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# Understanding Perceived Benefit of Early Cancer Detection: Community-Partnered Research with African American Women in South Los Angeles

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## Abstract

**Background:** African American women have lower 5-year cancer survival rates than non-Latino White women. Differences in perceived benefits of early cancer detection among racial/ethnic groups may affect cancer-screening behaviors. This study assessed correlates of perceived benefits of early breast, cervical and colorectal cancer detection among 513 African American women.

**Methods:** Using a community-partnered participatory research approach, we conducted a survey on cancer screening, risk behaviors, and related knowledge and attitudes among African American parishioners at 11 churches in South Los Angeles, a neighborhood that experiences one of the highest cancer mortality rates in California.

**Results:** African American women who participated in this study were more likely to believe that chances for survival are very good or good after early detection of breast cancer (74%) than after early detection of colorectal (51%) and cervical cancer (52%). Multivariate analyses show that perceived benefit of early cancer detection is associated with higher cancer knowledge and having discussed one's cancer risk with a doctor.

**Conclusions:** Given that 5-year survival rates for early stage breast, cervical, and colorectal cancer range from 84% to 93%, our data suggest that a substantial proportion of African American women in South Los Angeles are not aware of the benefits of early detection, particularly of colorectal and cervical cancers. Programs that increase cancer knowledge and encourage a discussion of individual's cancer risk with a doctor may be able to increase perceived benefit of early detection, a construct that has been shown to be associated with cancer screening in some studies.

## Introduction

SCREENING TESTS SUCH AS MAMMOGRAMS, Pap smears, and colonoscopies can detect cancer early and increase survival rates.<sup>1</sup> Based on a vast body of research, screening guidelines have been developed for the early detection of breast, cervical, and colorectal cancer.<sup>2</sup> Not all women are aware of these screening guidelines.<sup>3,4</sup> However, a woman's belief regarding the benefits of screening is a construct that is included in many health behavior theories, including the Health Belief Model, Social Cognitive Theory, and the Health Behavior Framework.<sup>5-7</sup> This construct, also labeled "perceived efficacy of early detection" or "perceived benefits of screening," has been discussed in the literature and particu-

larly in studies with minority women in connection with fatalism.<sup>8,9</sup> Women who perceive a cancer diagnosis as a "death sentence" typically do not believe that screening and early detection will improve survival after a cancer diagnosis.<sup>10,11</sup>

A woman's belief in the benefit of screening may be influenced by her social network, her health care providers, and the media.<sup>12,13</sup> Women who have a regular health care provider and who undergo routine checkups may discuss the benefit of early detection with their providers, who usually recommend screening. Media can have a positive influence by reporting women's success stories in which cancers are detected early and successfully treated or a negative influence by reporting conflicting recommendations regarding screening guidelines or by casting doubt about the value of

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screening.<sup>13,14</sup> Perceived benefits of screening may also be influenced by a woman's level of education and income, access to health care, and by cancer statistics that a woman observes in her social network and community.<sup>9</sup>

Researchers are interested in assessing perceived benefit of early cancer detection because this belief is postulated to influence the utilization of cancer screening tests, and it can potentially be modified through intervention. Stewart and colleagues found that perceived benefit of screening assessed at baseline was significantly associated with receipt of a mammogram at 3-year follow-up in a large and ethnically diverse sample of women and in the subgroup of African American women that were studied.<sup>15</sup> However, other studies did not show an association of perceived benefit of early cancer detection and cancer screening behavior.<sup>16</sup>

Our research team, comprised of academic and community faculty, conducted community-partnered research that included a survey of African American women in 11 churches in South Los Angeles. South Los Angeles, a series of contiguous communities with a shared history, has a large proportion of African American residents (28% compared with 8% in Los Angeles County) that are disadvantaged with respect to income (31% have a household income less than 100% of federal poverty level, compared with 18% in Los Angeles County) and education (39% of adults have less than a high school education compared with 23% of adults in Los Angeles County), access to health care (38% uninsured nonelderly adults, 18–64 years old versus 28% in Los Angeles County).<sup>17</sup> This area has one of the highest mortality rates, including for lung cancer (39.9 per 100,000 population compared with 31.3 in Los Angeles County), breast cancer (28.5 per 100,000 population compared with 21.3 in Los Angeles County), and colorectal cancer (19.8 per 100,000 population compared with 14.3 in Los Angeles County).<sup>17</sup>

Compared with non-Latino white women, African American women experience a greater mortality of breast, cervical, and colorectal cancer, later stage of diagnosis, and lower 5-year survival rates (see Table 1).<sup>18</sup> The purpose of this analysis is to gain a better understanding of the importance of this construct for participating in breast, cervical, and colorectal cancer screening among underserved African American women in South Los Angeles to inform future intervention development for this community.

## Methods

This cross-sectional study used a community-partnered participatory research approach to develop the study aims and survey. Details of the study design have been described previously.<sup>19</sup> In brief, this study was planned by a team of academic and community investigators. Utilizing a community-partnered participatory approach pioneered by L. Jones and colleagues,<sup>20</sup> a survey instrument was developed. The survey was conducted at 11 predominantly African American churches, including African Methodist Episcopal, Baptist, Seventh Day Adventist, and nondenominational churches. Community investigators participated in the analysis and interpretation of the data and the preparation of this manuscript. The overarching goal of this study was to gather data from the African American faith community in South Los Angeles about cancer awareness and behaviors associated with prevention and screening for early detection. This study was approved by the Institutional Review Board of Charles R. Drew University of Medicine and Science.

## Measures

*Perceived benefit of early cancer detection* was assessed by asking participants three questions: "If breast/cervical/colorectal cancer is detected early, what do you think is a

TABLE 1. CANCER STATISTICS FOR AFRICAN AMERICAN AND NON-LATINO WHITE WOMEN

	<i>Lifetime probability (%) of developing or dying from cancer, 2007–2009</i>			
	<i>Developing</i>		<i>Dying</i>	
	<i>African American</i>	<i>White</i>	<i>African American</i>	<i>White</i>
All sites	33.7 (1 in 3)	38.9 (1 in 3)	19.2 (1 in 5)	19.6 (1 in 5)
Breast	10.9 (1 in 9)	12.7 (1 in 8)	3.2 (1 in 31)	2.7 (1 in 37)
Colorectum	5.0 (1 in 20)	4.7 (1 in 21)	2.3 (1 in 44)	1.9 (1 in 53)
Uterine cervix	0.8 (1 in 119)	0.6 (1 in 153)	0.4 (1 in 250)	0.2 (1 in 479)
	<i>Five-year relative survival rates (%), U.S., 2002–2008</i>		<i>Percent diagnosed localized</i>	
	<i>African American</i>	<i>White</i>	<i>African American</i>	<i>White</i>
Breast			51	61
All stages	78	90		
Localized	93	99		
Colorectum <sup>a</sup>			36	40
All stages	57	65		
Localized	86	90		
Uterine cervix			40	49
All stages	59	69		
Localized	84	92		

<sup>a</sup>Male and female.

person's chance for survival? Would you say that her chance is: very good, good, fair, or poor?"

*Cancer knowledge* was measured using 25 true/false items that also had a "don't know" response option. Items were selected from Webpages of UCLA's Jonsson Comprehensive Cancer Center (Cancer Fact Sheet),<sup>21</sup> Women's Health (Women and Cancer),<sup>22</sup> the American Cancer Society (Learn about Cancer),<sup>20</sup> and the Cancer Fact Sheet.<sup>23</sup> True/false items related to knowledge about general cancer and specific questions about breast, cervical, and colorectal cancer included the following questions:

- Human papilloma virus (HPV), a virus that can cause cancer, is contagious;
- There are no symptoms of cervical cancer in the early stages;
- In its early stages, cervical cancer causes no pain or other symptoms;
- A diet high in animal fat increases the risk for several types of cancer;
- Regular exercise reduces risk for many types of cancer;
- Some polyps (bump on the surface of the colon) may become cancer;
- Having an inflammatory bowel disease for a long time increases a person's risk of developing colorectal cancer;
- Certain types of cancer are genetic; and
- Ethnicity is a factor in the development of certain type of cancer.

A knowledge score was created by adding the number of correct responses. Since all other variables were categorical and for ease of interpretation, cancer-related knowledge was categorized into tertiles: (1) low, (2) medium, and (3) high.

*Perceived health status* was assessed using a single item: "In general, would you say that your health is excellent, very good, good, fair, or poor?"

*Perceived risk of developing cancer* was measured by asking participants "Compared to the average woman your age, how would you rate your own risk of getting cancer? Would you say that your risk is: same, higher, or lower?"

Participants were also asked if they had a regular or primary care doctor (access to care), if they had ever discussed their personal risk for any type of cancer with their doctor, and demographic data including gender, age, education, and marital status.

#### *Sample and recruitment*

The data for this study was collected during late winter 2012 and early spring 2013. Over a 4 months period in 2012, the Community Principal Investigator (Co-PI) conducted community-engagement tasks with 13 churches in South Los Angeles, successfully garnering participation of 11 predominantly African American churches, including African Methodist Episcopal, Baptist, Seventh Day Adventist, and nondenominational churches. Church membership ranged from 50 to over 700 individuals. On the day of data collection, the PI and one of the Co-PI's described the study and informed consent process to potential respondents at a designated time during the church service. A total of 801 participants (11–149 participants per church) completed the study questionnaire in English, which took between 30 and 45

minutes. Assistance with reading the questionnaire was provided to 45 respondents who requested help. Upon completion of the survey, participants received \$10 cash. Of 827 individuals who were approached, 801 (97%) decided to participate in the study; only 26 individuals refused.<sup>18</sup> This analysis included only African American women ( $n=513$ ) who completed the survey. Therefore, 256 men and 32 women who did not self-identify themselves as African American were excluded from data analysis.

#### *Statistical analysis*

Statistical analysis was performed with the SPSS<sup>®</sup> program (SPSS 20.0 for Windows, SPSS Inc., Chicago, IL). Bivariate chi square tests were conducted to determine relationships between the outcome measure, perceived benefit of early detection of cancer, and other independent variables. In addition, a series of multivariate logistic regressions were performed predicting two levels of the outcome variable (very good and good versus fair and poor). A  $p$ -value  $<0.01$  was considered statistically significant to account for multiple comparisons. To test for multicollinearity, intercorrelations among independent variables were examined. Additionally, data was examined for clustering effects and the intracluster correlation are shown to be relatively small; therefore, data was analyzed in a standard way.

## **Results**

### *Characteristics of sample*

Age of participants ranged from 18 to 94 years. Sixty-five percent of participants were 50 years of age or older and 14% had no regular or primary care physician. Eighteen percent of participants reported fair or poor health.

Sixty-nine individuals (9.0%) reported that they have been diagnosed with a cancer, including 25 with breast cancer, 17 with cervical cancer, and 3 with colorectal cancer. Although 355 (69%) of respondents reported that one of their family members (blood relatives) had been diagnosed with some type of cancer, 48% of respondents had never discussed their personal risk of cancer with a doctor, including 44% of respondents aged 50 and older. Sixteen percent of the African American women who participated in this study indicated that compared with the average woman their age, they have a higher risk of developing cancer. In addition, 46% indicated that their risk is the same as others, whereas 38% perceived a lower risk than their counterparts (see Table 2).

### *Perceived benefit of early cancer detection*

African American women who participated in this study reported a more positive perception about early detection of breast cancer than colorectal and cervical cancers. More than 74%, 51%, and 52% of participants indicated that if breast, colorectal, and cervical cancers are "detected early" a person's chances of survival are very good or good, respectively.

### *Cancer knowledge*

The cancer knowledge score from the 25-item scale ranged from 2 to 24, with a mean of 14 and a median of 15. The

TABLE 2. CHARACTERISTICS OF STUDY SAMPLE AND BIVARIATE RELATIONSHIPS BETWEEN PERCEIVED BENEFITS OF EARLY DETECTION OF BREAST, COLORECTAL AND CERVICAL CANCERS AND SELECTED VARIABLES AMONG AFRICAN AMERICAN WOMEN (N=513)

Independent Variables	Total N (%)	Perceived chance of survival if cancers are detected early					
		Breast		Colorectal		Cervix	
		Very good or good N=361 (74%) n (%)	Fair or poor N=124 (26%) n (%)	Very good or good N=252 (51%) n (%)	Fair or poor N=238 (49%) n (%)	Very good or good N=246 (52%) n (%)	Fair or poor N=226 (48%) n (%)
Age							
<50 years	179 (35)	129 (75)	43 (25)	91 (53)	81 (47)	96 (47)	73 (43)
≥50 years	334 (65)	232 (74)	81 (26)	161 (51)	157 (49)	150 (49)	153 (51)
Education							
No college degree	249 (50)	<b>156 (68)</b>	<b>75 (33)</b>	113 (48)	121 (52)	<b>109 (47)</b>	<b>121 (53)</b>
College degree	248 (50)	<b>199 (83)</b>	<b>42 (17)</b>	136 (56)	106 (44)	<b>134 (59)</b>	<b>94 (41)</b>
Marital status							
Single	367 (72)	249 (72)	96 (28)	175 (50)	172 (50)	174 (52)	161 (48)
Married	146 (28)	112 (80)	28 (20)	77 (54)	66 (46)	72 (53)	65 (47)
Cancer knowledge							
High	170 (33)	<b>145 (88)</b>	<b>20 (20)</b>	<b>113 (68)</b>	<b>53 (32)</b>	<b>103 (66)</b>	<b>54 (34)</b>
Medium	197 (38)	<b>146 (76)</b>	<b>46 (24)</b>	<b>96 (50)</b>	<b>97 (50)</b>	<b>97 (51)</b>	<b>93 (49)</b>
Low	146 (29)	<b>70 (55)</b>	<b>58 (45)</b>	<b>43 (33)</b>	<b>88 (67)</b>	<b>46 (37)</b>	<b>79 (63)</b>
Perceived health status							
Fair/poor	92 (18)	<b>45 (55)</b>	<b>37 (45)</b>	33 (40)	50 (60)	33 (40)	49 (60)
Good	234 (46)	<b>174 (77)</b>	<b>51 (23)</b>	125 (55)	101 (45)	119 (55)	97 (45)
Excellent/very good	186 (36)	<b>141 (80)</b>	<b>36 (20)</b>	93 (52)	87 (48)	93 (54)	80 (46)
Family member with cancer							
Yes	355 (69)	<b>263 (77)</b>	<b>78 (23)</b>	<b>188 (54)</b>	<b>157 (46)</b>	175 (53)	154 (47)
No	158 (31)	<b>98 (68)</b>	<b>46 (32)</b>	<b>64 (44)</b>	<b>81 (56)</b>	71 (50)	72 (50)
Have a regular Doctor							
Yes	439 (86)	317 (76)	102 (24)	223 (53)	201 (47)	217 (53)	191 (47)
No	74 (14)	44 (67)	22 (33)	29 (44)	37 (56)	29 (45)	35 (55)
Perceived cancer risk a same as others	236 (46)	168 (76)	52 (24)	<b>128 (58)</b>	<b>94 (42)</b>	118 (55)	97 (45)
Higher than others	84 (16)	61 (74)	22 (27)	<b>36 (43)</b>	<b>47 (57)</b>	41 (53)	37 (47)
Lower than others	193 (38)	132 (73)	50 (27)	<b>88 (48)</b>	<b>97 (52)</b>	87 (49)	92 (51)
Discussed risk of cancer with doctor							
Yes	267 (52)	<b>212 (82)</b>	<b>46 (18)</b>	<b>148 (57)</b>	<b>114 (43)</b>	137 (55)	111 (45)
No	246 (48)	<b>149 (66)</b>	<b>78 (34)</b>	<b>104 (46)</b>	<b>124 (54)</b>	109 (49)	115 (51)

Bolded values are significantly different,  $p < 0.01$ .

proportion of “don’t know” responses ranged from 12% to 61% for individual items. Respondents demonstrated highest knowledge (>70% correct) for some of the more general items such as “certain types of cancer are genetic” or “a diet rich in fruits and vegetables greatly reduces risk of developing cancer.” Respondents had the lowest proportion of correct responses (<40% correct) and the largest proportion of don’t know responses (30%–60%) for some of the items on specific cancers such as “those who smoked for many years are at increased risk of developing colon cancer” and “human papilloma virus (HPV), a virus that can cause cancer, is contagious.”

#### Bivariate relationship

At the bivariate level (chi-square test), several variables including (1) education, (2) cancer knowledge, (3) perceived health status, (4) family history of cancer, and (5) discussion

of cancer risk with a physician all showed a significant association with perceived benefit of early detection of breast, cervical, and colorectal cancer (see Table 2).

#### Multivariate evaluation

Multivariate logistic regression shows that only four independent variables are significantly associated with perceived chance of survival if cancer is detected early. Higher level of cancer knowledge, having a discussion of cancer risk with a physician, and a higher level of perceived health status are most consistently associated with high perceived chance of survival (see Table 3).

Controlling for all other independent variables, participants who reported that “if a person’s breast cancer is detected early, she has a very good/good chance to survive” (versus poor/fair) were 4.09 (95% confidence interval [CI] 2.20–7.62) times more likely to have a high level of cancer-

TABLE 3. MULTIVARIATE LOGISTIC REGRESSION MODELS BETWEEN INDEPENDENT VARIABLES AND PERCEIVED CHANCE OF SURVIVAL IF CANCER IS DETECTED EARLY AMONG AFRICAN AMERICAN WOMEN (N=513)

Independent variables	Perceived chance of survival if cancer is detected early					
	very good or good versus fair or poor					
	Breast		Colorectal		Cervix	
	OR	95% CI	OR	95% CI	OR	95% CI
Age						
< 50 years	0.78	0.47–1.30	0.78	0.51–1.20	0.73	0.48–1.11
≥ 50 years	1.00	—	1.00	—	1.00	—
Education						
No college degree	1.40	0.86–2.29	0.99	0.65–1.50	1.27	0.84–1.91
College degree	1.00	—	1.00	—	1.00	—
Marital status						
Single	1.43	0.82–2.50	1.09	0.70–1.70	0.99	0.64–1.53
Married	1.00	—	1.00	—	1.00	—
Cancer knowledge						
High	<b>4.09</b>	<b>2.20–7.62</b>	<b>3.72</b>	<b>2.18–6.33</b>	<b>2.47</b>	<b>1.46–4.18</b>
Medium	<b>2.43</b>	<b>1.38–4.28</b>	1.56	0.94–2.59	1.62	0.98–2.69
Low	<b>1.00</b>	—	<b>1.00</b>	—	<b>1.00</b>	—
Perceived health status						
Fair/poor	<b>0.48</b>	<b>0.24–0.95</b>	<b>0.83</b>	<b>0.39–1.47</b>	0.69	0.38–1.28
Good	0.77	0.44–1.35	1.07	0.66–1.65	1.03	0.66–1.60
Excellent/very good	1.00	—	<b>1.00</b>	—	1.00	—
Family member with cancer						
Yes	1.30	0.78–2.17	1.35	0.87–2.11	0.90	0.58–1.39
No	1.00	—	1.00	—	1.00	—
Have a regular doctor						
Yes	<b>1.21</b>	<b>0.63–2.33</b>	0.99	0.55–1.79	0.98	0.54–1.76
No	<b>1.00</b>	—	1.00	—	1.00	—
Perceived cancer risk						
Same as others	1.45	0.85–2.48	<b>1.97</b>	<b>1.25–3.08</b>	<b>1.58</b>	<b>1.02–2.47</b>
Higher than others	0.83	0.41–1.70	0.68	0.37–1.24	1.15	0.63–2.11
Lower than others	1.00	—	<b>1.00</b>	—	<b>1.00</b>	—
Discussed risk of cancer with doctor						
Yes	<b>2.31</b>	<b>1.40–3.80</b>	<b>1.68</b>	<b>1.11–2.55</b>	1.31	0.87–1.98
No	<b>1.00</b>	—	<b>1.00</b>	—	1.00	—

For breast cancer: -2 log likelihood=434; chi-squared=64.4; Nagelkerke R-square=0.200.  
 For colorectal cancer: -2 log likelihood=567; chi-squared=54.4; Nagelkerke R-square=0.152.  
 For cervical cancer: -2 log likelihood=571; chi-squared=28.2; Nagelkerke R-square=0.084.  
 Odds ratios that are bolded are significantly different from the reference group,  $p < 0.01$ .  
 CI, confidence interval; OR, odds ratio.

related knowledge and 2.3 (CI 1.25–3.08) times more likely to have discussed their risk of cancer with a doctor. Participants who reported that “if a person’s colorectal cancer is detected early she has a very good/good chance to survive” (versus poor/fair) were 3.72 (CI 2.18 – 6.33) times more likely to have a high level of cancer-related knowledge and 1.97 (CI 1.25 – 3.08) times more likely to have discussed their risk of cancer with a doctor. High level of cancer knowledge was the only variable that was multivariately related to high perceived benefit of early detection of cervical cancer.

**Discussion**

Higher perceived benefits of early detection of breast cancer as compared with colorectal and cervical cancer reported by African American women in our sample are

consistent with cancer statistics in this population: African Americans experience higher survival rates after breast cancer compared with colorectal and cervical cancer. While only a few of our respondents may be familiar with specific cancer statistics on survival for African American women,<sup>4</sup> our data suggest that many African American women in South Los Angeles believe that there are differences in survival rates for breast, cervical, and colorectal cancer. Since beliefs and perceptions are often shaped by events in individuals’ environment,<sup>24</sup> this awareness may be influenced by cancer outcomes that women observe in their community.

However, given that 5-year survival rates range from 84% to 93% for all three cancers if detected early, our data suggest that a substantial proportion of African American women in South Los Angeles are not aware of the benefits of early detection, particularly for colorectal and cervical cancers. For

these two types of cancers, almost one out of two African American women in our study believed that chances of survival are fair or poor, even if the cancer was detected early. Our findings confirm results from previous studies that have identified fatalistic attitudes towards cancer outcomes among African American women and the attitude that cancer is a death sentence.<sup>8–11</sup> For example, Hall and colleagues (2008) conducted a study with an ethnically diverse sample of women and found that women who believed that breast cancer could not be cured if found early were more likely to be African American.<sup>9</sup> Programs designed to promote early detection of cancer among underserved African American women must seek to overcome these negative attitudes toward early detection of cancer.

This study shows that two variables are consistently associated with perceived benefit of early detection: cancer knowledge and discussion of cancer risk with a physician. All of these variables are most likely related, since discussion with a physician may increase a patient's cancer knowledge, including knowledge regarding the benefit of early detection, and patients who have higher levels of knowledge may be more comfortable discussing cancer with a physician than those with low level of cancer knowledge. While many patient-targeted interventions aim to increase cancer knowledge, both patient- and physician-targeted interventions should aim to increase patient-physician communication about cancer. Healthcare professionals who serve low-income minority women, especially in communities with few educational and health care resources, should discuss with women their personal risk of developing cancer and stress the importance of early detection for cancer survival.<sup>25</sup>

Limitations of this study include the nonrandom sample of the participants and the cross-sectional study design which only documents associations and precludes causal inferences. Participants were recruited at 11 churches and may not be representative of all African American women in South Los Angeles. Although knowledge items included a "don't know" response, some respondents may have guessed answers. Despite these limitations, our community-academic partnership was able to examine perceived benefits of early detection of cancer, a construct that was of interest to our community partner and that can potentially be modified in screening promotion interventions targeting patients and physicians.

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### Author Disclosure Statement

No competing financial interests exist.

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