

Psychosocial Correlates of Mammography Screening in Older African American Women

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Purpose/Objectives: To explore psychosocial correlates of older African American women's adherence to annual mammography screening, including cancer fatalism, dispositional optimism, social support, knowledge of breast cancer screening guidelines, perceptions of general health, and components of the Health Belief Model (HBM), and to examine factors associated with annual mammography screening.

Design: Cross-sectional survey.

Setting: Central North Carolina.

Sample: 198 African American women aged 50–98 years living in low-income housing.

Methods: Women attended group sessions at low-income housing complexes and completed questionnaires. Differences between women who had or did not have a mammogram in the previous year were explored using correlate variables associated with the HBM. Stepwise multivariable regression models were fit to explore factors associated with social support and significant components of the HBM.

Main Research Variables: Demographics, cancer fatalism, dispositional optimism, social support, perceptions of general health, components of the HBM, and mammography in the past year.

Findings: The groups did not differ by age, education, marital status, having a friend or family member with breast cancer, ever having had a clinical breast examination, self-rated health, cancer fatalism, dispositional optimism, or feelings about the seriousness of and their susceptibility to breast cancer. The groups differed significantly on mammogram-related variables, how often women should have clinical breast examinations, benefits and barriers to mammography screening, and social support. Stepwise multivariable regression analyses showed that dispositional optimism and social support were related significantly to perception of benefits; education, dispositional optimism, and cancer fatalism were related to barriers; and dispositional optimism was related to social support.

Conclusions: Older, low-income, African American women have perceived barriers to cancer screening, educational and cancer knowledge detriments, and a lack of health-related social support that may decrease adherence to mammography screening.

Implications for Nursing: The next step is to develop culturally appropriate educational interventions that increase knowledge about breast cancer and screening guidelines, enhance health-related social support, and address barriers and perhaps cancer fatalism in older, low-income, African American women.

Breast cancer is the most frequently diagnosed non-skin cancer in women in the United States (American Cancer Society, 2006a). It is also the most common cancer and second most common cause of cancer-related death among African American women (American Cancer Society, 2005b). Estimates suggest that 212,920 cases of breast cancer will be diagnosed nationally in 2006, including 6,290 women in North Carolina (American Cancer Society,

Key Points . . .

- ▶ Early detection is the most important predictor of breast cancer survival.
- ▶ African American women are more likely to be diagnosed with later-stage cancers and larger tumors than Caucasian women.
- ▶ Some of the factors that contribute to lack of mammography screening may be modifiable.

2006a). In Forsyth County, NC, 250 new cases of breast cancer were expected to occur in 2005, the most recent year for which data are available (Central Cancer Registry & American Cancer Society, 2005). The most important predictor of survival is stage at diagnosis. The survival rate is almost 98% for women diagnosed with the earliest stage of breast cancer but only 26% for women diagnosed with the most advanced stage (American Cancer Society, 2005a). African American women are more likely than Caucasian women to be diagnosed with larger tumors that are at more advanced stages (Ghafoor et al.,

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2003; Li, Malone, & Daling, 2003). Annual mammography screening beginning at age 40 is the best way to detect cancer before symptoms appear, which increases treatment options and saves lives (American Cancer Society, 2006b).

The purpose of this study was to examine the psychosocial factors that have been found to influence breast cancer screening practices among older African American women. The primary objective was to explore psychosocial correlates of older African American women's adherence to annual mammography screening, including cancer fatalism, dispositional optimism, social support, knowledge of breast cancer screening guidelines, perceptions of general health, and components of the Health Belief Model (HBM) (Champion, 1999). The secondary aim was to examine factors associated with annual mammography screening.

Several factors have been shown to influence women's choices regarding mammography screening. Factors that reduce screening (i.e., barriers) include logistical difficulties such as accessibility, cost, and lack of transportation; healthcare issues such as not having high-quality health care, a usual source of care, or trust in healthcare providers; informational barriers such as lack of knowledge of screening guidelines; and personal barriers such as the belief that cancer is incurable, embarrassment, fear, and stigma of cancer or death from cancer (Jernigan, Trauth, Neal-Ferguson, & Cartier-Ulrich, 2001; Phillips, Cohen, & Moses, 1999; Powe, 2001; Shankar, Selvin, & Alberg, 2002). Additionally, other urgent life priorities may lead to a crisis orientation rather than prevention orientation toward medical care (Phillips, 1999; Shankar et al.) in which cancer screening is not part of the routine healthcare experience (Powe, 2001). The biggest barrier to mammography screening may be lack of healthcare provider recommendation, which women may interpret as meaning that screening is not important (Davis, Emerson, & Husaini, 2005; Lukwago et al., 2003; Powe, 2001).

Cancer fatalism, the belief that death is imminent when cancer is present (Powe, 1995a, 1995b, 2001), is an additional barrier to breast cancer screening. Cancer fatalism stems from perceptions of hopelessness, worthlessness, meaninglessness, powerlessness, and social despair that are reinforced by poverty and late cancer diagnoses that lead to death of family members and friends (Powe, 1995b). It develops over time and is higher among women and African Americans (Powe, 1995a; Powe & Finnie, 2003; Skinner, Champion, Menon, & Seshadri, 2002), especially those who are older, have lower incomes, and are less educated and less knowledgeable about cancer (Powe, 2001; Powe & Finnie; Powe & Weinrich, 1999).

In contrast to barriers, factors that facilitate mammography screening include older age, knowing someone diagnosed with cancer regardless of his or her survival status, and having social support regarding cancer and cancer screening (Jernigan et al., 2001). Additionally, women who are optimistic, whose expectations focus on good outcomes in life, may be expected to engage in breast cancer screening behaviors more often than women without such expectations (Clarke, Lovegrove, Williams, & Machperson, 2000).

Theoretical Model

The present study was conceptualized using the HBM to provide a framework for understanding why some people are motivated to engage in specific health-promotion behaviors,

such as mammography screening, to avoid illness, whereas others are not (Champion, 1999; Champion & Scott, 1997; Cummings, Jette, & Rosenstock, 1978; Janz & Becker, 1984; Maiman, Becker, Kirscht, Haefner, & Drachman, 1977; Rosenstock, 1966; Rosenstock, Strecher, & Becker, 1988). The model postulates that decision making concerning health promotion behaviors depends on the belief that the disease is serious and its consequences are severe enough to affect a person's health. The beliefs are formed from an individual's knowledge about the disease and perceptions of personal risk based on that knowledge. For behavioral change to occur, the benefits of preventive action such as getting a mammogram must outweigh the perceived barriers to taking such an action. In the HBM, health behaviors also are influenced by the beliefs and attitudes of significant others, internal and external cues to action such as symptoms of illness and referrals or recommendations of healthcare professionals, and modifying factors such as age, gender, race, ethnicity, and socioeconomic status. During the past decade, the HBM has been tested with low-income African American populations (Champion & Scott) and widely used to explain and predict breast cancer screening behaviors (Brenes & Skinner, 1999; Charron-Prochownik, Becker, Brown, Liang, & Bennett, 1993; Clarke et al., 2000; Gasalberti, 2002; Oldridge & Streiner, 1990; Thomas-Vadarampil, Champion, Miller, Menon, & Skinner, 2003).

Methods

Design

The present study was a cross-sectional survey of the breast cancer screening beliefs and practices of older, low-income African American women living in central North Carolina. Potential participants were African American women 50 years of age or older living in low-income housing. The local housing authority provided a listing of low-income housing units with significant numbers of older, female, African American residents and an estimate of the number of such women at each site. Housing unit managers were contacted and, following an explanation of the study and an invitation to participate, times were arranged to hold focus group sessions at the housing complexes. Housing managers assisted research staff in publicizing sessions and inviting eligible women to participate.

At the start of each session, a brief overview of the study was given and informed consent was obtained from each participant. In addition to the survey instruments discussed in detail later in the article, the questionnaire included two open-ended questions designed to capture women's interest in learning more about breast cancer and breast cancer screening and the format in which they would prefer to receive such information. Upon completion of the questionnaire, participants were given information about breast cancer and breast cancer screening, locations where low-cost or free mammograms could be obtained, and a \$25 grocery store gift certificate. The study was approved by the institutional review boards at the Wake Forest University School of Medicine and Winston-Salem State University.

Measurements

Mammography screening in the past year was the dependent variable for the primary analysis. Women were asked when they had their last mammogram. Correlate variables

included questions designed to elucidate women's perceptions of benefits and barriers to mammography screening, their beliefs about the seriousness of breast cancer and their susceptibility to it, and their knowledge of breast cancer screening guidelines, perceptions of their general health, and other factors known to modify health practices.

Breast cancer screening knowledge and practices were assessed through several questions. Women were asked if they had ever had a mammogram (yes or no) or a clinical breast examination (yes or no) and how often they should have a mammogram (never, every year, every two years, every five years, don't know) or a clinical breast examination (same categories). Family history of breast cancer was ascertained by a yes or no question, "Has anyone in your family ever had breast cancer?" History of breast cancer among friends was assessed in a similar manner by asking, "Have any of your friends ever had breast cancer?"

The HBM was assessed with the **Revised Susceptibility, Benefits, and Barriers Scale for Mammography Screening** (Champion, 1999). The questionnaire includes four subscales related to breast cancer and mammography screening: susceptibility (five items), seriousness (seven items), benefits (six items), and barriers (five items). Responses to statements were made on five-point Likert scale ranging from strongly disagree to strongly agree. Susceptibility was assessed by statements such as "It is extremely likely I will get breast cancer in the future" and "I am more likely than the average woman to get breast cancer." Statements about the seriousness of breast cancer included "The thought of breast cancer scares me" and "If I developed breast cancer, I would not live longer than five years." Benefits of getting a mammogram were assessed by statements such as "When I get a mammogram, I don't worry as much about breast cancer" and "Having a mammogram will help me find a lump before it can be felt by myself or a health professional." Barriers to getting a mammogram were assessed by statements such as "Having a routine mammogram or x-ray of the breast would make me worry about breast cancer" and "Having a mammogram or x-ray of the breast would cost too much money." The revised scale was validated using a sample of 804 women; Cronbach's alpha for internal consistency ranged from 0.75–0.93. The instrument has been validated with African American women (Russell, Champion, & Perkins, 2003).

Optimism was measured by the **Life Orientation Test (LOT)** (Scheier & Carver, 1985). Expectations of good outcomes in life are anticipated to increase perceptions of the possibility of good outcomes when cancer is found and, thus, the benefit of mammography screening. The LOT consists of eight scored items such as "In uncertain times, I usually expect the best," "If something can go wrong for me, it will," and "I rarely count on good things happening to me," plus four unscored filler items. The LOT has adequate internal consistency (Cronbach's alpha = 0.76), test-retest reliability (0.79), and convergent and discriminant validity. Respondents indicate level of agreement with the statements that express positive or negative expectations using a five-point Likert scale ranging from strongly agree to strongly disagree. The coding of negatively worded statements was reversed, with higher scores indicating greater optimism.

A social support scale measured the health supportiveness of significant others that could influence screening decisions and potentially ameliorate some barriers to screening. The

scale was adapted from the **Medical Outcomes Study Social Support Scale** (Sherbourne & Stewart, 1991). The measure for the current study included eight items that assessed participants' functional and emotional social support related to general and breast health. Participants were asked to assess how often various kinds of assistance were available to them if they needed it. Functional support included questions such as asking patients whether they had "someone to take you to the doctor if you needed a ride" or "someone to take you to get a mammogram if you needed a ride." Emotional support was assessed by asking patients whether they had "someone to give you good advice about your health" and "someone you can talk to about breast cancer screening," among others. Responses were made on a four-point Likert scale ranging from none of the time to all of the time. Higher scores indicated greater levels of perceived social support.

Perceptions of general health were assessed using the **Perceived Health Subscale from the Short Form-36** (Hays, Sherbourne, & Mazel, 1993). The subscale contains five items with responses made on a five-point Likert scale; scores range from 0–25, with higher scores representing better perceived health.

Cancer fatalism was measured by the **Powe Fatalism Inventory** (Powe, 1995b; Powe & Weinrich, 1995). The scale was developed to assess factors that influence participation in colorectal cancer screening, including general influences (demographic factors) and intervening variables (e.g., cancer fatalism, knowledge of colorectal cancer). The inventory consists of 15 yes or no questions with a possible range of scores from 0–15. It was developed and tested with an African American population with Cronbach's alphas ranging from 0.84–0.87. Although the Powe Fatalism Inventory has been used extensively in studies of colorectal cancer, it also has been used in studies of breast and other kinds of cancer (Powe & Finnie, 2003). The inventory was revised with the author's permission to adapt items specific to breast cancer screening and change the response categories to a four-point Likert scale of strongly agree, agree, disagree, and strongly disagree. The defining attributes of the scale are fear ("Some women don't want to know if they have breast cancer because they don't want to know they are dying from it."), pessimism ("If a woman gets breast cancer, her time to die is near."), predetermination ("If a woman gets breast cancer, it was meant to be."), and the inevitability of death ("If a woman gets breast cancer, that's the way she was meant to die."). The scores on the revised scale ranged from 5–30 and had an alpha of 0.88 (Bakos, 2000). Higher scores indicated higher levels of cancer fatalism.

Analysis

Data were analyzed using the Statistical Analysis System version 9.1 (SAS Institute, Inc., Cary, NC). Descriptive statistics included frequencies, means, and percentages. Women were divided into two groups: those who had had a mammogram in the past year and those who had not had a mammogram in the past year. The latter category included women who had never had a mammogram, those whose last mammogram was more than a year ago, and women who did not know when they had had their last mammogram. Differences between the two groups of women were explored using correlate variables associated with the HBM. Categorical variables were compared between the two groups using chi-square

tests, and continuous variables were compared using t tests. Stepwise multivariable regression models were fit to explore factors associated with social support and the components of the HBM that were associated significantly with mammography screening, controlling for age, education, marital status, and self-reported health.

Results

The 198 women who participated in the study had an average age of 67 years (range = 50–98). The majority were either high school graduates (25%) or had less than a high school education (47%). Most of the women were not married; approximately 40% were widowed, 31% were separated or divorced, and 20% had never married. One out of four (26%) had a first-degree relative who had been diagnosed with breast cancer. Nearly all of the women reported having had a mammogram at some time in their lives (94%), and a similar proportion had at least one clinical breast examination (95%). Most of the women knew that they should have a mammogram (76%) and a clinical breast examination (75%) every year. Half (50%) reported that they had had a mammogram in the previous year. That figure is comparable to state and county figures from the Behavioral Risk Factor Surveillance System (BRFSS) Survey (Centers for Disease Control and Prevention, 2004); approximately 47% of African American women in North Carolina and 68% of women of all races aged 45 and older in Forsyth County reported having had a mammogram in the prior year (North Carolina State Center for Health Statistics, 2004).

The demographic, clinical, and psychosocial characteristics of the women are presented in Table 1. The groups did not differ by age, education, marital status, having a friend or family member with breast cancer, ever having had a clinical breast examination, self-rated health, cancer fatalism, dispositional optimism, or feelings about seriousness of and susceptibility to breast cancer. The groups differed significantly on mammogram-related variables, how often women should have clinical breast examinations, benefits and barriers to mammography screening, and social support. Fewer women in the group without a current mammogram knew how often they should have mammograms; they also had lower mean scores for benefits and social support and higher mean scores for perceived barriers to getting a mammogram.

Two components of the HBM, benefits and barriers to mammography screening, differed significantly between those with and without a current mammogram. Women who had had a mammogram in the prior year had higher levels of perceived benefits to mammography screening and fewer perceived barriers to getting a mammogram. In addition, women with a current mammogram had higher levels of perceived social support.

Stepwise multivariable regression analyses were used to explore factors associated with benefits, barriers, and social support (see Table 2). The analyses showed that dispositional optimism ($p = 0.0013$) and social support ($p = 0.0207$) were related to perception of benefit to mammography screening; education ($p = 0.0406$), dispositional optimism ($p < 0.0001$), and cancer fatalism ($p < 0.0001$) were significantly related to barriers to mammography screening; and dispositional optimism ($p = 0.0218$) was related to social support. Thus, women who were more optimistic in their outlook on life perceived

Table 1. Sample Characteristics

Variable	Mammogram in Prior Year (N = 96)		No Mammogram in Prior Year (N = 97)	
	\bar{X}	SD	\bar{X}	SD
Age (years)	66.96	10.43	67.85	11.60
Self-rated health	12.75	3.26	12.47	3.12
Powe Fatalism Inventory	4.35	2.82	4.87	3.32
Life Orientation Test (optimism)	29.07	4.15	28.27	3.90
Health Belief Model				
Susceptibility	11.71	4.50	11.36	4.35
Seriousness	20.10	5.77	21.03	5.52
Benefits*	24.20	3.92	22.68	4.08
Barriers*	10.58	3.60	12.34	3.73
Social support**	27.24	4.45	24.12	6.02
Variable	n	%	n	%
Education				
Less than high school	42	44	48	50
High school graduate or GED	25	26	24	25
Some college	16	17	22	23
College or graduate degree	13	14	3	3
Marital status				
Never married	16	17	23	24
Married or partnered	9	9	7	7
Separated or divorced	33	34	27	28
Widowed	38	40	40	41
Family history of breast cancer				
Yes	29	30	20	21
No	67	70	77	79
Friend had breast cancer				
Yes	38	40	32	34
No	58	60	63	66
Ever had a mammogram*				
Yes	96	100	85	88
No	–	–	12	12
Time since last mammogram				
Within past year	96	100	–	–
Within past two years	–	–	47	48
Within past three years	–	–	20	21
More than three years, do not know, or never	–	–	30	31
How often should you have a mammogram?*				
Never	–	–	3	3
Every year	86	90	60	62
Every two years	10	10	21	22
Every five years	–	–	2	2
Do not know	–	–	11	11
Ever had a clinical breast examination				
Yes	92	97	90	93
No	3	3	7	7
How often should you have a clinical breast examination?*				
Never	–	–	1	1
Every year	87	91	57	59
Every two years	5	5	18	19
Every five years	–	–	2	2
Do not know	4	4	19	20

* $p < 0.001$, ** $p < 0.0001$

Note. Because of rounding, not all percentages total 100.

Note. Data were missing for some of the variables.

Table 2. Summary of Multiple Linear Regressions for Correlates of Benefits, Barriers, Social Support, and Cancer Fatalism^a

Variable	β	SE	p
Benefits			
LOT optimism	0.2305	0.0708	0.0013**
Social support	0.1210	0.0519	0.0207*
Barriers			
LOT optimism	-0.3068	0.0616	< 0.0001***
Cancer fatalism	0.3441	0.0701	< 0.0001***
Education	-0.3851	0.1868	0.0406*
Social support			
LOT optimism	0.2311	0.0999	0.0218*

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.0001$

^a All models are adjusted for age, education, marital status, and self-reported health.

LOT—Life Orientation Test; SE—standard error

more benefits and fewer barriers to mammography screening and had more perceived social support. Women who were more educated and less fatalistic perceived fewer barriers to mammography screening. Although cancer fatalism was not a direct correlate of mammography screening in the prior year, it was significantly associated with barriers to cancer screening.

Discussion

The results of the present study suggest that older, low-income, African American women who perceive more benefits and fewer barriers to mammography screening and who have higher levels of available social support are more likely to follow guidelines for annual mammography screening. Thus, the findings of this study support the association of two components of the HBM, benefits and barriers, with mammography screening. The results are in contrast to other reports that age and education are predictors of current mammography screening (Blanchard et al., 2004; Magai, Consedine, Conway, Neugut, & Culver, 2004; Phillips, 1999; Thomas-Vadaparampil et al., 2003). As hypothesized by Lukwago et al. (2003), the contrasting findings could be the result of a lack of variability in these measures in the study sample; the present study's participants lived in low-income housing, were older, and had relatively low education levels.

Participants in the current study had relatively high levels of self-reported mammography screening comparable to Healthy People 2010 goals of 70% of women having a mammogram in the previous two years (U.S. Department of Health and Human Services, 2000). Self-reports of mammography screening are not consistent across studies and may vary because of question wording and length of recall time (Fiscella, Franks, & Meldrum, 2004). Recall periods of a year or more, such as those used in the current study, may be inflated by as much as 40%. However, the wording and time period in the current questionnaire replicated that used in the BRFSS, and the results were similar to BRFSS results for Forsyth County, NC. The relatively high rates of mammography screening may reflect the positive influence of earlier studies in the community. Two studies related to breast cancer have been conducted with older, low-income, African American women in the geographic area covered by the current study:

the Forsyth County Cancer Screening Project conducted from 1992–1996 (Paskett, Tatum, D'Agostino, Rushing, & Velez, 1999; Tatum, Wilson, Dignan, Paskett, & Velez, 1997) and A Woman's Touch, conducted in 2002 and 2003, which used three of the same housing units as the current study. In addition, two of the housing units contained wellness centers. The relatively high mammography rates found in the current study may be an indicator that repeated messages about breast cancer screening and programs increasing accessibility and availability to mammography screening are influencing women to obtain annual mammograms.

Benefits and barriers to mammography screening were correlated with current mammography screening in the present study's group of older, low-income, African American women. The barriers to mammography screening included increased worry about breast cancer, embarrassment, lack of time, pain, and cost of the procedure. The factors contributed to lower rates of mammography screening. Other research has found similar deterrents to mammography screening (Davis et al., 2005; Magai et al., 2004; Phillips et al., 1999; Shankar et al., 2002) in addition to more structural barriers such as inconvenient location, lack of transportation, not being recommended by a healthcare provider, and not having a usual source of care. The benefits of mammography screening included feeling good about oneself, reducing worry about breast cancer, and increasing the chances of finding a lump early, leading to better outcomes. Women who felt more strongly that mammography screening was beneficial were more likely to have had a mammogram in the prior year.

Social support was conceptualized in the current study as a facilitating factor in mammography screening. The questions concerning social support included types of support related to general and breast-specific health. In Jernigan et al.'s (2001) series of focus groups with African American women, participants described social support in terms of having someone offer to drive them to appointments and having someone to talk to about cancer and cancer screening. Women in the present study who had this type of support were more likely to report that they had received a mammogram in the prior year. This finding suggests that facilitating support networks and assisting women with scheduling appointments may be viable ways to increase mammography screening.

In addition to the elements of the HBM that directly influence breast cancer screening behaviors, fatalistic beliefs about cancer may influence all elements of the HBM: susceptibility to and seriousness of breast cancer as well as benefits and barriers associated with mammography screening. Although the findings of this study do not support cancer fatalism as a direct correlate of mammography screening, cancer fatalism was associated with increased barriers. Women who fear cancer, who believe that getting cancer is predetermined and out of their control, and who are pessimistic about cancer and think that death is inevitable will not perceive the early diagnosis of cancer through mammography screening as beneficial and may have more barriers to screening arising out of their fear of knowing they have cancer. Other studies using the Powe Fatalism Inventory also have found that cancer fatalism is not a direct predictor of mammography screening (Mayo, Ureda, & Parker, 2001) or gynecologic cancer screening (Dettenborn, DuHamel, Butts, Thompson, & Jandorf, 2004). The levels of cancer fatalism in the current study were relatively low. Prior studies of cancer fatalism using the Powe Fatalism Inventory

have found a mean score of 10 or higher in African American populations (Powe, 1995b) and have established a score of 10 as the cutpoint for high fatalism (Powe, 2001). Very few of the women in the current study had cancer fatalism scores in this range. Thus, the researchers are not surprised that cancer fatalism was not a significant correlate of mammography screening in this population.

Some of the factors that influence whether older, low-income, African American women get annual mammography screening, such as perceived barriers, benefits to screening and early diagnosis, and availability of functional and emotional social support related to general and breast health, may be modifiable. According to the HBM, beliefs about breast cancer and perceptions of personal risk arise out of a woman's knowledge about the disease. Thus, educational programs that increase women's knowledge of breast cancer, its signs and symptoms, and efficacy of breast cancer treatments can be expected to address some of the barriers to screening and influence women's perceptions of the seriousness of the disease, their susceptibility to it, and the benefits of mammography screening.

Implications for Education, Practice, and Research

The findings of this study have implications for clinicians and researchers. Repeated messages about breast cancer screening in this community may be affecting the moderately high rates of mammography screening. Educational programs that increase women's knowledge about breast cancer screening procedures and guidelines and the availability of free or low-cost mammography screening in the area could be developed to address some of the barriers identified in this study.

Second, cancer fatalism is a dynamic and potentially modifiable variable that seems to tap into a dimension particularly salient to African Americans (Powe, 2001; Powe & Weinrich, 1999; Skinner et al., 2002). Cancer fatalism may be fueled in part by knowing women who have had late diagnoses and poor breast cancer outcomes. African American women may be more likely to have had a family member or friend die from breast cancer (Phillips et al., 1999; Powe, 1995b; Powe & Finnie, 2003; Thomas-Vadaparampil et al., 2003). In the present study, cancer fatalism was associated with lower education, poorer self-rated health, and a less optimistic outlook on life but not with age, marital status, social support, and having family or friends with breast cancer. This suggests that strategies or materials that are culturally and personally relevant (Kreuter et al., 2003), provided at the appropriate educational

level, and designed to assess and address cancer fatalism, self-perceived health, and dispositional optimism may be an appropriate intervention for older African American women.

An additional finding of the present study is that women who have more emotional and functional social support in regard to their health in general and breast health in particular are more likely to get timely mammograms. This finding suggests that rates of mammography screening might be increased by helping women schedule mammography appointments and facilitating support networks. Interestingly, more than 80% of women in the present study expressed a desire to learn more about breast cancer and breast cancer screening. Therefore, future efforts should include developing culturally appropriate educational interventions that address the barriers and concerns of this group of women to increase knowledge about breast cancer and screening guidelines in a manner that enhances health-related social support and addresses perceived barriers and, perhaps, beliefs about cancer fatalism.

Finally, many of the women in the current study indicated that they had no one to talk to about breast cancer and breast cancer screening and no one to help them get to provider appointments and mammography screening locations. The educational groups could provide a forum for discussing breast health, guidelines for frequency of screening, and the procedure used in performing a mammogram to allay fears of pain, making sure that the messages are culturally and personally relevant and delivered in lay terms and at an educationally appropriate level. The educational groups could facilitate getting women to mammography appointments, perhaps taking them in groups to provide emotional support.

The study results should be interpreted in light of certain limitations. First, the women in the study were self-selected; the group may have included a disproportionate number of women who were interested in and somewhat knowledgeable about breast cancer and breast cancer screening. In addition, mammography screening was assessed by self-report and therefore was subject to recall bias.

The study results suggest that perceived barriers and the experience of low levels of health-related emotional and functional social support influence mammography screening among older, low-income, African American women. Additionally, certain elements of the HBM (i.e., lack of knowledge of mammography screening guidelines) also are relevant to mammography-screening behavior in this population.

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