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Breast Cancer Knowledge, Beliefs and Screening Practices among African American Women in a Rural Setting: A Pilot Study

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Abstract

The purpose of this study was to explore perceptions about breast cancer among African American women within rural populations. This pilot study was designed to give greater insight on how to identify and detect breast cancer interventions specific to African American women. Data were collected via a questionnaire given to sixty women in the rural middle Georgia area (USA). The questionnaire provided vital information about the knowledge, beliefs and screening behaviors of Black women. The results emphasized the need to identify barriers to early detection and treatment of breast cancer among African American women living in a rural setting.

Keywords: African American Women, Breast Cancer, Health Disparities, Health Equity, Health Promotion, Rural Health

1. Introduction

Of the various types of cancers that women suffer from, breast cancer is the most common non-skin malignant neoplasm (Zhu, et al., 2009). It is the second leading cancer killer among women 20-59 years of age (Avis-Williams, Khoury, Lisocicz and Graham, 2009). In 2018, it is estimated that more than 250,000 new cases of invasive breast cancer will be diagnosed among women in the United States. At present, slightly more than 2 million women living in the U.S. have received a diagnosis and treatment for breast cancer. Moreover, in 2018, it is estimated that about 40,000 women will die from breast cancer in the United States (American Cancer Society, 2017).

While incidence rates (13%) of breast cancer remain higher for white women than for black women, the mortality rate due to breast cancer remains higher for black women (28%) (Harris, Miller, and Davis, 2003; Albain, Unger, Crowley, Coltman, and Hersham, 2009). It is believed that several factors (biological and non-biological) contribute to the higher mortality rate among black women. The biological factors include a more aggressive histology and more treatment-resistant tumors (Gerard and Pai, 2008; Ely, Hill, Chen, et al., 1994; ACS, 2017; Kelsey and Bernstein, 1996). Non-biological factors include access to care (Gerard and Pai, 2008; U.S. Department of Health and Human Services, 2017) and attitudes about health care seeking (Moormier, 1996). Given that these non-biological factors are more readily mutable than the biological factors, it is reasonable to develop proactive methods to address the increased mortality rate among black women.

A key factor in decreasing the mortality rate among women is early detection and treatment of breast cancer. This factor is especially significant for African American women. Studies show regular mammographic screening contributed to a decrease of the breast cancer rate by 63% in women 40-69 years old (Tabor, Vitak, Chen, et al., 2001; Smith-Bindman, Migloretti, Lurie, 2006). Such a result is a strong indicator that early detection and proper treatment translates into a decrease in breast cancer mortality rates.

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2. Study Rationale

Several studies have examined breast cancer treatment and survival in women. These studies have focused on differences between white women and women of color (Wilson, McClish, Tracy, et al., 2009; Dignam, 2000; Campbell, 2002; Chu, Tarone, and Brawlyet, 1999). Other studies have examined geographic variations in breast cancer mortality (Greenlee, Hill, Murray, and Thun, 2001; Canto, Anderson, and Brawley, 2001), breast cancer trends (Chu, et al., 1999) and breast cancer prognosis (Albain, et al., 2009; Campbell, 2002). Taken together, this vast amount of literature is helpful to understanding the magnitude of breast cancer in the United States.

To better understand some of the mutable factors that are related to breast cancer, researchers have begun to develop a line of research that examines breast cancer knowledge, beliefs and screening behaviors among women (Gullate, 2006; Jones, Thompson, Oster, et al., 2003; Coughlin, Uhler, Bobo and Caplan, 2000; Adams-Campbell, Rosenberg, Sawmya and Palmer, 2004; Graham, 2002). The evidence from these studies helps to develop interventions that will facilitate the prevention of breast cancer. At the very least, the results of these studies can be a catalyst to decrease the higher mortality rate of cancer in women of color.

Although more information is being discovered about breast cancer knowledge, beliefs and screening behaviors, little is currently known about how these concepts are manifested among African American women in rural populations. As with many other diseases, rural areas continue to see a higher prevalence of chronic diseases (Gosschalk & Carozza, 2010). An examination of knowledge, beliefs and screening behaviors among African American women in rural populations will reveal greater insight on how to develop appropriate primary interventions for this particular population group.

Given that little is known about breast cancer knowledge, beliefs and screening behaviors among African American women in rural populations, this pilot study proposed to answer a set of exploratory research questions as opposed to testing any *a priori* hypotheses. Hence, this project's research questions were:

1. What is the level of knowledge regarding breast cancer risk factors among African American women in a rural setting?
2. What knowledge and beliefs do African American women in a rural setting have regarding breast cancer and breast cancer screening?
3. What are the breast cancer screening practices among African American women in a rural setting?
4. What factors (e.g., age, education, income, etc.) are related to breast cancer knowledge and beliefs among African American women in a rural setting?

3. Methods

3.1 Research participants:

The study sample consisted of approximately 60 African American females (18 years old and older) selected at hair salons in four rural counties in the middle Georgia area. The hair salons were chosen based on listings in the phone directory of each community/county. Study participants were provided with a small monetary incentive to participate in the study. Although the measures were designed to be self-administered, research assistants answered any participant questions regarding the measures.

3.2 Questionnaire:

A structured questionnaire was adapted from Jones, et al (2003). Permission was obtained prior to adapting the questionnaire for the current study. Additional questions came from various areas of the cancer research literature as well as the health care literature in general. The questionnaire was designed for a readability level between the sixth to ninth grades, and comprised both open-ended and closed-ended questions. The questionnaire was pilot-tested with a group of women who had a similar background as the study participants.

1. Questions re: demographic characteristics of the study population
   These include age, marital status, education, annual household income, employment status and health insurance status.
2. Questions re: knowledge of breast cancer risk factors

These include age, family history of breast cancer, high fat diet, overweight, menopause after age 50, bruising of the breast, smoking, stress, air pollution, race/ethnicity and being around breast cancer victim.

3. Questions re: knowledge and beliefs about breast cancer and screening examinations
   These include history of having a mammogram, knowledge of how often a woman should receive a mammogram, how often a woman should have a clinical breast exam (CBE), that a woman should not have her breast examined if she is not having problems, that women should not talk about breast cancer to one another, that breast cancer is God's will and nothing can be done, that early diagnosis and treatment can save a woman's life, and what are the participant's chances are of getting breast cancer.
4. Questions re: breast cancer screening practices
   These include mammogram (time since last mammogram, indication for last mammogram and initiator of last procedure), clinical breast examination (time since last CBE – mos, reason for last CBE) and breast self-examination (how often).

4. Data Analysis

Data analyses were performed using Statistical Package for the Social Sciences (SPSS), version 22. Descriptive statistics were utilized to aggregate the responses and examining statistical profiles of the data. The bivariate analyses examined relationships between different variables.

5. Results

Demographic characteristics for the sample are displayed in Table 1. Overall, 13% (n=8), 20% (n=12), 31% (n=19), 20% (n=12), 15% (n=9) of the participants were in the strata of 18–27, 28-37, 38-47, 48-57 and ≥ 58 years of age, respectively. The sample consisted of 60 women living in rural middle Georgia (age range 18-67 years, mean 42). Thirty-five percent of the participants were married. Of the married participants, 90% were 38 years old or older. Twenty percent of the respondents reported being divorced or separated, while 20% reported they had never been married.

Table 1: Demographic Characteristics of the Study Population by Age Group (N=60)

Marital Status	Age 18-27 (n=8)	28 – 37 (n=12)	Age 38 – 47 (n=19)	Age 48-57 (n=12)	Age 58 – 67 (n=9)
Married	--	2	6	7	6
Widowed	--	--	1	1	--
Divorced	--	1	3	1	2
Separated	--	1	1	2	1
Never Married	4	5	3	1	--
Living As Married	--	--	--	--	--
Other	4	3	5	--	--
Refused	--	--	--	--	--

Education	Age 18-27	28 – 37	Age 38 – 47	Age 48-57	Age 58 – 67
8th grade or less	--	1	1	1	--
Some High School	--	--	--	--	3
H.S Grad / GED	5	4	7	5	4
Trade / Vocational School	--	--	1	1	--
Some College	3	2	5	3	1
College Grad or Higher	--	5	5	2	1
Don't Know	--	--	--	--	--
Refused	--	--	--	--	--

Household Income	Age 18-27	28 – 37	Age 38 – 47	Age 48-57	Age 58 – 67
Under $10,000	1	2	2	2	1
$10,000 - $20,000	1	2	3	2	4
$20,000 - $30,000	1	2	4	2	1
$30,000 - $40,000	1	1	4	3	--
$40,000 - $50,000	--	1	2	1	--
$50,000 and above	2	3	4	2	1
Don't Know	1	1	--	--	2
Refuse	--	--	--	--	--

Employment Status	Age 18-27	28 – 37	Age 38 – 47	Age 48-57	Age 58 – 67
Retired	1	--	1	2	3
Employed full-time	4	8	11	5	3
Employed part-time	--	1	--	--	2
Self-employed	--	--	3	1	--
Unemployed	3	2	2	1	--
Disabled	--	1	2	3	1
Other	--	--	--	--	--
Refuse	--	--	--	--	--

Health Insurance	Age 18-27	28 – 37	Age 38 – 47	Age 48-57	Age 58 – 67
Private Insurance	3	10	15	9	9
Medicaid	2	1	2	1	--
Medicare	1	1	--	1	--
None	1	--	2	1	--
Don't Know	--	--	--	--	--
Refuse	--	--	--	--	--

5.1 Knowledge of Breast Cancer Risk Factors

Table 2 displays the responses to specific knowledge questions across the various age groups. Specifically, age categories were further collapsed into groups categorized as younger (18-37), middle (38-47) and older (48-67). A majority of the responses for risk factors were equally distributed across the three different age groups, with the exception of "menopause after 50" and "race/ethnicity" risk factors. Women in the younger age category were more likely to believe that menopause after age 50 was a risk factor, while older women were likely to believe that being African American was a risk factor.

Irrespective of age, a majority of the participants believed that smoking was a risk factor, and approximately 48% of the sample also believed that bruising of the breast was a risk factor for breast cancer. Likewise, more than 56% of the participants believed that air pollution increases one's chance of getting breast cancer.

Table 2: Knowledge of Breast Cancer Risk Factors by Age Group

Risk Factor / Characteristic	Age 18-27	Age 28 – 37	Age 38 – 47	Age 48-57	Age 58 – 67
Age 40 & Over					
Yes	7	7	12	10	5
No	1	5	7	2	1
Don't Know	--	--	--	--	3
Family History of Breast Cancer					
Yes	7	11	16	9	7
No	1	1	3	3	1
Don't Know	--	--	--	--	1
High-Fat Diet					
Yes	5	5	13	3	7
No	2	5	3	7	1
Don't Know	1	2	3	2	1
Overweight					
Yes	6	5	9	5	4
No	2	6	10	7	3
Don't Know	--	1	--	--	2
Menopause after age 50					
Yes	6	7	8	6	2
No	1	4	6	3	5
Don't Know	1	1	5	3	2
Bruising of the Breast					
Yes	6	3	9	5	6
No	1	8	8	5	2
Don't Know	1	1	2	2	1
Smoking					
Yes	6	8	13	11	7
No	2	3	4	1	2
Don't Know	--	1	2	--	--
Stress					
Yes	5	8	7	3	4
No	3	4	9	6	5
Don't Know	--	--	3	3	--
Air Pollution					
Yes	4	4	6	3	2
No	2	8	11	8	5
Don't Know	2	--	2	1	2
Race / Ethnicity (African American)					
Yes	3	5	10	9	5
No	4	7	9	2	4
Don't Know	1	--	--	1	--
Being Around Cancer Victim					
Yes	--	--	--	--	--
No	8	11	19	12	9
Don't Know	--	1	--	--	--

5.2 Knowledge and Beliefs about Breast Cancer and Screening Practices

Participants were asked about their knowledge and beliefs regarding breast cancer screening practices (see Table 3). Two of the 60 participants had never heard of a mammogram. Women in the oldest group (95%) were more likely than women in the middle group (73%) or youngest group (45%) to think women should undergo an annual mammogram. The mean responses for what age women should start getting mammograms ranged from 25 to 34. Approximately 42% of the sample participants believe breast cancer cannot be prevented. However, 98% of the respondents believe finding and treating breast cancer in the very early stages can save a woman's life. All participants 58 years old and older believe women should not talk about breast cancer, while only one participant in the younger age group held this belief. Thirty percent of the respondents believe that getting breast cancer is God's will and nothing can be done about it.

Table 3: Knowledge and Beliefs about Breast Cancer Screening and Examinations

Variable	Age 18-27	Age 28 – 37	Age 38 – 47	Age 48-57	Age 58 – 67
Have you ever heard of a mammogram?					
Yes	8	10	19	12	9
No	--	2	--	--	--
How often should women have a mammogram?					
Every Year	1	8	14	11	9
1-2 Years	2	1	4	--	--
More than 2 Years	1	1	--	--	--
Only if problems	--	--	--	--	--
Never	--	--	--	--	--
Other	4	1	1	--	--
Don't Know	--	1	--	--	--
Refused	--	--	--	--	--
At what age should women start getting mammograms?					
(mean age based all responses)	26	31	34	25	31
How often should a woman your age get exam?					
Monthly	3	3	5	1	--
Yearly	4	8	12	8	8
Whenever Doctor Say So	--	--	--	--	--
Never	--	--	--	--	--
Other	1	1	2	3	1
Don't Know	--	--	--	--	--
Refused	--	--	--	--	--
Do you think Breast Cancer can be prevented?					
Yes	3	4	6	7	4
No		8	9	3	5
Don't Know	3	--	2		--
Finding and treating breast cancer in the very early stages can save a woman's life.					
Agree	8	11	19	12	9
Disagree	--	1	--	--	--
Neither Agree nor Disagree	--	--	--	--	--
A woman should not have her breast examined if she is not having any problems.					
Agree	1	--	--	--	--
Disagree	7	12	19	12	9
Neither Agree nor Disagree	--	--	--	--	--
Women should not talk about breast cancer to each other					
Agree	--	1	--	--	--9
Disagree	8	11	19	12	--
Neither Agree nor Disagree	--	--	--	--	
Getting breast cancer is God's will and you can't do anything about it.					
Agree	3	1	7	3	4
Disagree	4	9	11	9	4
Neither Agree nor Disagree	1	2	1	--	1

5.3 Breast Cancer Screening Practices

Table 4 provides a summary of breast cancer screening practices and behaviors. Sixty-five percent of the respondents reported they have had a mammogram. Of those who had a mammogram, three (8%) were in the younger group, 15 (38%) were in the middle group, and 21 (54%) were in the oldest group. Forty-eight percent of the women who had a mammogram did so less than a year prior to the study, while 45% of the women had a mammogram one or more years prior to the study. Ninety-three percent of the participants reported they had received a physical breast exam by their physician, with 59% of those who had a physical breast exam having had one less than a year prior to the study. A majority of the respondents (83%) stated that they perform breast self-exams. Forty-six percent of the respondents performed breast self-exams more than once per month, while 44% performed them at least once per month and 10% performed their breast self-exams less than once per month. Of those who perform breast self-exams, 74% stated that their physician or another health care provider observed the way they do their breast self-exam to assure that the exam was being conducted properly.

Table 4: Breast Cancer Screening Practices and Behaviors

Practice/Behavior	Age 18-27	Age 28 – 37	Age 38 – 47	Age 48-57	Age 58 – 67
Have you ever had a mammogram?					
Yes	2	1	15	12	9
No	6	10	4	--	--
Don't Know			--	--	--
Refused			--	--	--
When was your last mammogram?					
Less than 1 year ago	--	--	5	10	4
1-year ago	1	--	4	1	4
Between 1 and 2 years ago	1	--	5	1	1
More than 2 years ago	--	--	1	--	--
Don't know / Not sure	--	--	--	--	--
Have you ever had physical breast exam by doctor?					
Yes	6	10	19	12	9
No	2	2	--	--	--
Don't know / Not sure	--	--	--	--	--
Refused	--	--	--	--	--
How long was it since last physical breast exam?					
Less than 1 year	6	7	13	11	6
1 year	--	2	1	1	2
1-2 years	1	1	3	--	1
More than 2 years	--	--	2	--	--
Never	--	--	--	--	--
Don't Know	--	--	--	--	--
Refused	--	--	--	--	--
Do you perform self breast exams?					
Yes	5	9	18	10	8
No	3	3	1	2	1
Don't Know	--	--	--	--	--
Refused	--	--	--	--	--
How often do you perform self breast exams?					
More than once per month	1	5	9	4	4
Once per month	4	2	8	4	2
Less than once per month	--	2	1	2	2
Never	--	--	--	1	--
Refused	--	--	--	--	--
In the past 2 yrs, has your doctor or other health care provider observed the way you do your breast self-exam to make sure that you are doing it correctly?					
Yes	4	7	13	8	5
No	1	2	6	2	3
Don't know	--	--	--	--	--
Refused	--	--	--	--	--

6. Discussion

Deaths due to cancer continue to be a major concern in both rural and urban areas. It has been projected that the number of cancer cases will double by the middle of this century (Edwards, Howe, Ries, et al., 2002). Most likely, the variability in incidence and prevalence of cancer morbidity and mortality by gender and race will be sustained unless effective interventions are implemented. Because African American women have a lower rate of breast cancer morbidity but a higher rate of breast cancer mortality, it is reasonable to develop and implement culturally specific interventions for this group.

Limited data are available regarding cancer incidence, cancer prevention behaviors, and cancer related mortality within rural areas (Holt, et al., 2003). It can be argued that even less is known as related to African American women in rural areas. The current pilot study takes a step in providing additional information as it relates to breast cancer attitudes, knowledge and screening practices among African American women in rural areas.

Overall, the level of knowledge of breast cancer risk factors varied across age groups with the majority of those in the 38-47 age group accurately identifying risk factors. These results are expected given that this particular age group exists within the category of women who are typically targeted for breast cancer screening. However, the increased knowledge of risk factors among all age groups did not seem to have an impact on their knowledge and beliefs about breast cancer and screening practices results.

Despite knowing the risk factors for breast cancer, women in the middle and younger age groups were not as knowledgeable of the screening practices. Age was found to be directly related to knowing that women should have annual mammograms, although knowledge of the age at which this practice should commence was not particularly high among any age group.

This lack of knowledge is extremely important as other studies have found that women who obtain regular mammographic screening starting at the appropriate age (40 - 69) significantly decreases the breast cancer death rate (Tabar, et al., 2001; Smith-Bindman, et al., 2006). Therefore, it is reasonable to conclude that not knowing what age women should start having mammograms is a contributing factor to late diagnosis of breast cancer for African American women leading to higher mortality rates from this particular type of disease.

Although almost all of the respondents (98%) believe that identifying and treating breast cancer in the early stages can save a woman's life, less than half (42%) believe that breast cancer cannot be prevented. Consistent with these beliefs, almost half of the respondents believe that getting breast cancer is God's will and nothing can be done about it. These results are consistent with other studies which show that religion and spirituality are important in the lives of African American women (Holt, et al., 2003) but are often seen as barriers to seeking healthcare for conditions such as cancer (Dessio, Wade, Chao, and Kronenberg, 2004).

Regardless of the beliefs identified through the study, more than half (65%) of the women in the study have had a mammogram and 93% of the respondents have had a clinical breast exam. In addition 83% of the respondents perform self breast exams regardless of age. The screening practices reported by the respondents are not consistent with other studies which demonstrate an inverse relationship between breast cancer screening and age (McCarthy, Burns, Freund, et al., 2000; Mandelblatt, Gold, O'Malley, et al., 1999). The higher breast cancer screening rates associated with this study may be related to efforts by community-based groups (e.g., local affiliate of Susan G. Komen for a Cure).

There are some limitations to the study. First, generalizability of the results is limited due to the small sample size. Secondly, we relied on self-reports of screening practices, which could possibly be affected by recall and response bias. Third, only three of the respondents did not have any type of health insurance. Therefore, they are more likely to have annual physicals and engage in preventive measures as their insurance allows. Also, for this reason, the women in this study may be healthier and more health conscious than some others in the rural areas.

7. Conclusion

Despite the limitations, this pilot study emphasizes the need to identify barriers to early detection and treatment of breast cancer among African American women. While the majority of respondents are having annual mammograms, there were many who did not demonstrate knowledge of the risk factors for breast cancer. Culturally appropriate programs and interventions should be developed to target African American women in rural areas in an effort to create awareness of all risk factors for breast cancer and to encourage women to discuss the prevention of breast cancer with their primary care provider.

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