| % who were very likely to do BSE in the next month | 15.3             | n/a            |
| % who were very likely to have CBE in the next year | 12.9             | n/a            |
| % who were very likely to get a mammogram in the next year | 25.5             | n/a            |
| Intention to support women’s screenings (men only) |                  |                |
| % who would support female through treatment | n/a             | 87.4           |
| % who believe men in family do show support for women to be screened | n/a             | 46.1           |

NOTE: BSE = breast self-examination; CBE = clinical breast examination. n/a means that the item was not applicable to that group.

Table 2 shows summations of the knowledge and attitude measures prior to the workshops, as well as behavioral intention measures for the female (to get screened) and male workshop participants (to support women getting screened). The knowledge measures included 11 items concerning breast cancer risk factors, including both known risks (family history, older than age 40, never having children, menopause after the age of 50, first child after the age of 30) as well as known myths (breast injury, breast fondling, worrying too much, breast feeding, milk stuck in breast, and baby sneezing while breastfeeding). The latter two items were identified as possible causes of breast cancer by Hmong women in our formative focus group phase. Before the workshops, both female and male participants correctly identified only about half of these risk factors. The attitude measures
Table 3. Changes in Screening Knowledge, Attitudes, and Behaviors of Female and Male Participants

|                          | Female          |                       |                               | Male          |                       |                               |
|--------------------------|-----------------|-----------------------|-------------------------------|---------------|-----------------------|-------------------------------|
|                          | n               | Mean                 | Change                        | p             | n                     | Mean                         | Change                        | p             |
| Knowledge scale          | 302             | 3.1391                | < .0001                       |               | 313                   | .9585                        | < .0001                       |               |
| Attitude scale           | 301             | .1694                 | .0206                         |               | 312                   | .1154                        | .0276                         |               |
| Intention to get screened (women only) |                 |                       |                               |               |                       |                               |                               |               |
| BSE in next month        | 296             | .0203                 | .3436                         | n/a           | n/a                   | n/a                          |                               |               |
| CBE in next year         | 297             | .1380                 | < .0001                       | n/a           | n/a                   | n/a                          |                               |               |
| Mammogram in next year   | 295             | .1695                 | < .0001                       | n/a           | n/a                   | n/a                          |                               |               |
| Intention to support women’s screenings (men only) |                 |                       |                               |               |                       |                               |                               |               |
| Would support female through breast cancer treatment | n/a             | n/a                   | n/a                          | 310           | .1194                 | < .0001                       |                               |               |
| Believe men in family do show support for women to be screened | n/a             | n/a                   | n/a                          | 310           | .1742                 | < .0001                       |                               |               |

NOTE: BSE = breast self-examination; CBE = clinical breast examination. n/a means that the item was not applicable to that group.

a. One sample t tests for significant differences between pretest and posttest.

... included six items: likelihood of breast cancer among Hmong women, no way to prevent breast cancer, need for mammogram only when lump is present, afraid to tell husband if I had breast cancer, I’d rather not know if I had breast cancer, and I would undergo treatment if painful and unpleasant, but provided a chance of survival. Before the workshops, both females and males reported positive attitudes to only half of these items.

As shown in Table 3, the education intervention significantly increased knowledge, attitudes, behavioral intention (for women), and support (for men) from pretest to posttest. For women, there were significant increases in knowledge of risk factors ($p < .0001$) and positive attitudes toward breast cancer and prevention ($p = .02$). In addition, women significantly increased their intention to get both a CBE and mammogram in the next year. Intention to perform BSE in the next month increased but was not statistically significant. For men, there were significant increases in knowledge of risk factors ($p < .0001$) and positive attitudes ($p = .02$), as well as beliefs concerning two kinds of support: supporting women through treatment if they had breast cancer, and belief that men in the family show support for women to get their breasts checked (both at the $p < .0001$ levels).

We did not see any declines in two other measures of men’s attitudes: their fears about finding out about women’s breast cancer, and their preferences for not knowing if women had breast cancer (data not shown).

**DISCUSSION AND IMPLICATIONS FOR RESEARCH AND PRACTICE**

This article describes our efforts to develop a culturally and linguistically appropriate breast cancer education intervention for Hmong women and men in Southern California. The social learning–based intervention used several strategies described by Kreuter et al. (2002) to highlight verbal and visual rather than written educational and testing tools. The
video emphasized the importance of breast cancer for Hmong women (what Kreuter calls an evidential strategy) and weaved breast cancer messages into common Hmong interactions (a sociocultural strategy) to introduce the topics of women’s breast cancer screening exams. The visual materials also relied on graphics and pictures (a peripheral and linguistically appropriate strategy) to support the information provided in the video, whereas beads were supportive materials that were colorful reminders of the breast cancer screening information provided in the workshops. All project activities were designed with significant input from all of the community collaborators (a constituent-involving strategy) to ensure that messages were appropriate and sensitive to Hmong values and beliefs. Finally, the pre- and postworkshop surveys were facilitated by the community health educator and involved participant use of color-coded stickers on color-matched response sheets to indicate their answers to the questions (another appropriate strategy).

We also relied on social learning and support theories to develop the verbal and visual breast health messages for Hmong women in this study. The use of bilingual, bicultural Hmong community health educators in a group setting (a common community health education approach) was supplemented by materials that highlighted culturally appealing images (such as traditional dress and dancing) and traditional health beliefs (like the inclusion of a Hmong shaman). In addition, we acknowledged the importance of Hmong men in the culture and included them in the educational effort in order to increase their support for women getting CBEs and mammograms. Past research with Asian women has found that women’s health is not an individual matter alone and that spouses and other family members influence the ways that women view cancer screening (Bottorff et al., 1998; Han, Williams, & Harrison, 2000) and treatment (Kagawa-Singer & Wellisch, 2003; Makabe & Hull, 2000). Future breast health education studies for Asian women should explore and expand on our development of a social support intervention for men.

Among workshop participants, our cultural and linguistically appropriate educational approach significantly increased women’s knowledge, positive attitudes, and behavioral intention to get a CBE and mammogram, and men’s support for women to get screenings and treatments, with a few exceptions. First, women’s intention to perform BSE in the next month did not significantly increase as we had hoped. One reason may be due to the fact that the intervention only allocated about 15 minutes to teach BSE to the participants and for the participants to practice on breast models to find the embedded lumps. The American Cancer Society’s Special Touch program, in comparison, is a 1-hr training that includes both demonstration and practice for women to master the technique. Future community-based efforts should allow for more time to teach such an important self-care skill. The intervention also did not change men’s fears about finding out about women’s breast cancers, nor their preferences for not knowing about women’s breast cancers. Unlike knowledge, fears about cancer are very difficult to change, and thus further interventions should incorporate culturally appropriate, fear-reducing strategies (such as possible testimonials from Hmong cancer survivors).

Despite encouraging short-term outcomes of the intervention on the actual workshop participants, there are several limitations to our study. First, the before/after design of the workshop surveys did not allow us to decipher the separate contributions of the educational components (e.g., community health worker, educational video, and discussion). Given the intensive amount of resources required to develop the array of educational materials (video, brochure, and flipchart) alone, it would be beneficial to know how much each modality contributed to the observed knowledge, attitude, and behavior intention increases among participants. Further research, however, must apply appropriate approaches when working with smaller ethnic/racial subgroups (that often lack the popu-
lation sizes to support sample requirements for measurement of modality differences).
An additional limitation to our work was that the workshop participants were recruited through nonprobability sampling, and thus, we do not know whether they differed significantly from the general population of Hmong women age 40 years and older. We believe, however, that recruitment through existing networks and opportunities represents an important culturally sensitive approach for smaller, refugee communities where trust is an issue. Finally, the data reported in this article only measured behavioral intention to seek screening, and not screening behavior. A future article will report on the behavior change results from the quasi-experimental design that compared the outcomes of the educational intervention in our two sites (Fresno and San Diego) with the comparison site (Long Beach). Preliminary analyses, however, demonstrate significant increases in knowledge, attitudes, and intentions due to the intervention (Kagawa-Singer et al., 2003) and underscore the importance of both culturally and linguistically appropriate strategies to improve the health and welfare of racial/ethnic communities such as the Hmong in California.

References

Babey, S. H., Ponce, N. A., Etzioni, D. A., Spencer, B. A., Brown, E. R., & Chawla, N. (2003). *Cancer screening in California: Racial and ethnic disparities persist*. Los Angeles: UCLA Center for Health Policy Research.

Bandura, A. (1985). Model of causality in social learning theory. In M. J. Mahoney & A. Freeman (Eds.), *Cognition and psychotherapy* (pp. 81-99). New York: Plenum.

Banner, R. O., DeCambra, H., Enos, R., Gotay, C., Hammond, O. W., Hedlund, N., et al. (1995). A breast and cervical cancer project in a Native Hawaiian community: Wai‘anae Cancer Research Project. *Preventive Medicine*, 24, 447-453.

Bird, J. A., McPhee, S. J., Ha, N. T., Le, B., Davis, T., & Jenkins, C. N. (1998). Opening pathways to cancer screening for Vietnamese American women: Lay health workers hold a key. *Preventive Medicine*, 27(6), 821-829.

Bottorff, J. L., Johnson, J. L., Bhagat, R., Grewal, S., Balneaves, L. G., Clarke, H., et al. (1998). Beliefs related to breast health practices: The perceptions of South Asian women living in Canada. *Social Science & Medicine*, 47(12), 2075-2085.

Cooper, R. (1984). *Resource scarcity and the Hmong response*. Singapore: Singapore University Press.

Davis, T. C., Williams, M. V., Marin, E., Parker, R. M., & Glass, J. (2002). Health literacy and cancer communication. *CA: A Cancer Journal for Clinicians*, 52, 134-149.

Deapen, D., Liu, L., Perkins, C., Bernstein, L., & Ross, R. K. (2002). Rapidly rising breast cancer incidence rates among Asian American women. *International Journal of Cancer*, 99(5), 747-750.

Erwin, D. O., Spatz, T. S., Stotts, R. C., Hollenberg, J. A., & Deloney, L. A. (1996). Increasing mammography and breast self-examination in African American women using the Witness Project model. *Journal of Cancer Education*, 11, 210-215.

Fadiman, A. (1997). *The spirit catches you and you fall down*. New York: Farrar, Straus, and Giroux.

Freimuth, V. S., & Mettger, W. (1990). Is there a hard-to-reach audience? *Public Health Reports*, 105(3), 232-239.

Frye, B. A. (1995). Use of cultural themes in promoting health among Southeast Asian refugees. *American Journal of Health Promotion*, 9(4), 269-280.

Gutierrez, L. M., & Lewis, E. A. (1997). Education, participation, and capacity building in community organizing with women of color. In M. Minkler (Ed.), *Community organizing and community building for health* (pp. 216-229). New Brunswick, NJ: Rutgers University Press.
Han, Y., Williams, R. D., & Harrison, R. A. (2000). Breast cancer screening knowledge, attitudes, and practices among Korean American women. *Oncology Nursing Forum, 27*(10), 1585-1591.

Heaney, C. A., & Israel, B. A. (1997). Social networks and social support. In K. Glanz, F. M. Lewis, & B. K. Rimer (Eds.), *Health behavior and health education: Theory research and practice* (2nd ed., pp. 179-205). San Francisco, CA: Jossey-Bass.

Hein, J. (1995). *From Vietnam, Laos, and Cambodia: A refugee experience in the United States* (Twayne’s Immigrant Heritage of America Series; T. J. Archdeacon, Series Ed.). New York: Twayne.

Hirayama, H., & Cetingok, M. (1988). Empowerment: A social work approach for Asian immigrants. *Social Casework, 69*(1), 41-47.

House, J. S., & Kahn, R. L. (1985). Measures and concepts of social support. In S. Cohen & L. Syme (Eds.), *Social support and health*. Orlando, FL: Academic Press.

Institute of Medicine. (2004). *Health literacy: A prescription to end confusion*. Washington, DC: National Academy of Sciences.

Israel, B. A., Checkoway, B., Schulz, A., & Zimmerman, M. (1994). Health education and community empowerment: Conceptualizing and measuring perceptions of individual, organizational, and community control. *Health Education Quarterly, 21*(2), 149-170.

Israel, B. A., Schulz, A. J., Parker, E. A., Becher, A. B., Allen, A. J., & Guzman, J. R. (2003). Critical issues in developing and following community-based participatory research principles. In M. Minkler & N. Wallerstein (Eds.), *Community-based participatory research for health* (pp. 53-76). San Francisco, CA: Jossey-Bass.

Jackson, J. C., Taylor, V. M., Chitnarong, K., Mahloch, J., Fischer, M., Sam, R., et al. (2000). Development of a cervical cancer control intervention program for Cambodian American women. *Journal of Community Health, 25*(5), 359-375.

Jenkins, C. N. H., & Kagawa-Singer, M. (2003). Cancer. In N. W. S. Zane, D. T. Takeuchi, & K. N. J. Young (Eds.), *Confronting critical health issues of Asian and Pacific Islander Americans* (pp. 105-147). Thousand Oaks, CA: Sage.

Kagawa-Singer, M., & Chung, R. (1994). A paradigm for culturally based care for minority populations. *Journal of Community Psychology, 22*(2), 192-208.

Kagawa-Singer, M., & Pourat, N. (2000). Asian American and Pacific Islander breast and cervical carcinoma screening rates and Healthy People 2000 objectives. *Cancer, 89*(3), 696-705.

Kagawa-Singer, M., Tanjasiri, S. P., Foo, M. A., Nguyen, J., Yang, X., Yang, B., et al. (2003, September 13). Breast cancer screening in Hmong women pre- and postintervention study. Presentation at the California Breast Cancer Research Program Symposium, San Diego, CA.

Kagawa-Singer, M., & Wellisch, D. K. (2003). Breast cancer patients’ perceptions of their husbands’ support in a cross-cultural context. *Psychooncology, 12*(1), 24-37.

Kelly, A. W., Chacori, M., Wollan, P. C., Trapp, M. A., Weaver, A. L., Barrier, P. A., et al. (1996). A program to increase breast and cervical cancer screening for Cambodian women in a Midwestern community. *Mayo Clinic Proceedings, 71*, 437-444.

Kreuter, M. W., Lukwago, S. N., Bucholtz, D. C., Clark, E. M., & Sanders-Thompson, V. (2003). Achieving cultural appropriateness in health promotion programs: Targeted and tailored programs. *Health Education & Behavior, 30*(2), 133-146.

Lindenberg, C. S., Solorzano, R. M., Vilaro, F. M., & Westbrook, L. O. (2001). Challenges and strategies for conducting intervention research with culturally diverse populations. *Journal of Transcultural Nursing, 12*(2), 132-139.

Makabe, R., & Hull, H. H. (2000). Components of social support among Japanese women with breast cancer. *Oncology Nursing Forum, 27*(9), 1381-1390.

National Center for Health Statistics. (2003). *Health, United States, 2003 with chartbook on trends in the health of Americans*. Hyattsville, MD: Author.

Navarro, A. M., Senn, K. L., McNicholas, L. J., Kaplan, R. M., Roppe, B., & Campo, M. C. (1998). Por La Vida model intervention enhances use of cancer screening tests among Latinas. *American Journal of Preventive Medicine, 15*, 32-41.
Pasick, R. J., Hiatt, R. A., & Paskett, E. D. (2004). Lessons learned from community-based cancer screening intervention research. *Cancer, 101*(Suppl. 5), 1146-1164.
Ponce, N., Gatchell, M., & Brown, E. R. (2003). *Cancer screening rates among Asian ethnic groups.* Los Angeles: UCLA Center for Health Policy Research.
Roter, D. L., Rudd, R. E., & Comings, J. (1998). Patient literacy: A barrier to quality of care. *Journal of General Internal Medicine, 13,* 850-851.
Shadick, K. M. (1993). Development of a transcultural health education program for the Hmong. *Clinical Nurse Specialist, 7*(2), 48-51.
Skinner, S. C., Sykes, R. K., Monsees, B. S., Andriole, D. A., Arfken, C. L., & Fisher, E. B. (1998). Learn, share, and live: Breast cancer education for older minority women. *Health Education & Behavior, 25*(1), 60-78.
SPSS, Inc. (2001). Chicago: SPSS Inc.
Stillwater, B., Echavarria, V. A., & Lanier, A. P. (1995). Pilot test of a cervical cancer prevention video developed for Alaska Native women. *Public Health Reports, 110*(2), 211-214.
Symonds, P. V. (2004). *Calling in the soul: Gender and the cycle of life in a Hmong village.* Seattle: University of Washington Press.
Tanjasiri, S. P., Kagawa-Singer, M., Foo, M. A., Chao, M., Linayao-Putman, I., Lor, Y. C., et al. (2001). Breast cancer screening among Hmong women in California. *Journal of Cancer Education, 16,* 50-54.
Tanjasiri, S. P., Kagawa-Singer, M., Nguyen, T., & Foo, M. A. (2002). Collaborative research as an essential component for addressing cancer disparities among Southeast Asian and Pacific Islander women. *Health Promotion Practice, 3*(2), 147-157.
U.S. Census Bureau. (2000). *Census 2000 summary file 1 (SF 1), PCT7, Asian alone or in combination with one or more other races.* Washington, DC: U.S. Department of Commerce, U.S. Census Bureau.
Wallace, A. F. C. (1973). Revitalization processes. In T. Weaver (Ed.), *To see ourselves.* London: Glenview Press.
Yancey, A. K., Tanjasiri, S. P., Klein, M., & Tunder, J. (1995). Increased cancer screening behavior in women of color by culturally sensitive video exposure. *Preventive Medicine, 24*(2), 142-148.