

Effects of a Culturally Sensitive Education Program on the Breast Cancer Knowledge and Beliefs of Hispanic Women

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Purpose/Objectives: To determine the effectiveness of a multifaceted, culturally sensitive, and linguistically appropriate breast cancer education program for Hispanic women.

Design: Experimental (post-test only, control-group design).

Setting: The parish hall of a Roman Catholic Church in northeastern Arkansas.

Sample: 31 Hispanic women aged 25–56 residing in northeastern Arkansas.

Methods: The experimental group received a multifaceted, culturally sensitive, and linguistically appropriate breast cancer education program; the control group received general nutritional information. Both groups completed the Breast Cancer Knowledge Test and Breast Cancer Screening Belief Scales so that the researchers could measure dependent variables. Data were analyzed with t tests.

Main Research Variables: Knowledge of and beliefs about breast cancer.

Findings: The experimental group scored significantly higher on the Breast Cancer Knowledge Test than did the control group. The control group scored significantly higher than the experimental group on the barriers to mammography scale and the benefits of breast self-examination scale of the Breast Cancer Screening Belief Scales.

Conclusions: The multifaceted, culturally sensitive, and linguistically appropriate breast cancer education program appeared to be responsible for increased knowledge of breast cancer and reduced barriers to mammography.

Implications for Nursing: Education may change Hispanic women's knowledge and beliefs about breast cancer. An intervention designed and implemented by nurses can play a significant role in meeting the strong need for culturally sensitive and linguistically appropriate breast cancer educational programs for Hispanic women. Such programs should focus on helping Hispanic women understand their personal risks related to breast cancer and reduce barriers they perceive to early screening and detection.

Key Points . . .

- ▶ Hispanics are the largest and fastest-growing minority group in the United States.
- ▶ Hispanic women have a higher mortality rate from breast cancer than do non-Hispanic Caucasian women. The increased mortality is caused, in part, by later diagnosis in Hispanics.
- ▶ Hispanic women significantly underutilize breast screening services; underutilization is related to lack of appropriate education.
- ▶ Multifaceted, culturally sensitive, and linguistically appropriate breast cancer education programs can enhance Hispanic women's knowledge of the disease and increase early detection.

2003). Arkansas has the fastest growth rate in the nation, with 127,000 Hispanics comprising 4.4% of the state's population (Lee, 2006). Most of the individuals have arrived since 1993 (Southern Regional Educational Board, 2005).

Breast cancer is the most frequent solid tumor in U.S. women, constituting the second-leading cause of cancer death. Differences in survival rates for the disease exist among racial and ethnic groups. Compared to non-Hispanic Caucasian women, Hispanic women have a higher risk of cancer death, partially because the disease is diagnosed at later stages

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Hispanics are the largest and fastest-growing minority in the United States (Population Resource Center, 2002). The U.S. Census Bureau (2003) estimated the Hispanic population to be 38.8 million. In 2000, the group constituted 12.6% of the total population. By 2010, the percentage is projected to rise to 15.5%, with steady increases in the following years (U.S. Census Bureau, 2004). Hispanics are more likely to reside in the western and southern United States than in other parts of the country (Ramirez & de la Cruz,

(Boyer-Chammard, Taylor, & Anton-Culver, 1999; Frost et al., 1996). Among Hispanic women, breast cancer is the most commonly diagnosed cancer and the leading cause of cancer death. An estimated 1,740 Hispanic women died from breast cancer in 2006 (American Cancer Society, 2006).

Breast Cancer Screening of Hispanic Women

Hispanic women greatly underutilize breast cancer screening services (American Cancer Society, 2006; Bazargan, Bazargan, Calderon, Husaini, & Baker, 2003; Fulton, Rakowski, & Jones, 1995; Goel et al., 2003; Jibaja et al., 2000; National Cancer Institute, 2006; Saint-Germain & Longman, 1993; Salazar, 1996; Wong, 2000; Zambrana, Breen, Fox, & Gutierrez-Mohamed, 1999). Infrequent mammography use and delayed follow-up for abnormal screening results contribute to the high mortality rates for Hispanics (American Cancer Society).

Consistent with the Health Belief Model (HBM) (Rosenstock, 1966; Rosenstock, Strecher, & Becker, 1988), the underutilization of breast cancer screening services by Hispanic women is linked to limited knowledge. A number of studies have found that Hispanic women's knowledge about breast cancer has a strong positive association with obtaining screening (Hubbell, Chavez, Mishra, & Valdez, 1996; Longman, Saint-Germain, & Modiano, 1992; Saint-Germain & Longman, 1993). In addition, culturally based beliefs among Hispanic women reduce use of breast cancer screening services. Thus, foreign-born Hispanic women who are less acculturated to the United States are less likely to receive mammograms (Borrayo & Guarnaccia, 2000; Goel et al., 2003; O'Malley, Kerner, Johnson, & Mandelblatt, 1999) and are less likely to practice correct breast self-examination (BSE) (Peragallo, Fox, & Alba, 2000). Fulton et al. (1995) found that Hispanic women were unlikely to perceive themselves as susceptible to breast cancer and often believed that the disease is incurable. Hispanic women are more likely than non-Hispanic Caucasian women to believe that breast trauma, breast fondling, and multiple sexual partners increase risk. Hispanic women also are more likely to believe that the disease is God's punishment for immoral behavior. Many Hispanic women believe that breast cancer inevitably leads to death. As a result, they do not want to discuss breast cancer, are reluctant to know whether they have it, and are fearful of telling their husbands if they develop the disease (Luquis & Villanueva Cruz, 2006). Thus, fear and fatalism serve as significant barriers to screening for Hispanic women (Carpenter & Colwell, 1995; Huerta, 2003; Rahman, Mohamed, & Dignan, 2003; Salazar, 1996).

Mammography

Hispanic women are less likely to receive screening mammograms than non-Hispanic Caucasian or African American women (Darling, Nelson, & Fife, 2004). Many Hispanic women have never heard of mammography (Cockburn, Murphy, Schofield, Hill, & Borland, 1991; Skaer, Robison, Sclar, & Harding, 1996), and those who have often believe that mammograms are unnecessary except for diagnostic purposes, such as evaluating breast lumps (Hubbell et al., 1996; Skaer et al.). Some Hispanic women believe that mammograms are not routine medical tests and that two consecutive normal mammograms negate the need for further mammography (Fulton et al., 1995). Hispanic women with such poor func-

tional health literacy or the inability to understand and act on health information (Andrus & Roth, 2002) are the least likely to undergo mammography (Guerra, Krumholz, & Shea, 2005). In addition, lack of health insurance and costs associated with the procedure are deterrents to Hispanic women obtaining mammograms (Bazargan et al., 2003; Fulton et al.; Gorin & Heck, 2005; Salazar, 1996; Skaer et al.; Zambrana et al., 1999).

Breast Self-Examination

BSE is an important early-detection tool for women (Taylor, 2002). An estimated 65%–75% of women are independently responsible for detecting their own breast tumors (Arndt et al., 2003; Facione, Miaskowski, Dodd, & Paul, 2002). Although the efficacy of BSE instruction has been questioned, the American Cancer Society recommended that women be informed about the potential benefits, limitations, and harms of BSE (Smith, Cokkinides, & Eyre, 2004). Furthermore, Susan G. Komen for the Cure continues to endorse monthly BSE for women beginning at age 20. Others note that, even though it is of limited effectiveness in detecting breast cancer in its earliest stages, BSE still has advantages. For example, nurses and healthcare professionals easily can teach BSE to women, no financial costs are associated with the practice, and it may help reduce mortality from the disease (Peragallo, Fox, & Alba, 1998, 2000).

Hispanic women are less likely to perform BSE than are non-Hispanic Caucasians (Borders, Warner, & Sutkin, 2003). In addition, Hispanic women's knowledge of BSE often is lacking. Peragallo et al. (1998) noted that 44% of the participants in their study were unable to correctly answer any questions on a basic BSE knowledge test. Palacios and Sheps (1992) found that approximately one-fourth of Hispanic women in their study did not know how to perform BSE. Two other studies have confirmed that a significant portion of Hispanic women are not proficient in the technique (Coe et al., 1994; Fitzgibbon, Gapstur, & Knight, 2003).

Specific personality constructs are correlated with whether Hispanic women perform BSE (Coe et al., 1994). For example, Chrisler (1993) found that Hispanic women with an external health locus of control (i.e., women who believe that their health is controlled by external forces such as luck or fate) are less likely to perform BSE than those with an internal locus of control (i.e., who believe that they can affect their health through their own actions). High self-efficacy also is positively correlated with knowledge of how to perform BSE and actual practice of the method (Carpenter & Colwell, 1995; Gonzalez, 1990).

Breast Cancer Education Programs for Hispanic Women in the United States

Breast cancer programs that focus on risk factors, behavior changes, and screening should reduce the death rate for Hispanic women (Cancer in Mexican American Women, 2006). A small but growing number of empirically validated breast cancer education programs exist for Hispanic women in the United States (Cancer in Mexican American Women; Fitzgibbon et al., 2003). Mishra et al. (1998) used a quasiexperimental design to evaluate the effectiveness of an educational program with Hispanic women based on Bandura's (1997)

self-efficacy theory and Freire's empowerment pedagogy. The program focused on skill enhancement and empowerment. Participants in the experimental group had greater knowledge, skill, and self-efficacy in performing BSE than did those in the control group. Jibaja et al. (2000) evaluated the impact of a computer-based breast cancer educational program for high-risk Hispanic women. The program used a culturally sensitive, linguistically appropriate soap-opera format. Women randomly assigned to the experimental condition demonstrated greater knowledge and more accurate beliefs than those randomly assigned to a control condition. Valdez, Banerjee, Fernandez, and Ackerson (2001) evaluated the effectiveness of an interactive multimedia breast cancer education program based on Bandura's (1986) social learning theory with low-income Hispanic women. The program was delivered through a touch-screen kiosk in the participant's language preference. Information about breast cancer and barriers to screening and mammography was provided via a combination of video, animation, photos, music, and audio. At a four-month follow-up, approximately 40% of the participants who had obtained or scheduled a mammogram since receiving the intervention attributed the decision to their participation in the program. In a similar study, the same researchers examined the effectiveness of a multimedia breast cancer education program based on Bandura's social learning theory. Low-income Hispanic women were assigned randomly to an experimental or control group. Women in the experimental group exhibited greater knowledge and were more likely to seek information about mammograms than were women in the control group (Valdez, Banerjee, Ackerson, & Fernandez, 2002). Finally, Darling et al. (2004) implemented an educational outreach program in Spanish with Hispanic women through a bilingual outreach coordinator. The coordinator visited community centers, churches, and health clinics to present culturally appropriate information about breast cancer. During the first six months of the program, the number of women obtaining mammograms rose by more than 200%.

Although several researchers have attempted to provide appropriate programming for Hispanic women, Hispanic women's lack of participation in screening is caused, in part, by breast education programs being insensitive to special, culturally based concerns (Million-Underwood, Sanders, & Davis, 1993). Thus, a strong need exists for culturally and linguistically appropriate interventions pertaining to breast cancer with Hispanic women living in the United States. Similar to those for women in other minority groups, the programs should involve the community and be infused with cultural knowledge (Oncology Nursing Society, 1999). Program materials should be culturally sensitive (Smiley, McMillan, Johnson, & Ojeda, 2000), presented in Spanish, and at appropriate reading levels (Perez-Stable, Sabogal, Otero-Sabogal, Hiatt, & McPhee, 1992). Additionally, programs should be implemented in a familiar environment (e.g., churches) using community facilitators or liaisons from the same cultural group. Finally, nurses should work collaboratively with researchers in higher education to ensure rigorous evaluation of the effects of the programs.

The purpose of the current study was to determine the effectiveness of a multifaceted, culturally sensitive, and linguistically appropriate breast cancer education program based on the HBM for Hispanic women in Arkansas. Two hypotheses were tested. The first was that participants in the experimental

condition would exhibit greater knowledge of breast cancer than those in the control condition. The second hypothesis was that participants in the experimental condition would display more adaptive beliefs regarding mammography and BSE than those in the control condition. The program was modeled after a successful intervention designed to teach breast cancer screening to African American women in Arkansas (Hall et al., 2005). Hall et al. found that participants in the experimental group who received the program possessed more knowledge about breast cancer, had a better understanding of risk or susceptibility associated with developing the disease, and were more confident in their ability to successfully perform BSE than those in the control group.

Theoretical Model

The HBM has been applied frequently to breast cancer screening. In recent years, the HBM has been used in studies involving Hispanic women (e.g., Fulton et al., 1995; Smiley et al., 2000). The model proposes that screening behaviors result from personal decisions that are based on perceived susceptibility, perceived seriousness, benefits and barriers to action, and confidence (Champion & Scott, 1997). A person's knowledge of cancer and risk influences perceived susceptibility and seriousness. Participation in screening results from the belief that certain behaviors will benefit the person and surpass any barriers. Finally, confidence, or self-efficacy (Bandura, 1986, 1997), specific to engaging in screening behaviors such as BSE, functions to increase the likelihood of engaging in health-promoting behavior (Champion & Scott; Mishra et al., 1998).

Methods

Prior to conducting the study, the researchers obtained approval from the Institutional Review Board at Arkansas State University. To maintain confidentiality, subjects did not record their names or other direct identifying information on any of the questionnaires.

Setting

The study was carried out in the parish hall of a local Roman Catholic Church. The priest gave permission for the study. The nun who was primarily responsible for working with the Hispanic population in the church and the director of the local Hispanic community center assisted in announcing the program and encouraged women to attend.

Participants

To be included in the study, a participant had to be a woman of at least 18 years of age who identified herself as being of Hispanic background. The participants were recruited through an announcement in local English and Spanish newspapers describing the free breast cancer education program. Written announcements in Spanish also were delivered to Hispanic businesses, local churches that had a substantial number of Hispanic members, and the area Hispanic community center. The announcements offered child care, door prizes, and lunch. Informed consent was obtained from all participants before initiation of the study.

The sample consisted of 31 Hispanic women aged 25–56 years living in northeastern Arkansas. The average age was

36 years (SD = 7.38). The mean number of years of education completed was 7.72 (SD = 3.72) with a range of 2–16 years. The median income level was \$13,500 per year, with 84% earning less than \$20,000 per year and 44% earning less than \$10,000 per year. Statistical analysis revealed no significant differences between the experimental and control groups in terms of age, education, or income. With regard to health status variables, 59% reported being in good to excellent health, 35% reported fair health, and 7% reported poor health. Only 24% had a physician, and only 48% reported having regular checkups. In addition, only 24% had ever had a mammogram, only 45% had received a clinical breast examination in the prior year, and only 52% performed BSE. None of the participants had been diagnosed with cancer, and only one had received a breast biopsy.

Design

An experimental post-test-only, control-group design (Campbell & Stanley, 1963) was employed. A pretest was not administered to the participants because of time constraints and concerns about reactivity. Participants in the experimental group ($n = 15$) received the multifaceted, culturally sensitive, and linguistically appropriate breast cancer education program. Participants assigned to the control group ($n = 16$) received a program on nutrition. Participants were assigned randomly to the groups immediately before implementation of the program. Immediately after measurements were collected, participants in the experimental program received the nutrition program and those in the control group received the breast cancer education program. Thus, all participants had access to both programs.

Researchers achieved randomization by first printing the study instruments on different colors of paper (pink for experimental and blue for control). The instruments then were sealed in large manila envelopes with a demographic questionnaire attached to the outside. The envelopes were ordered randomly and placed on a table where participants entered the church hall. Upon entry, participants were asked to choose an envelope from the table. After completing the demographic questionnaire, participants opened the manila envelope and were directed to the appropriate group based on the color of the instruments. This was done so that women who arrived together were less likely to feel that they were being separated arbitrarily.

Educational Program

The educational program was presented by a university nursing faculty member who had completed the Susan G. Komen Breast Cancer Foundation breast health course and undergraduate nursing students. A multimedia format was used to provide readable, culturally sensitive information and materials. Hispanic interpreters were obtained from the local Hispanic community center. Interpreters translated all spoken program information from English to Spanish. Printed materials and media were provided in Spanish. The materials did not exceed a seventh-grade reading level. All visual aids featured Hispanic women. All educational materials were obtained from the Susan G. Komen Breast Cancer Foundation.

The program was divided into two parts. The first was delivered via large-group instruction and played the Spanish version of selected sections from the Susan G. Komen Breast Cancer Foundation (2003–2006) interactive Web site

“Anatomy of Breast Cancer.” The Web site uses animation to present some of its program content. Topics from sections I and XII were shown and included information on incidence, mortality, general risk factors, personal history with cancer, lifestyle-related risk factors, screening recommendations, breast cancer facts, and screening examinations. Next, participants viewed the Susan G. Komen Breast Cancer Foundation (2004b) videotape titled, “Cáncer del Seno: Guia de Deteccion Temprana (“Breast Cancer: Your Guide to Early Detection”).

The second part of the educational program, which immediately followed the large-group instruction, consisted of small-group sessions led by a presenter who was assisted by an interpreter. The interpreter translated all information about BSE from the presenter. Each participant received a shower card designed for Hispanic women that gave directions for performing BSE titled, “Pasos Para el Autoexamen del Seno” (“Steps to Breast Self-Examination”) produced by Susan G. Komen Breast Cancer Foundation (2004c). The presenter provided the content of the shower card to the participants verbatim. Participants retained the cards at the conclusion of the program. Additionally, participant modeling was used to teach correct BSE. Each presenter first demonstrated proper BSE using a breast model. Next, each participant was required to demonstrate proper BSE and detect at least one lump using the model. Finally, each participant was given a “Beads for Life” key chain. The aid, which the participants were allowed to keep, consisted of beads of various sizes that are analogous to breast tumors detected at different points in their development using available screening methods. Each presenter discussed the significance of the tool and explained the accompanying script, written in Spanish, which noted the size of breast tumors detected by various screening techniques (i.e., untrained in BSE, occasional BSE, regular BSE, first mammogram, subsequent mammograms). The educational program concluded with each participant receiving a Spanish version of a booklet published by Susan G. Komen Breast Cancer Foundation (2004a) titled, “Breast Cancer: What Every Woman Needs to Know.”

The total length of the program was approximately 40 minutes. The control group received a program about nutrition, also lasting approximately 40 minutes. Collection of the study measurements occurred immediately following the programs. Hispanic interpreters assisted in data collection, which took approximately 30 minutes, as needed.

Treatment Integrity

Treatment integrity, the extent to which a program is implemented properly, was measured by trained observers who read along with the program scripts to determine whether each presenter delivered the content as listed on selected portions of the Web site, shower card, and key chain. Observers also used a checklist in one of the small groups to determine whether the participants correctly demonstrated BSE on the model and detected lumps. Overall, treatment integrity associated with the program was 98%.

Instruments

Each participant completed a demographic questionnaire. Knowledge of breast cancer was measured by the Breast Cancer Knowledge (BCK) Test (McCance, Mooney, Smith, & Field, 1990). Adaptive beliefs regarding mammography and

BSE were measured by the Breast Cancer Screening Belief Scales (BCSBS) (Champion & Scott, 1997). The three instruments had been translated into Spanish. The demographic questionnaire was written at a sixth-grade reading level. The translation of the BCK Test was at the seventh-grade level, and the translation of the BCSBS was at the eighth-grade level. The levels are the same as those of the English versions.

The BCK Test is based on Stillman's (1977) Knowledge Questionnaire and has been recommended for evaluating the effectiveness of educational programs designed to promote early detection of breast cancer (McCance et al., 1990). It contains 18 items with an internal consistency (coefficient alpha) of 0.81 on the English language version. Content validity was established through expert opinion. A high score on the instrument is associated with greater knowledge. Coefficient alpha for the Spanish translation used in the current study was 0.72, indicating sufficient internal consistency.

The BCSBS (Champion & Scott, 1997) is based on the HBM and consists of 47 items that comprise six scales: (a) susceptibility, (b) benefits of mammography, (c) benefits of BSE, (d) barriers to mammography, (e) barriers to BSE, and (f) confidence. All of the items on the BCSBS are rated on a 5-point scale from 1 (strongly disagree) to 5 (strongly agree). High scores on the susceptibility, benefits of mammography, benefits of BSE, and confidence scales are associated with increased breast cancer screening. Conversely, low scores on the barriers to mammography scale and barriers to BSE scale are associated with early detection. Internal consistencies for the English-language version of the instrument are 0.83 for susceptibility, 0.65 for benefits of mammography, 0.69 for benefits of BSE, 0.85 for barriers to mammography, 0.83 for barriers to BSE, and 0.90 for confidence. Test-retest reliabilities for the English-language version over an unspecified time interval ranged from 0.40–0.68. Construct validity for the scales was assessed and supported through confirmatory factor analysis. Coefficient alphas for the Spanish translation used in the current study were 0.92 for susceptibility, 0.70 for benefits of mammography, 0.36 for benefits of BSE, 0.80 for barriers to mammography, 0.84 for barriers to BSE, and 0.88 for BSE self-efficacy. Thus, all of the scales except benefits of BSE had sufficient internal consistency. Although analyses are reported for benefits of BSE to maintain the integrity of the BCSBS, the findings for that scale should be interpreted with caution.

Data Analysis

The results were analyzed with t tests using SPSS version 14.0 (SPSS Inc.). Because directional hypotheses were involved, statistical significance was evaluated at the 0.05 level using one-tailed tests. Degrees of freedom vary for some tests because some participants did not respond to all items.

Results

Breast Cancer Knowledge

The mean scores on the BCK Test were 12.92 (SD = 2.40) for the experimental group and 10.53 (SD = 3.41) for the control group. The difference was statistically significant, $t(27) = 2.17$, $p < 0.05$ one tailed. Fisher exact tests indicated that the experimental and control groups differed significantly ($p < 0.05$) on four of the BCK Test items. Women in the experimental group were more likely than those in the control group to know that

postmenopausal women should perform BSE once a month (86% correct versus 46% correct), that regularly feeling the breasts is one of the most effective methods of cancer detection (100% correct versus 73% correct), that women should begin BSE at 20 years of age (100% correct versus 67% correct), and that looking at the breasts in a mirror is an important part of BSE (100% correct versus 60% correct).

Barriers to Screening

The mean scores on the BCSBS are presented in Table 1. Only two of the differences were statistically significant. Thus, the hypothesis that participants in the experimental condition would display more adaptive beliefs about mammography and BSE than those in the control condition was supported only partially. As predicted, the control group perceived greater barriers to mammography than did the experimental group, $t(26) = 1.88$, $p < 0.05$ one tailed. Three individual items contributed significantly to the difference ($p < 0.05$ one tailed). Women in the control group were more likely than those in the experimental group to believe that they could not remember mammography appointments ($\bar{X} = 2.47$ versus 1.36) and that having a mammogram would be painful ($\bar{X} = 2.93$ versus 1.93). Women in the control group also were more likely to fear finding out that something is wrong ($\bar{X} = 4.53$ versus 3.50). Contrary to prediction, the control group perceived greater benefits to BSE, $t(27) = 2.18$, $p < 0.05$ two tailed. However, analysis of individual items revealed no statistically significant differences. Analysis did reveal that responses in the experimental and control groups were uniformly high (i.e., all 4s and 5s) except for one participant in the experimental group who assigned a 1 to four of the five questions. Thus, the difference between the groups appears to be the result of a ceiling effect on the scale, possibly caused by response bias.

Discussion

The breast cancer education program for Hispanic women implemented in this study was multifaceted, culturally sensitive, and linguistically appropriate. A major objective of the program was to increase Hispanic women's knowledge of breast cancer because, consistent with the HBM, more knowledge of breast cancer has been associated with greater mammography use, more frequent clinical breast examinations (McCance et al., 1990), and more frequent BSE (Champion,

Table 1. Scores on the Breast Cancer Screening Belief Scales

| Subscale | Control Group | | Experimental Group | |
|-------------------------------------|---------------|------|--------------------|------|
| | \bar{X} | SD | \bar{X} | SD |
| Susceptibility | 17.21 | 6.6 | 20.13 | 3.9 |
| Benefits of mammography | 18.14 | 3.4 | 19.33 | 1.1 |
| Benefits of breast self-examination | 18.57* | 2.1 | 19.80 | 0.4 |
| Barriers to mammography | 26.57* | 8.6 | 33.50 | 10.7 |
| Barriers to breast self-examination | 21.57 | 11.2 | 21.73 | 8.6 |
| Confidence | 38.50 | 9.7 | 35.93 | 10.7 |

* $p < 0.05$

1987; Dickson et al., 1986; Gray, 1990; Mamon & Zapka, 1986; Reeder, Berkanovic, & Marcus, 1980; Rutledge, Barsevick, Knobf, & Bookbinder, 2001).

Women who received the educational program exhibited greater knowledge of breast cancer than did those in the control group. Participants in the experimental group perceived barriers to mammography according to the BCSBS; however, no between-group differences existed on barriers to BSE, benefits of mammography, confidence, or susceptibility. Small sample size may have contributed to the nonsignificance of group differences on those variables. Thus, the researchers detected an indication of some success on the second objective of the program, to reduce specific beliefs that serve as barriers to breast cancer screening. The women who received the program exhibited reduced fear of physical discomfort or pain, perceived inability to remember appointments, and fear of diagnostic results. The finding is important because previous research has shown that fear of diagnostic results is a major barrier to screening in Hispanic women (Taplin & Montano, 1993).

The finding that women in the control group perceived greater benefits of BSE was unexpected. The extremely high scores on the scale in both groups and the low internal consistency indicate that the result is more likely a result of measurement problems than the effect of the educational program. Previous research has shown that response sets such as extreme responses, acquiescence, and socially desirable responses may be more frequent in Hispanic samples (Hui & Triandis, 1989). Thus, the women in the sample may have been biased to say positive things about BSE.

Although unrelated to the research hypotheses, the translation of the BCK Test and the BCSBS into Spanish for the study is important. The researchers were able to obtain translations of the instruments without affecting reading levels and, for the most part, retained acceptable internal consistencies. Thus, the instruments appear to be valuable tools for assessing breast cancer knowledge and beliefs of Hispanic women.

Limitations

The study has several limitations. First, the term "Hispanic" refers to a number of diverse subpopulations. Whether the findings of the study would generalize to Hispanic women of different backgrounds is unknown. In addition, the sample was a convenience sample of women willing to attend an advertised intervention at a local church. Replication of the program is needed to evaluate the generalization of the intervention. Second, future research should compare the program to alternative interventions to evaluate relative efficacy and cost efficiency. Third, although knowledge and beliefs can be predictors of screening, actual screening behaviors were not examined. Studies that examine differences in obtaining mammography and actual performance of BSE are needed. Fourth, although the

translations of the BCK Test and the BCSBS showed acceptable reading levels and internal consistencies, the validity of the measurements with Hispanic populations was not evaluated. The BCK Test and the BCSBS appear to be amenable to Spanish translation, although the psychometric properties of the Spanish versions of the instruments will require additional research specific to their reliability and validity. Fifth, although the reading levels of sixth- to eighth-grade for written materials was appropriate for most members of the sample, some participants had educational levels as low as second grade. Thus, a few participants may have had difficulty with the written materials.

Implications for Nursing Practice

Nurses must play an important role in making breast cancer education accessible to underserved populations (Olsen & Frank-Stromborg, 1993). Providing breast cancer screening to Hispanic women in the United States is challenging; increasing knowledge and changing faulty beliefs associated with screening are needed to increase mammography and BSE in the population. Educational programs for the women, however, must be culturally based and linguistically appropriate to be successful. In addition, careful evaluation of the effectiveness of programs is necessary. Program success can be increased through collaborative partnerships with the community (e.g., local churches, Hispanic community centers) and with researchers in higher education to increase participation and ensure proper evaluation, respectively (Meade & Calvo, 2001). Group education is a viable and acceptable way to bring advances in breast cancer prevention to large groups of women (Snyder et al., 2003), and multimedia technology can present messages in a sensory-rich environment (Street, Van Order, Bramson, & Manning, 1998).

The present study involved the successful use of all of those resources. In addition, the specific educational materials used in the investigation are readily available through Susan G. Komen for the Cure, making replication of the program possible without the need to develop special materials. Thus, the study shows that providing multifaceted, culturally sensitive, and linguistically appropriate breast cancer education programs for Hispanic women can be accomplished successfully within the scope of nursing practice.

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