



# Addressing Breast Cancer Health Disparities in the Mississippi Delta Through an Innovative Partnership for Education, Detection, and Screening

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**Abstract** Projects to reduce disparities in cancer treatment and research include collaborative partnerships and multiple strategies to promote community awareness, education, and engagement. This is especially needed in underserved areas such as the Mississippi Delta where more women are diagnosed at regional and distant stages of breast cancer. The purpose for this project was to increase the relatively low screening rate for African American women in the Mississippi Delta through a partnership between the Mississippi Network for Cancer Control and Prevention at The University of Southern Mississippi, The Fannie Lou Hamer Cancer Foundation and the Mississippi State Department of Health to decrease health disparities in breast cancer through increased awareness on self-early detection methods, leveraging resources to provide mammography screenings, and adequate follow-up with

services and treatment for abnormal findings. Through this collaborative effort, over 500 women in three rural Mississippi Delta counties were identified, provided community education on early self-detection, and given appointments for mammography screenings within one fiscal year.

**Keywords** Breast cancer · Health disparities · African American women · Underserved · Mississippi delta · Community health workers

## Introduction

Breast cancer is the most common cancer among women in Mississippi with nearly 2500 new cases diagnosed each year [15]. Racial disparities in breast cancer outcomes have been well documented [2, 3, 5–7, 10, 13, 20, 23, 24, 28] with African American women having a lower incidence of breast cancer compared with whites but a higher overall mortality [6, 20]. In Mississippi, the relative burden of invasive breast cancer varies by age and by race/ethnicity. In 2012, the age-specific incidence for breast cancer among black women aged 40–49 years was 329.73 per 100,000 [16], whereas the same rate among non-Hispanic whites was 239.08 per 100,000 [17]. However, the age-specific mortality rate for black women was 89.10 per 100,000 [18] and was 28.66 per 100,000 [19] for non-Hispanic whites in 2012. Thus, age-specific incidence rates for blacks are 1.379 times higher when compared to whites, but alarmingly, age-specific mortality is 3.11 times higher. Even after age 50, black women continue to have the highest mortality rate [19].

Although cancer prevention programs have increased knowledge levels about how screenings can prevent

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premature deaths, screening rates among low-income African American women remain low [8, 30]. While funding for federal and state outreach initiatives has resulted in increased percentages of breast cancer screenings, African American women continue to have the worst breast cancer indices among all women. While key factors associated with breast cancer health disparities include access to affordable health care services, biological factors, race/ethnicity, socioeconomic status, education level, and cultural differences, the 2010 National Health Interview Survey reported that education and income are powerful predictors of screening behaviors [4]. Women who are 40 years and older and below the poverty level have the lowest rates of mammography screening.

While programs to reduce barriers to breast cancer screenings in African American women have achieved success, the most effective community-based cancer screening interventions have numerous culturally targeted strategies. Those included have components of outreach with community health workers, community-based education, health care provider assistance, and mass media exposure [1, 10, 11, 14, 22, 27, 29]. Innovative projects to reduce disparities in cancer treatment and research include partnerships between academic and community cancer centers, patient navigation programs, state departments of health, and strategies to promote community awareness, education, and engagement. This is especially needed in underserved areas like the Mississippi Delta. The Mississippi Delta region is typically considered economically depressed, with 68 % of the residents classified as living at or below the 200 % Federal Poverty Line (FPL), the measuring tool often used as a marker for government aid [25]. It is the most impoverished area of the state with the lowest educational attainment.

The Mississippi Cancer Registry data for 2008–2012 documents more women in the Mississippi Delta counties diagnosed at regional and distant stages of breast cancer than women in non-Delta counties, prompting the need for healthcare intervention at multiple levels [15]. The goal for this project was to increase the relatively low screening rate for African American women in the Mississippi Delta through a partnership between the Mississippi Network for Cancer Control and Prevention at The University of Southern Mississippi, The Fannie Lou Hamer Cancer Foundation and the Mississippi State Department of Health. Funds from the Avon Foundation for Women were secured to decrease health disparities in breast cancer through increased awareness on early self-detection methods, leveraging resources to provide mammography screenings, and adequate follow-up with services and treatment for abnormal findings. Through this collaborative effort, over 500 women in three rural Mississippi Delta counties were identified, provided community education on

early self-detection, and given appointments for mammography screenings within one fiscal year.

## Partners

### Fannie Lou Hamer Cancer Foundation

The Fannie Lou Hamer Cancer Foundation (FLHCF) is an independent, volunteer-run, community-based non-profit organization committed to the eradication of cancer in Mississippi, particularly the Mississippi Delta, through support, education, research, and advocacy. The FLHCF honors the memory of a Ruleville, Mississippi native, Fannie Lou Hamer, who was willing to undergo great personal sacrifice as an authentic voice of those who were impoverished and disenfranchised. The FLHCF is committed to increasing awareness of cancer risk factors, enhancing the quality of life of those affected by cancer, and establishing a public agenda for prevention, detection, and treatment of cancer in Mississippi, particularly among residents of the Mississippi Delta, and underserved populations in other locations.

### Mississippi Network Cancer Control and Prevention

To address the health disparities of the African American and other health disparity communities in Mississippi, the Fannie Lou Hamer Cancer Foundation, in partnership with The University of Southern Mississippi, established the Mississippi Network for Cancer Control and Prevention (MNCCP) in November 2010. The primary goal of the MNCCP is to reduce or eliminate disparities in the mortality rates of breast, cervical and colorectal cancers in Mississippi, a state with a substantial minority population and significant disparity in health indicators. The MNCCP concentrates on cancer awareness, education, research, advocacy, and increasing utilization of early detection screenings. The purpose of the MNCCP is to build on an established community and institutional capacity in order to eliminate cancer health disparities by conducting community-based participatory education, training and research. The goals of the MNCCP are to improve access to and utilization of proven beneficial cancer interventions.

### Mississippi State Department of Health, Breast and Cervical Cancer Early Detection Program

The Mississippi State Department of Health, Breast and Cervical Cancer Program (MSDH/BCCP) began in the West Central Public Health District (encompassing Claiborne, Copiah, Hinds, Sharkey, Issaquena, Madison, Rankin, Simpson, Warren, and Yazoo counties) in July 1998.

The main focus of the program was to address screening needs of those women at the highest risk. High risk categories for Mississippi are defined as women who are uninsured, underinsured (insurance does not cover screening exams for breast and cervical cancer), medically underserved, poor, minority, and elderly. With funding from the Centers for Disease Control and Prevention, and matching non-federal funds, Mississippi State Department of Health implemented a plan that made available early detection for breast and cervical cancer services statewide. Pap exam screening services at MSDH clinics, Community Health Centers (CHC) and private providers are available to uninsured women 18 years of age and older. Mammography screening is available through contracted providers to uninsured women 50 years of age and older [9].

## Methods

The study was approved by the Institutional Review Boards at The University of Southern Mississippi and the Avon Foundation for Women's Breast Healthy Outreach Program (Avon BHOP) (who utilizes Chesapeake Institutional Review Board). Multiple culturally targeted strategies of mass media exposure, community-based education, health care provider assistance, and outreach with community health workers, were employed to identify African American women in the Mississippi Delta for inclusion in the project. Mass media exposure included public service announcements on local radio stations, television appearances, flyers (to churches, community centers, senior centers, and local bulletin boards), and creation of community events like an Avon Walk. For example, after a public service announcement on breast cancer awareness on a local radio station, FLHCF offered the first fifty women over the age of 40 who had never had a mammogram to contact their office to help set an appointment at the state department of health for a clinical breast exam. After the participant completed the appointment, she received a \$10 gift card to a local business. These creative methods helped to increased awareness and participation.

Community education events like an Avon Breast Health Awareness Walk were utilized to increase awareness about breast cancer and early detection, and served as a recruitment tool for participants, community support, and involvement. Through the Avon Walks, the FLHCF raised funds to support breast cancer survivors with needs related to transportation for treatment, prostheses, and peer-to-peer group support. Participation was solicited from community residents, local community-based organizations, Avon representatives, and city/county officials. Other forums and health fairs provided opportunities for program staff, local health care providers, and volunteers to share health disparity data on breast cancer, dispel myths, and educate community members about proper

self-exams and the need for regular screenings. It also offered chances to discuss barriers to care and resources available to community women, such as those offered through the Mississippi State Department of Health Breast and Cervical Cancer Program. Community health workers were recruited to provide education and information at local shopping centers to inform residents on cancer risk, treatment, and resources. Word-of-mouth referrals and continual presence in these communities allowed visibility and recognition of the importance of self and clinical care of women's health issues.

Volunteer community health workers were recruited from the four Mississippi Delta counties of focus to identify and recruit women (family, friends, and neighbors) ages 40+ from their communities for breast cancer screenings. Community health workers (also known as lay health workers, community health advisors, promotors, and by many other titles) are an effective means of accessing underserved and/or minority populations. They are from the communities they serve, understand the health issues of that community, and serve as a gateway to care and services for other community members. Substantial literature documents that community health advisors are effective in increasing access to health services, increasing knowledge, and promoting behavior change among ethnic minority women [1, 10–12, 14, 27, 29]. Community health workers were also provided a 6 h course on breast cancer and breast health that trained them to identify women who rarely or never had had a mammogram or clinical breast exam and/or were at a higher risk for developing breast cancer. Some of the targeted women included smokers, obese/overweight women, and low-income women with dependents. Stipends were provided to assist with transportation, time, and resources for recruitment of community women for the volunteer community health workers.

After participant recruitment, individuals who agreed to be enrolled as a participant in the program received a consent form that gave project staff authority to receive and obtain screening results for each participant. Coding of participants and secure databases ensured patient confidentiality. The program manager contacted the participant's provider (nurse and/or physician) for case management purposes. If the participant had no primary care provider, the participant was scheduled with a provider partnering with the program. Consistent follow-up before and after appointments contributed greatly to the significant increase in screenings among African American women.

## Results

Data was collected by the FLHCF and compiled by the Avon BHOP. Demographics of the survey participants can be found in Table 1. Most participants were African

American women (94.72 %) who were Non-Hispanic (98.61 %). Approximately half of the women (51.14 %) were age 50–64, and 35.33 % of women were age 40–49. The majority of participants (83.43 %) reported that they lived in an area that was rural. Educational attainment varied within the sample of participants with

1.67 % reporting that they had no formal education, and 21.62 % reporting that they had received some formal education, but had not completed high school. More than half (55.41 %) reported an annual income of \$10,000 or less.

**Table 1** Demographics of survey participants

Demographic characteristics	n (%)
Gender	
Female	554 (99.82 %)
Other	1 (0.18 %)
Race	
Black or AA	503 (94.72 %)
White or caucasian	16 (3.01 %)
Asian	1 (0.19 %)
Native Hawaiian or other Pacific Islander	1 (0.19 %)
American Indian or Alaska Native	5 (0.94 %)
Multi-racial	3 (0.57 %)
Other	2 (0.38 %)
Ethnicity	
Non-Hispanic	498 (98.61 %)
Hispanic	7 (1.39 %)
Participants home	
Indian reservation	2 (0.37 %)
Rural	448 (83.4 %)
Suburban	1 (1.86 %)
Urban city	86 (16.01 %)
Age	
<40	62 (10.90 %)
40–49	201 (35.33 %)
50–64	291 (51.14 %)
>65	15 (2.63 %)
Education	
Some high school	117 (21.62 %)
High school degree	7 (1.29 %)
GED/high school equivalency	34 (6.28 %)
Some college	112 (20.70 %)
Associates degree	7 (1.29 %)
Bachelors degree	34 (6.28 %)
Some graduate level course work	9 (1.67 %)
Graduate degree	16 (2.95 %)
No formal education	9 (1.67 %)
Annual income	
<\$5000	100 (18.05 %)
\$5001–\$10,000	207 (37.36 %)
\$10,001–\$15,000	122 (22.02 %)
\$15,001– \$25,000	85 (15.34 %)
\$25,001–\$50,000	33 (5.96 %)
Greater than \$50,000	5 (0.90 %)

Participants were able to complete the confidential Avon BHOP Client Intake Form (CIF), which includes demographic, behavioral, and socio-economic questions at various locations. Most of the participants (55.78 %) completed the form “at outreach,” 18.10 % completed it at their home, 3.73 % completed it over the phone, and 1.49 % completed it at the screening appointment. In most instances, the participants completed the Avon BHOP CIF (77.72 %), however, when clients needed help preparing or understanding questions from the Avon BHOP CIF, it was completed by the community health worker (18.73 %). A few (1.50 %) completed the form with the help of an interpreter.

Participants (n = 554) either received a screening mammogram (90.43 %) or a diagnostic mammogram (9.57 %). Most participants (93.78 %) also received a clinical breast exam. Although 554 people participated in mammogram screening, the location where the screening occurred was available for 542 participants. The majority of participants (92.44 %) received their mammogram at a hospital imaging center. Others received their mammogram at the community health center (2.40 %), or at their primary care provider’s office (0.37 %).

Self-reported screening habits of participants can be found in Table 2. Few participants (1.54 %) had a prior diagnosis of breast cancer. A slightly larger percentage (2.79 %) had had a breast biopsy. Some participants (8.80 %) reported having a family history of breast cancer in a sister, daughter, or mother. The majority of participants (87.74 %) did not report having current breast symptoms. When asked how long it had been since the participant’s last mammogram, 40.26 % reported never having had the screening procedure, and 37.29 % reported that it had been more than 2 years since their last mammogram. When asked how long it had been since the participant’s last breast exam by a physician or nurse, 8.67 % reported never having been examined, more than half of participants (51.48 %) had not been examined in more than 2 years, and 51.48 % had not had been examined in one to 2 years. When asked about frequency of self-breast exam, 41.80 % of participants reported doing a breast self-exam at least once a month, whereas 34.73 % reported doing a breast self-exam rarely or never.

Participants were also asked about their knowledge of breast cancer screening practices (Table 3). Most participants (93.06 %) reported previous knowledge of mammograms, and 66.79 % had been taught how to do a breast self-exam by a health professional.

**Table 2** Self-reported screening and clinical history

Category	n (%)
Past history of breast cancer diagnosis	
Yes	8 (1.54 %)
No	504 (96.74 %)
Not sure	9 (1.73 %)
Past history of mother, sister, or daughter with breast cancer diagnosis	
Yes	46 (8.80 %)
No	439 (83.94 %)
Not sure	38 (7.27 %)
Current breast symptoms	
Yes	46 (8.95 %)
No	451 (87.74 %)
Not sure	17 (3.31 %)
Past history of breast biopsy	
Yes	14 (2.79 %)
No	484 (96.41 %)
Not sure	4 (0.80 %)
Time since last mammogram	
Less than a year ago	5 (0.93 %)
From 1–2 years ago	89 (16.51 %)
More than 2 years ago	201 (37.29 %)
Never	217 (40.26 %)
Not sure	27 (5.00 %)
Time since last breast examination by physician or nurse	
Less than a year ago	32 (5.90 %)
From 1–2 years ago	122 (22.51 %)
More than 2 years ago	279 (51.48 %)
Never	47 (8.67 %)
Not sure	62 (11.44 %)
Frequency of self breast examination	
More than once a month	69 (13.17 %)
About once a month	150 (28.63 %)
A few times a year	123 (23.47 %)
Rarely	136 (25.95 %)
Never	46 (8.78 %)

**Table 3** Knowledge of breast cancer screening practices

	n (%)
Prior knowledge of mammograms	
Yes	483 (93.06 %)
No	35 (6.74 %)
Not sure	1 (0.19 %)
Taught how to do self breast exam by health professional	
Yes	352 (66.79 %)
No	141 (26.76 %)
Not sure	34 (6.45 %)

Barriers to mammogram participation were also identified. Participants were asked to select items that they perceived were barriers to mammogram participation. Results

from this question can be found in Table 4. The most frequently cited barrier to mammogram participation was lack of health insurance (71.49 %). Less than half of

participants (41.98 %) reported that mammograms were too expensive. Respondents also reported that they did not have “anything wrong with them” to warrant having a mammogram (15.05 %), that the procedure was too painful (12.08 %), or that they were afraid of finding a problem (11.09 %).

## Discussion

The total population of African American women aged 40 years and older in 2012 for the targeted Mississippi Delta counties (Humphreys, Leflore, and Sunflower) is 10,417 or 67 % of the total female population [26]. To recruit African American underserved women for mammography screenings in three Mississippi Delta counties, several culturally targeted approaches were utilized. Those included outreach with community health workers, community-based education, health care provider assistance, and mass media exposure. One of the basic tenets of health education is to meet “people where they are” [21]. The channels employed exemplified this ethos, and were necessary to reach the targeted underserved population. Reaching and recruiting older, minority, and underserved women for screening services in a rural health professional shortage area required outreach to faith-based

organizations and churches, community centers, healthcare entities, and through other community-based events. Flyers at shopping venues, radio spots, and television announcements through channels utilized by the target population were strategies consistent with the Mississippi Delta culture. In addition, collaborative partnerships with local federally qualified health centers (FQHCs), community health centers, clinics, hospitals, and state departments of health ensured quality services were provided.

In summary, 86.47 % of participants in this research were  $\geq 40$  years of age, and were recommended to have a mammogram based on clinical guidelines. From results, 40.26 % reported never having had the screening procedure, and 37.29 % reported that it had been more than 2 years since their last mammogram even though 93.06 % had prior knowledge of mammograms. Approximately 35 % of participants were not participating in monthly self-breast exams despite being taught the proper technique by a health professional (66.79 %).

A majority of participants cited expense and access as difficulties to mammogram participation. With over 55.41 % of the participants reported an annual income of \$10,000 or less, financial considerations were a primary obstacle. To address these barriers, existing community resources that were available to offset screening services included community health centers with sliding fee scales, the Mississippi State Department of Health’s Breast and Cervical Cancer Early Program (MSDH/BCCP) utilized by county health departments, and a local county diagnostic center.

In the target service region, there are two FQHCs. Working with these organizations, the collaborative partnership and community health workers sought to make sure that all participants eligible for Medicare and Medicaid were enrolled. They also assisted Medicare and Medicaid recipients by providing local health-related resources and linking them to providers and other healthcare entities accepting the coverage. For participants living in counties with no FQHC or those who had limited transportation to the nearest FQHC, funds available through the MSDH/BCCP were made available so the screening could occur at a local county diagnostic center. The local county diagnostic center agreed to conduct mammograms at a significantly reduced cost of \$100 for those women who are referred to them by the FLHCF. Additional funding was secured to assist women who were in need to help pay for services.

Through the collaborative efforts, new connections were formed with participants’ service providers and existing relationships were strengthened. FLHCF ensured that ongoing case management and follow-up was provided for each participant in the program within the targeted counties. This included secondary follow-up based on screening

**Table 4** Barriers to mammogram participation as reported by program participants

Potential barrier to mammogram participation	n = 505
Lack of health insurance	361 (71.49 %)
It is too expensive	212 (41.98 %)
There is nothing wrong with me	76 (15.05 %)
It is too painful	61 (12.08 %)
I am afraid of finding a problem	56 (11.09 %)
I am too busy	55 (10.89 %)
I am too young to have one	46 (9.11 %)
My doctor has not recommended one	41 (8.12 %)
I never had breast cancer in my family	23 (4.55 %)
It is not a priority in my life	19 (3.76 %)
I have no transportation	16 (3.17 %)
I am afraid of the mammography machine	11 (2.18 %)
I don’t trust medical providers	11 (2.18 %)
It is too embarrassing	10 (1.98 %)
I believe that my health is in god’s hands	9 (1.78 %)
I am afraid of the radiation	7 (1.39 %)
I didn’t know I should	5 (0.99 %)
My family did not want me to go	4 (0.79 %)
It goes against my culture	2 (0.40 %)
It goes against my faith or religion	1 (0.20 %)
I don’t think it would find breast cancer	0 (0.00 %)

results with a provider, and if a participant was found to have an abnormality or breast cancer, FLHCF contacted the provider on behalf of the participant to schedule another appointment for a resulting visit. If the participant was uninsured or under-insured and in need of imaging services, biopsy, or any breast-related treatment, FLHCF contacted local, county, and state health departments to link the patient with free or low-cost medical services as needed. In addition, FLHCF worked with diagnostic centers, community health centers, health departments and private providers to provide free or low-cost intervention services to the program's under- or uninsured women that were found to have an abnormality.

This study was undertaken to increase breast cancer screening rates among African American women in the Mississippi Delta through a partnership between several community-based and academic entities. This study was able to document potential barriers to breast cancer screening among program participants and increase screening rates among an underserved population. However, because a non-probabilistic sampling design was utilized, caution should be taken in generalizing the results to other populations. The sample was a convenience sample of African American women in rural communities.

## Conclusion

The findings from this study underline the need for strong collaborations between academic universities, state departments of health, and community-based organizations, and the application of culturally appropriate multimodal strategies in reducing health disparities in breast cancer rates through increased awareness of early self-detection methods. Leveraging resources to provide mammography screenings and adequate follow-up with services and treatment for abnormal findings provided continuity of care beyond screening participation. While this program targeted low-income rural participants with financial barriers to care, successful outreach and interagency partnership removed impediments to obtaining needed screenings. This program highlights avenues for underserved, older, minority women to be screened, and serves as a case study example for successfully increasing breast cancer screening to potentially reduce health disparities related to breast cancer.

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