

Teaching Breast Cancer Screening to African American Women in the Arkansas Mississippi River Delta

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Purpose/Objectives: To determine the effectiveness of a multifaceted, culturally sensitive breast cancer education program for African American women in the Arkansas Mississippi River Delta.

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

Setting: African American churches and a county Extension Homemakers Club sponsored through the Arkansas Extension Homemakers council.

Sample: 53 African American women. The experimental group included 30 participants who had a mean age of 56 years, and the control group consisted of 23 participants with a mean age of 51 years.

Methods: After the presentation of a multifaceted, culturally sensitive breast cancer education program, a variety of instruments were administered to participants in the experimental group that measured dependent variables. Subjects in the control group completed the same instruments in the absence of a viable intervention. Data were analyzed using t tests.

Main Research Variables: Knowledge and beliefs about breast cancer.

Findings: The experimental group's mean scores were significantly higher than the control group's on the Breast Cancer Knowledge Test and the susceptibility scale of the Breast Cancer Screening Belief Scales. The experimental group also scored significantly higher than the control group on the confidence scale of the Breast Cancer Screening Belief Scales.

Conclusions: The multifaceted, culturally sensitive breast cancer education program appeared to be responsible for the differences in scores between the experimental and control groups.

Implications for Nursing: Culturally sensitive group educational programs aimed at helping African American women in the rural South become more knowledgeable about breast cancer and early detection clearly are needed. Such efforts also must focus on increasing women's confidence in effectively performing regular breast self-examination as well as their understanding of personal risk. Healthcare professionals play a major role in the development and implementation of these programs.

Key Points . . .

- ▶ African American women have the highest mortality rates among all racial or ethnic groups, and those in the Arkansas Mississippi River Delta are of particular concern.
- ▶ Churches and community groups, such as county Extension Homemakers Clubs, continue to be important settings for educating African American women in the rural southern United States about breast cancer screening.
- ▶ Multifaceted, culturally sensitive breast cancer education programs may assist in enhancing African American women's knowledge and beliefs associated with early detection of the disease.

African American women are less likely to be diagnosed with early-stage breast cancer and are more likely to have regional or distant spread (Champion & Menon, 1997). Breast cancer screening offers the greatest potential for reducing mortality and enhancing outcomes within this group (Phillips, Cohen, & Tarzian, 2001). Unfortunately, many African American women,

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African American women are more likely to die as a result of breast cancer than women from any other racial or ethnic group (American Cancer Society [ACS], 2005; Glanz, Croyle, Chollette, & Pinn, 2003). According to ACS (2005), the breast cancer mortality rates among African American women are 30% higher than among white women.

particularly older women, are not screened for the disease (Stager, 1993). African American women in Arkansas and the Mississippi River Delta region are of particular concern.

Arkansas and the Mississippi River Delta

Arkansas is among the poorest and most economically depressed states in the nation. According to the U.S. Census Bureau (2005), Arkansas' per capita income is \$16,904, compared to the national average of \$21,597. A significant portion of the state is located in the Mississippi River Delta, which is one of the most poverty-stricken regions in the country. Health care in this region, where African Americans account for approximately 34% of the population, often is lacking. The poverty rate for African Americans in this rural area is 40%, whereas the national poverty rate is 12% (Housing Assistance Council, 2002). Poverty and inferior health care among African Americans have been associated with late diagnosis and poor outcomes regarding cancer (Glanz et al., 2003).

Among women in Arkansas, breast cancer is the most frequently diagnosed cancer. The most recently available data showed that from 1997–2001, 10,523 new cases of female breast cancer were diagnosed in Arkansas, 1,050 of which occurred in African American women (Arkansas Department of Health, 2005). Studies published by the Arkansas Foundation for Medical Care (2003) indicated that Arkansas ranks 45th in Medicare biennial mammography rates. The lowest mammography rates are in the Mississippi River Delta, which may be attributed partially to a lack of knowledge and inaccurate beliefs associated with breast cancer.

Breast Cancer Screening

The underuse of mammography seems to play a significant role in delayed breast cancer diagnosis, which leads to a disproportionate number of deaths in African American women. The Agency for Healthcare Research and Quality (2000) noted that knowledge of screening recommendations and access to free mammograms often are inadequate in prompting low-income African American women to keep appointments. Knowledge, beliefs, and other factors related to mammography appear to play a major role in the failure to follow through with screening appointments. This point is consistent with the Health Beliefs Model (HBM) (Rosenstock, 1966; Rosenstock, Strecher, & Becker, 1988). Lack of knowledge about mammograms is a significant barrier to early detection that appears to increase women's anxiety and fear associated with the procedure (Paskett, Tatum, Wilson, Dignan, & Velez, 1996). Additionally, women who believed that getting a mammogram is embarrassing or unnecessary in the absence of symptoms were more likely to miss a mammogram appointment (Crump, Mayberry, Taylor, Barefield, & Thomas, 2000). Phillips et al. (2001) noted that healthcare professionals need to develop a specific understanding of African American women's experiences to enhance the utilization of mammography.

Several studies have examined variables that influence the increased use of mammography screening among low-income African American women. For example, Champion and Menon (1997) found that perceived barriers, recommendations by healthcare professionals to get a mammogram, recent thoughts about mammograms, and regular physician visits influenced the

likelihood of obtaining this type of screening. Calle, Flanders, Thun, and Martin (1993) found that low income, low educational attainment, being older than 65 years, and living in a rural area were associated with mammography underuse.

In addition to mammography, breast self-examination (BSE) is an important early identification tool for women (Taylor, 2002). Although the efficacy of teaching BSE has been questioned and monthly performance is no longer recommended by ACS (Smith, Cokkinides, & Eyre, 2004), the Susan G. Komen Breast Cancer Foundation continues to endorse the practice for women older than age 40. ACS recommends that women be informed about the potential benefits, limitations, and harm associated with BSE. Women may choose to practice BSE regularly or not at all; however, the regular performance of BSE may function to increase the likelihood of obtaining mammography screening (Bloom, Grazier, Hodge, & Hayes, 1991).

African American women tend to perform BSE at rates similar to other racial groups. Stager (1993) found that 44% of women (N = 182) reported performing monthly BSE, whereas only 35% of the women (N = 538) in a study by Rutledge, Bar-sevick, Knobf, and Bookbinder (2001) reported practicing BSE 12 or more times per year. According to Gasalberti (2002), BSE is unique in comparison to other screening behaviors because it is personal and not dependent on healthcare professionals or facilities. Barriers associated with BSE include the lack of knowledge and confidence in its performance.

Overall, knowledge of BSE among African American women is low (Nemcek, 1989). Inaccurate knowledge of breast cancer among older African American women may hinder early detection (Bailey, Erwin, & Belin, 2000). Taylor (2002) found that educational programs appear to have a significant impact on the use of BSE, and among low-income African American women, a single educational encounter can positively affect BSE behavior.

Women must possess motivation, ability, and freedom from barriers to effectively and routinely perform BSE. Researchers have identified several variables or predictors related to BSE that also are incorporated into the HBM (Champion & Menon, 1997; Champion & Scott, 1997). These include perceived susceptibility, benefits, and competence. The use of other breast cancer screening practices (e.g., mammography) also may be tied to sociocultural factors.

Sociocultural Factors Related to Breast Cancer Detection

Social support may play a critical role in increasing the use of cancer screening techniques among minority women (Gotay & Wilson, 1998). Erwin, Spatz, Stotts, and Hollenberg (1999) confirmed the importance of social ties, such as those within the church, in promoting early cancer detection. African American women have identified the church and work as sources of psychosocial support specific to cancer screening (Jernigan, Trauth, Neal-Ferguson, & Cartier-Ulrich, 2001). Consequently, the church is well positioned to encourage older African American women to participate in cancer screening programs.

Cultural influences also seem to play a significant role in the breast cancer screening behavior of African American women (Hoffman-Goetz & Mills, 1997; Russell, Champion, & Perkins, 2003). Core cultural values emphasizing family, interdependence, religion, and a holistic view of health are important factors that influence screening behaviors (Glanz et al., 2003).

Factors affecting the acceptability of healthcare services among minority women include cultural beliefs about cancer, communication styles, linguistic barriers, and real or anticipated discrimination. Bailey et al. (2000) identified a number of cultural beliefs among African American women regarding breast cancer, such as believing that it mainly affects Caucasians or being fatalistic about the disease. Breast cancer also was stigmatizing and therefore was not to be discussed. Some women believed cancer was a punishment from God. The women indicated that they sought care from social and cultural networks and viewed educational messages from familiar social and cultural sources as truthful. In addition, according to Bailey et al., the women exhibited a preference for intra-ethnic role models. Therefore, cultural beliefs may be of utmost importance to breast cancer interventionists when designing and implementing prevention programs for African American women and may be relevant especially in select regions of the southern United States, such as the Arkansas Mississippi River Delta.

Breast Cancer Education in the Arkansas Mississippi River Delta

Coleman et al. (2003) examined breast cancer screening in the Arkansas Mississippi River Delta and suggested that structured and multifaceted programs may increase participation rates among African American women. Instruction by healthcare providers can increase breast cancer screening; however, a major limitation associated with education programs is a lack of culturally sensitive teaching materials for African American women with low literacy levels. Most healthcare information is written at a 10th-grade or higher reading level, but many individuals read at a fifth-grade or lower level (Chelf et al., 2001; Winslow, 2001). Low literacy levels are prevalent in the African American population of the Mississippi River Delta. Readable and culturally sensitive cancer education materials are needed and should function to strengthen primary cancer prevention efforts by increasing screening and promoting early detection behaviors (Guidry, Fagan, & Walker, 1998). Paskett et al. (1996) found that photo-essays or pictures conveying mammography information can be effective in educating women with low-literacy levels.

Erwin, Spatz, and Turturro (1992) noted that minority and low-income populations exhibit low participation rates in breast cancer education and screening programs. To enhance breast cancer screening behaviors among African American women in Arkansas, including the Mississippi River Delta, Erwin et al. designed a program in which presenters and role models were breast cancer survivors of the same race and background as participants. The program, which was held in African American churches and community centers, called for the presenters to engage in "witnessing." The presenter focused on the recognition and discovery of a breast lump, treatment, personal philosophy regarding survival, and the benefits of early detection. The goal was to empower women to take responsibility for their health and practice early detection behaviors. A three-month follow-up revealed that participants ($N = 78$) had increased their practice of BSE by 43% and 19% had obtained a mammogram.

Clearly, a need exists for more culturally appropriate interventions, as well as research pertaining to breast cancer, aimed at African American women living in the South. These efforts should involve the church, community, and healthcare professionals in an attempt to raise the quality of services

within this population (Glanz et al., 2003). According to the Oncology Nursing Society (1999), cultural knowledge must infuse the entire process. African American healthcare professionals must be included in the delivery of breast cancer educational programs designed for groups of minority women when attempting to alter knowledge, beliefs, and behaviors.

The purpose of this study was to determine the effectiveness of a multifaceted, culturally sensitive breast cancer education program based on the HBM for African American women in the Arkansas Mississippi River Delta to enhance breast cancer knowledge, beliefs, and behaviors. The researchers hypothesized that African American women who received this breast cancer education program would demonstrate significant differences in knowledge, beliefs, and behaviors regarding breast cancer when compared with women who did not. The first hypothesis 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 adaptive beliefs (e.g., susceptibility, benefits of mammography and BSE, confidence) about mammography and BSE compared to those in the control condition. Finally, the researchers hypothesized that subjects in the experimental condition would obtain a mammogram and engage in more frequent BSE within a three-month time period than those in the control situation.

Theoretical Model

In recent years, the HBM has been applied to breast cancer screening. According to Champion and Scott (1997), this model indicates that screening behaviors result from personal decisions that are based on perceived susceptibility, perceived seriousness, benefits and barriers to action, and confidence. The individual's knowledge of cancer and risk influences perceived susceptibility and seriousness. Participation in screening results from the belief that certain behaviors will benefit the individual and surpass any barriers. Finally, confidence, or self-efficacy (Bandura, 1986, 1997), specific to performing select screening behaviors such as BSE appears to be a critical variable that increases the likelihood of engaging in this health-promoting behavior (Champion & Scott). A number of instruments were used in this study to assess these key variables (i.e., knowledge of cancer and risk, susceptibility, benefits, barriers, and confidence, or self-efficacy).

Methods

Participants

Fifty-three African American women aged 40 and older living in the Arkansas Mississippi River Delta participated in this study. Race, age, and geographic location or area of residence were the criteria used for inclusion. The mean age of participants was 56 years in the experimental group and 51 years in the control group. Informed consent was obtained from all participants before the study began. Because participants could not be randomly assigned to experimental and control groups, statistical analyses were conducted to determine comparability of the groups based on participants' ages, education levels, and annual incomes; whether they had health insurance, regular visits with a physician, regular physical examinations, yearly clinical breast examinations, and previous mammographies; and cancer diagnoses, participants' ages at first mammogram,

breast biopsies, family histories of breast cancer, and past participation in breast cancer education programs. SPSS® (SPSS Inc., Chicago, IL) was used to conduct data analyses, including t tests, chi-square tests, and Fisher's exact tests as appropriate. No statistically significant differences were found, indicating that the experimental and control groups were comparable regarding all of the variables before treatment.

Design

A post-test only, control group design (Campbell & Stanley, 1963) was employed. Participants were recruited from six African American churches and one county Extension Homemakers Club sponsored by the Arkansas Extension Homemakers Council. Participants from three of the churches and the county Extension Homemakers Club were randomly assigned to the experimental group, and participants from the remaining three churches were randomly assigned to the control group. As a result, these associational groups were nested within treatment conditions. Entire groups rather than individuals were assigned to prevent information from being disseminated within a group. Participants in the experimental group (n = 30) received the breast cancer educational program, which was followed by testing. Participants assigned to the control group (n = 23) simply were tested. A pretest was not administered to participants because of time constraints and concerns about reactivity. Participants assigned to the control group were offered the educational program after the study was concluded.

Settings

The study was carried out in six African American churches and one Extension Homemakers Club, all of which were located in five northeastern counties in the Arkansas Mississippi River Delta. Pastors of the churches were contacted by letter and telephone to obtain permission for conducting the study. Three investigators visited an African American county Extension Homemakers Club to secure participants. The pastors and the home extension contact person announced the date and time of the event and encouraged all women older than 40 years to attend.

Educational Program

In an attempt to address some of the concerns and limitations associated with past breast cancer education programs, this program provided readable, culturally sensitive materials and was presented by African Americans from different healthcare disciplines. The written program materials did not exceed the ninth-grade reading level, and visual aids featured African American women. Additionally, African American breast models were used to teach BSE. All of the presenters and leaders were students or university faculty from nursing and allied health disciplines (e.g., radiation, medical technology, physical therapy). Faculty presenters and leaders were BSE certified by ACS. The nursing and allied health students participated in a training program about African American women's beliefs pertaining to breast cancer and BSE instruction before the initiation of the program. Eight of nine student presenters and leaders were female African Americans.

The program's core content included risk factors associated with the development of breast cancer, early detection, the performance of BSE with models, guidelines for mammography screening, and the role of mammography in breast cancer

detection. The program was divided into two parts. The first part consisted of large group instruction with a computerized multimedia slide show estimated to be at the ninth-grade reading level and the showing of two brief ACS multicultural videos, *Instructions for Breast Self-Examination* and *Quality Mammography Can Save Your Life* (ACS, 1997a, 1997b). A number of photos of African American women were incorporated into this presentation to illustrate the proper positions and techniques for BSE. The second part of the program, which immediately followed the large group instruction, consisted of a small group session led by a presenter. Each participant received a shower card produced by the Susan G. Komen Breast Cancer Foundation designed for African American women that gave directions for performing BSE and was written at the eighth-grade reading level. The group leaders presented the content on the shower card to the participants verbatim. Participants kept the cards at the end of the program. Additionally, participant modeling was used to teach proper BSE. Each group leader first demonstrated correct 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. This aid, which the participants also were allowed to keep, consisted of beads of various sizes that are analogous to breast tumors detected at different points in time using available screening methods. Each group leader discussed the significance of this tool and explained the accompanying script, which noted the size of breast tumors detected by various screening techniques (i.e., untrained in BSE, occasional BSE, regular BSE, first mammograms, and subsequent mammograms). The program concluded with each participant receiving a preexisting information sheet listing breast health resources in Arkansas. This document was written at a thirteenth-grade reading level. The total length of the program was 60–70 minutes and immediately was followed by an additional 30 minutes of testing.

Treatment integrity, which reflects the reliability of the independent variable, was measured by trained observers who read along with the program scripts to determine whether each presenter delivered the precise content listed on each slide, shower card, and key chain. Observers also used a predeveloped checklist in one small group per experimental site to note whether the participants demonstrated BSE on the model and detected lumps. Overall, treatment integrity associated with the program was 80% and would have been considerably higher if one student presenter had not accidentally failed to read orally a portion of the content listed on the shower card during the small group instruction at one site.

Instruments

Each participant was asked to complete a demographic questionnaire, the **Breast Cancer Knowledge (BCK) Test** (McCance, Mooney, Smith, & Field, 1990), and the **Breast Cancer Screening Belief Scales (BCSBS)** (Champion & Scott, 1997). The BCK Test and the BCSBS were administered in a counterbalanced fashion to control for order effects. The items on these instruments were administered orally to several participants because of low literacy levels. Subjects in both groups also were asked by letter to complete a brief three-month follow-up survey. Participants in the experimental group completed the **Client Satisfaction Questionnaire-8 (CSQ-8)** (Pascoe & Attkisson, 1983). Both of these measures were written at a ninth-grade reading level. The survey was designed

to assess the use of BSE and mammography and to obtain information about recent breast cancer diagnoses. The CSQ-8 is an eight-item tool designed to assess participants' satisfaction with the program on a four-point scale ranging from 1 (low) to 4 (high). A high score on this scale represents satisfaction. These instruments and an accompanying letter were mailed to the participants three months after the delivery of the program. Subjects were asked to return the completed materials in an addressed, stamped envelope by U.S. mail.

The BCK Test (McCance et al., 1990) measures subjects' knowledge of detection and screening practices and originally was based on Stillman's (1977) Knowledge Questionnaire. The BCK Test has been recommended to assist in evaluating the effectiveness of educational programs designed to promote early breast cancer detection (McCance et al.) and consists of 18 items written at a seventh-grade reading level. Internal consistency for the scale was 0.81. The content validity for the measure was established through expert opinion. A high score on the BCK Test is associated with greater knowledge. In general, more knowledge of breast cancer detection and screening has been associated with the use of mammography and clinical breast examinations (McCance et al.). Furthermore, a number of investigations have found a significant relationship between breast cancer knowledge and BSE (Champion, 1987; Dickson et al., 1986; Gray, 1990; Mamon & Zapka, 1986; Reeder, Berkanovic, & Marcus, 1980; Roberts, French, & Duffy, 1984; Rutledge et al., 2001).

The BCSBS is used to measure beliefs about mammography and BSE, is based on the HBM, and consists of 47 items written at an eighth-grade or lower reading level. The items comprise six scales: susceptibility, benefits of mammography, benefits of BSE, barriers to mammography, barriers to BSE, and confidence. All of the items on the BCSBS are scored using a five-point Likert scale ranging 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 breast cancer screening, whereas high scores on the barriers to mammography and barriers to BSE scales are associated with early detection. Internal consistency coefficients for the instrument equaled 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 reliability over an unspecified time interval ranged from 0.40–0.68. Construct validity of the six scales was assessed and supported through confirmatory factor analysis. The BCSBS has value in identifying beliefs of African American women regarding mammography and BSE (Champion & Scott, 1997).

Results

Sample

The study sample consisted of 53 African American women 40 years of age and older from six counties in the Arkansas Mississippi River Delta region of the United States. The mean age of participants was 56 years in the experimental group and 51 years in the control group. Fifty percent of participants reported an annual income less than \$20,000, and fifty-seven percent had completed the 12th grade. Eighty-five percent had health insurance. Ninety percent indicated that they had a regular physician, 75% stated that they received regular

physical examinations, 72% had received a clinical breast examination performed by a physician or nurse within the previous year, and 81% indicated that they had obtained a mammogram in the past.

Knowledge

The mean score on the BCK Test for the experimental group ($\bar{X} = 14.07$, $SD = 2.53$) was significantly higher than for the control group ($\bar{X} = 11.91$, $SD = 2.76$) ($t[51] = 2.95$, $p < 0.01$). Table 1 lists the differences between the experimental and control groups on the BCSBS. The mean score on the susceptibility scale of the BCSBS for the experimental group ($\bar{X} = 13.34$, $SD = 5.51$) was significantly higher than for the control group ($\bar{X} = 10.23$, $SD = 4.30$) ($t[51] = 2.19$, $p < 0.05$). Additionally, the mean score on the confidence scale of the BCSBS for the experimental group ($\bar{X} = 43.00$, $SD = 5.08$) also was significantly higher than the control group ($\bar{X} = 31.32$, $SD = 8.86$) ($t[51] = 5.87$, $p < 0.01$). No other scales on the BCSBS showed significant differences between the two groups.

Because of a poor return rate for the three-month follow-up survey and the CSQ-8, the third hypothesis could not be tested statistically. Only 16 of 53 (30%) surveys were returned. No participants in either group reported having had a mammogram. On average, respondents from both the experimental and control groups had performed BSE twice per month. None of the subjects noted a recent diagnosis of breast cancer. Overall, the responses on the limited number of returned CSQ-8s ($n = 13$) indicated that participants in the experimental group appeared to be satisfied with the program and were inclined to recommend it to others in similar need ($\bar{X} = 2.85$).

Discussion

The multifaceted, culturally sensitive breast cancer education program implemented in this study with African American women in the Arkansas Mississippi River Delta appeared to be responsible for the differences between the scores for the experimental and control groups on the BCK Test. Breast cancer knowledge was a major focus of the large group instruction, composing the first portion of the program. These results are important because knowledge has been associated with increased use of mammography, clinical breast examinations (McCance et al., 1990), and BSE (Champion, 1987; Dickson et al., 1986; Gray, 1990; Mamon & Zapka, 1986; Reeder et al.,

Table 1. Breast Cancer Screening Beliefs Scales Score Differences by Group

Outcome Measure	Experimental Group		Control Group	
	\bar{X}	SD	\bar{X}	SD
Susceptibility	13.34*	5.51	10.23	4.30
Benefits of mammography	18.31	2.29	18.04	3.01
Benefits of BSE	18.46	3.47	18.47	3.34
Barriers to mammography	23.19	11.18	20.85	5.77
Barriers to BSE	16.35	8.07	17.33	7.46
Confidence	43.00**	5.08	31.32	8.86

* $p < 0.05$

** $p < 0.01$

BSE—breast self-examination

1980; Roberts et al., 1984; Rutledge et al., 2001). Knowledge also is an important element in the HBM. The program appeared to be responsible for the differences between scores for the experimental and control groups on the susceptibility and confidence scales of the BCSBS. Participants who received the program appeared to have a significantly better understanding of their risk of or susceptibility to developing breast cancer. African American women typically do not identify themselves as being at risk for breast cancer and generally tend to be unaware and unconcerned about the topic (Bailey et al., 2000). Women who do not perceive themselves as susceptible to developing the disease may not practice regular BSE. Participation in breast cancer detection behaviors can be predicted partially by perceived susceptibility of risk (Rutledge et al., 2001). The first portion of the program placed a significant emphasis on African American women's susceptibility to developing breast cancer, which may explain why significance was noted between the groups on the susceptibility scale of the BCSBS. Engaging in breast cancer prevention behaviors partially depends on becoming more aware of personal risk or susceptibility. African American women who completed the program also appeared to be more confident in performing BSE than those in the control condition. This finding likely can be attributed to the group leaders modeling proper BSE, which was followed by each participant adequately demonstrating the procedure and detecting the presence of lumps using the breast model. An enhanced sense of confidence, or self-efficacy, in performing BSE is important and a key construct in the HBM. Individuals who are confident in their ability to engage in BSE successfully are more inclined to continue this practice.

Limitations

The current study possesses several limitations. Whether the findings of this study would generalize to African American women in a different geographic area is unknown. Replication of the program is needed to address this issue and further evaluate the external validity of the intervention. Future research should compare this program to alternative interventions as they are developed to evaluate effectiveness. Because of inadequate returns associated with the three-month follow-up survey, any differences between participants in the experimental and control groups in terms of mammography and frequency of performing BSE are unknown. Evaluation of the satisfaction of individuals in the experimental condition also was hampered by the low return rate. This information may have been obtained more effectively by conducting telephone surveys with each participant (LaSala, 1997) or by using a contact person at each site to collect the requested information. Given the difficulties associated with collecting follow-up data (Erwin et al., 1992; Royse, Thyer, Padgett, & Logan, 2001), future studies should consider conducting telephone surveys or enlisting a contact person to

increase participation in the follow-up. The preexisting information sheet that listed breast health resources in Arkansas was received by all participants and was written at a grade 13 reading level, which also should be regarded as a limitation. In future studies, rewriting such materials at a lower reading level may be necessary. Finally, the BCSBS, three-month follow-up survey, and CSQ-8 all rely on self-reported data that may not be reliable and valid.

Implications for Nursing

Enhancing knowledge and changing beliefs associated with breast cancer screening are important when attempting to increase mammography and BSE among African American women. By increasing the use of screening behaviors, breast cancer may be detected earlier, when treatment is more successful. These efforts may assist in lowering the unacceptable mortality rate found in this population (Champion & Scott, 1997; Dignam, 2000).

Establishing effective collaborative approaches and partnerships in the African American community is necessary to link research and practice (Glanz et al., 2003). African American churches and community groups continue to be viable settings for outreach breast cancer education programs (Erwin et al., 1992; Rutledge et al., 2001) for women living in the rural South. Work settings also should be considered.

Culturally sensitive educational programs aimed at helping groups of African American women become more knowledgeable about breast cancer and early detection clearly are needed (Taylor, 2002). These efforts also must strive to enhance women's confidence in effectively performing regular BSE because it has been linked to other important screening methods. This fact alone provides support for continuing to recommend regular BSE. Finally, programs need to focus on assisting African American women with better understanding their personal risk associated with breast cancer (Rutledge et al., 2001). Because of the costs associated with the disease and the design and implementation of prevention programs (Erwin et al., 1992), all interventions should be validated empirically and implemented with integrity. Healthcare professionals from a variety of disciplines have a major role in designing and implementing interventions to teach women about BSE and mammography screening.

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References

- Agency for Healthcare Research and Quality. (2000, September). Negative attitudes about mammography lead some low-income black women to skip their appointments to have the procedure. *Research Activities*, 241. Retrieved April 26, 2005, from <http://www.ahrq.gov/research/sep00/0900RA2.htm#head1>
- American Cancer Society (Producer). (1997a). *Instructions for breast self-examination* [Motion picture]. (Available from the American Cancer Society, 1599 Clifton Rd. NE, Atlanta, GA 30329)
- American Cancer Society (Producer). (1997b). *Quality mammography can save your life* [Motion picture]. (Available from the American Cancer Society, 1599 Clifton Rd. NE, Atlanta, GA 30329)
- American Cancer Society. (2005). *Cancer facts and figures: 2005*. Retrieved May 17, 2005, from <http://www.cancer.org/downloads/STT/CAFF2005PWSecured.pdf>
- Arkansas Department of Health. (2005). Arkansas central cancer registry incidence tool. Retrieved May 13, 2005, from <http://www.cancer-rates.info/ar>

- Arkansas Foundation for Medical Care. (2003). Arkansas scorecard for national quality improvement indicators. Retrieved May 10, 2005, from <http://www.afmc.org/HTML/programs/statisticaldata/medicare/scorecard/index.aspx>
- Bailey, E.J., Erwin, D.O., & Belin, P. (2000). Using cultural beliefs and patterns to improve mammography utilization among African American women: The witness project. *Journal of the National Medical Association, 92*, 136–142.
- Bandura, A. (1986). *Social foundations of thought and action: A social cognitive theory*. Englewood Cliffs, NJ: Prentice Hall.
- Bandura, A. (1997). *Self-efficacy: The exercise of control*. New York: W.H. Freeman.
- Bloom, J.R., Grazier, K., Hodge, F., & Hayes, W.A. (1991). Factors affecting the use of screening mammography among African American women. *Cancer Epidemiology, Biomarkers and Prevention, 1*, 75–82.
- Calle, E.E., Flanders, W.D., Thun, M.J., & Martin, L.M. (1993). Demographic predictors of mammography and Pap smear screening in U.S. women. *American Journal of Public Health, 83*, 53–60.
- Campbell, D.T., & Stanley, J.C. (1963). *Experimental and quasi-experimental designs for research*. Chicago: Rand McNally.
- Champion, V., & Menon, U. (1997). Predicting mammography and breast self-examination in African American women. *Cancer Nursing, 20*, 315–322.
- Champion, V.L. (1987). The relationship of breast self-examination to Health Belief Model variables. *Research in Nursing and Health, 10*, 375–382.
- Champion, V.L., & Scott, C.R. (1997). Reliability and validity of breast cancer screening belief scales in African American Women. *Nursing Research, 46*, 331–337.
- Chelf, J.H., Agre, P., Axelrod, A., Cheney, L., Cole, D.D., Conrad, K., et al. (2001). Cancer-related patient education: An overview of the last decade of evaluation and research. *Oncology Nursing Forum, 28*, 1139–1147.
- Coleman, E.A., Lord, J., Heard, J., Coon, S., Cantrell, M., Mohrmann, C., et al. (2003). The Delta project: Increasing breast cancer screening among rural minority and older women by targeting rural healthcare providers. *Oncology Nursing Forum, 30*, 669–677.
- Crump, S.R., Mayberry, R.M., Taylor, B.D., Barefield, K.P., & Thomas, P.E. (2000). Factors related to noncompliance with screening mammogram appointments among low-income African-American women. *Journal of the National Medical Association, 92*, 237–246.
- Dickson, G., Parsons, M.A., Greaves, P., Jackson, K.L., Kronenfeld, J.J., Ward, W.B., et al. (1986). Breast self-examination knowledge, attitudes and practice behaviors of working women. *AAOHN Journal, 34*, 228–232.
- Dignam, J.J. (2000). Differences in breast cancer prognosis among African American and Caucasian women. *CA: A Cancer Journal for Clinicians, 50*, 50–64.
- Erwin, D.O., Spatz, T.S., Stotts, R.C., & Hollenberg, J.A. (1999). Increasing mammography practice by African-American women. *Cancer Practice, 7*, 78–85.
- Erwin, D.O., Spatz, T.S., & Turturro, C.L. (1992). Development of an African-American role model intervention to increase breast self-examination and mammography. *Journal of Cancer Education, 7*, 311–319.
- Gasalberti, D. (2002). Early detection of breast cancer by self-examination: The influence of perceived barriers and health conception. *Oncology Nursing Forum, 29*, 1341–1347.
- Glanz, K., Croyle, R.T., Chollette, V.Y., & Pinn, V.W. (2003). Cancer-related health disparities in women. *American Journal of Public Health, 93*, 292–298.
- Gotay, C.C., & Wilson, M.E. (1998). Social support and cancer screening in African American, Hispanic, and Native American women. *Cancer Practice, 6*, 31–37.
- Gray, M.E. (1990). Factors related to practice of breast cancer self-examination in rural women. *Cancer Nursing, 13*, 100–107.
- Guidry, J.J., Fagan, P., & Walker, V. (1998). Cultural sensitivity and readability of breast and prostate printed cancer education materials targeting African Americans. *Journal of the National Medical Association, 90*, 165–169.
- Hoffman-Goetz, L., & Mills, S.L. (1997). Cultural barriers to cancer screening among African American women: A critical review of the qualitative literature. *Women's Health: Research on Gender, Behavior, and Policy, 3*, 183–201.
- Housing Assistance Council. (2002). High need rural areas and populations. In *Taking stock: Rural people, poverty, and housing at the turn of the 21st century* (pp. 35–102). Washington, DC: Author.
- Jernigan, J.C., Trauth, J.M., Neal-Ferguson, D., & Cartier-Ulrich, C. (2001). Factors that influence cancer screening in older African American men and women: Focus group findings. *Family and Community Health, 24*(3), 27–33.
- LaSala, M.C. (1997). Client satisfaction: Consideration of correlates and response bias. *Families in Society, 78*, 54–64.
- Mamon, J.A., & Zapka, J.G. (1986). Breast self-examination by young women: I. Characteristics associated with frequency. *American Journal of Preventive Medicine, 2*, 61–69.
- McCance, K.L., Mooney, K.H., Smith, K.R., & Field, R. (1990). Validity and reliability of a Breast Cancer Knowledge Test. *American Journal of Preventive Medicine, 6*, 93–98.
- Nemcek, M.A. (1989). Factors influencing black women's breast self-examination practice. *Cancer Nursing, 12*, 339–343.
- Oncology Nursing Society. (1999). *Multicultural outcomes: Guidelines for cultural competence*. Retrieved April 25, 2005, from <http://www.cityofhope.org/prc/pdf/multicultural.pdf>
- Pascoe, G.C., & Attkisson, C.C. (1983). The evaluation ranking scale: A new methodology for assessing satisfaction. *Evaluation and Program Planning, 6*, 335–347.
- Paskett, E.D., Tatum, C., Wilson, A., Dignan, M., & Velez, R. (1996). Use of a photoessay to teach low-income African American women about mammography. *Journal of Cancer Education, 11*, 216–220.
- Phillips, J.M., Cohen, M.Z., & Tarzian, A.J. (2001). African American women's experiences with breast cancer screening. *Journal of Nursing Scholarship, 33*, 135–140.
- Reeder, S., Berkanovic, E., & Marcus, A.C. (1980). Breast cancer detection behavior among urban women. *Public Health Reports, 95*, 276–281.
- Roberts, M.M., French, K., & Duffy, J. (1984). Breast cancer and breast self-examination: What do Scottish women know? *Social Science and Medicine, 18*, 791–797.
- Rosenstock, I.M. (1966). Why people use health services. *Milbank Memorial Fund Quarterly, 44*(3), 94–127.
- Rosenstock, I.M., Strecher, V.J., & Becker, M.H. (1988). Social learning theory and the Health Belief Model. *Health Education Quarterly, 15*, 175–183.
- Royse, D., Thyer, B.A., Padgett, D.K., & Logan, T.K. (2001). *Program evaluation: An introduction* (3rd ed.). Belmont, CA: Brooks/Cole-Wadsworth Thomson Learning.
- Russell, K.M., Champion, V.L., & Perkins, S.M. (2003). Development of cultural belief scales for mammography screening. *Oncology Nursing Forum, 30*, 633–640.
- Rutledge, D.N., Barsevick, A., Knobf, M.T., & Bookbinder, M. (2001). Breast cancer detection: Knowledge, attitudes, and behaviors of women from Pennsylvania. *Oncology Nursing Forum, 28*, 1032–1040.
- Smith, R.A., Kokkinides, V., & Eyre, H.J. (2004). American Cancer Society guidelines for the early detection of cancer, 2004. *CA: A Cancer Journal for Clinicians, 54*, 41–52.
- Stager, J.L. (1993). The comprehensive Breast Cancer Knowledge Test: Validity and reliability. *Journal of Advanced Nursing, 18*, 1133–1140.
- Stillman, M.J. (1977). Women's health beliefs about breast cancer and breast self-examination. *Nursing Research, 26*, 121–127.
- Taylor, G.A. (2002). Effects of a culturally sensitive breast self-examination intervention. *Outcomes Management, 6*, 73–78.
- U.S. Census Bureau. (2005). *Arkansas quickfacts*. Retrieved April 27, 2005, from <http://quickfacts.census.gov/qfd/states/05000.html>
- Winslow, E.H. (2001). Patient education materials. *American Journal of Nursing, 101*(10), 33–38.