J Canc Educ (2019) 34:277–284
https://doi.org/10.1007/s13187-017-1298-0

An Evaluation of a Rural Community-Based Breast Education and Navigation Program: Highlights and Lessons Learned

Essie Torres[1] · **Alice R. Richman**[2] · **Ann M. Schreier**[3] · **Nasreen Vohra**[4] · **Kathryn Verbanac**[4]

Published online: 17 November 2017

Abstract Cancer has become the leading cause of death in North Carolina (NC) (North Carolina DHHS, State Center for Health Statistics 2015) and the eastern region of North Carolina (ENC) has experienced greater cancer mortality than the remainder of the state. The Pitt County Breast Wellness Initiative-Education (PCBWI-E) provides culturally tailored breast cancer education and navigation to screening services for uninsured/underinsured women in Pitt and Edgecombe Counties in ENC. PCBWI-E created a network of 23 lay breast health educators, and has educated 735 women on breast health and breast cancer screening guidelines. Navigation services have been provided to 365 women, of which 299 were given breast health assessments, 193 were recommended for a mammogram, and 138 were screened. We have identified five lessons learned to share in the successful implementation of a community-based breast cancer screening intervention: (1) community partnerships are critical for successful community-based cancer screening interventions; (2) assuring access to free or low-cost screening and appropriate follow-up should precede interventions to promote increased use of breast cancer screening; (3) the reduction of system-based barriers is effective in increasing cancer screening; (4) culturally tailored interventions can overcome barriers to screening for diverse racial/ethnic and socioeconomic groups; and (5) multi-component interventions that include multiple community health strategies are effective in increasing screening.

Keywords Culturally tailored breast cancer education · Lay health education model · Community-based navigation · Rural cancer control program

✉ Essie Torres
Torrese@ecu.edu

[1] Department of Health Education and Promotion, East Carolina University, 3202 Carol Belk Building, Greenville, NC 27858, USA

[2] Department of Health Education and Promotion, East Carolina University, 3107 Carol Belk Building, Greenville, NC 27858, USA

[3] College of Nursing, East Carolina University, Health Sciences Bldg, Greenville, NC 27834, USA

[4] Department of Surgery, Brody School of Medicine, Greenville, NC 27834, USA

Introduction

Breast cancer mortality rates have been steadily decreasing over time; however, black women experience 40% higher mortality rate (compared to white counterparts) and shortest survival of any racial and ethnic group in the USA for breast cancers [1–3]. Among Latinas in the USA, breast cancer is the most commonly diagnosed cancer, the leading cause of cancer death, and less likely to be diagnosed at a local stage [4]. Studies over the past decade have shown that higher mortality rates are largely due to disparities in screening [4–8]. Lower access, frequency of screening, longer intervals between mammograms, as well as lack of timely follow-up after an abnormal mammogram are thought to contribute to the higher percentage of advanced stage breast cancers detected among both Black and Latina women [4–8]. Furthermore, low breast health literacy has been shown to be inextricably linked to breast cancer disparities among minority women [4–8].

Cancer has become the leading cause of death in North Carolina (NC) [9] and the eastern region of North Carolina (ENC) has experienced greater cancer mortality than the

remainder of the state [10]. Breast cancer incidence rates have increased in NC with Black women experiencing a slightly higher incidence (164.4 per 100,000) and mortality rates (28.8 per 100,000) as compared to White women (159.5 per 100,000 and 20.1 per 100,000, respectively) [11]. Pitt and Edgecombe Counties experience similar breast cancer disparities [12, 13], with incidence rates in 2011 significantly higher among minority women (212.8, Pitt and 171.7, Edgecombe per 100,000), compared to white women (132.0, Pitt and 117.4, Edgecombe per 100,000) [12]. In 2012, mortality rates for minority women in Pitt county was four times higher compared to their white counterparts (47.0 vs. 19.9 per 100,000, respectively) and three times higher in Edgecombe county (27.3 vs. 8.6 per 100,000, respectively) [12]. Furthermore, minority women were diagnosed at later stages of the disease, with the rate of diagnosis at stage 4 being almost three times higher than white women in Pitt County and significantly higher in Edgecombe County [13]. Therefore, access to early screening among minority women is just part of the solution in addressing existing breast cancer health disparities in ENC.

During 2013–2017, Susan G. Komen Triangle to the Coast Affiliate funded several grants under the Pitt County Breat Wellness Initiative (PCBWI) that addressed breast cancer needs across the continuum of breast cancer care in several ENC counties. The Pitt County Breast Wellness Initiative-Education grant (PCBWI-E) addressed some of these upstream factors through provision of education and navigation to early detection and access to screening for uninsured and underinsured women age 25 and older, with targeted outreach to Black and Latina women. The PCBWI-E targeted Pitt and Edgecombe Counties with the following objectives: (1) To train and support identified community members who serve as lay breast health educators (LBHE), (2) to increase breast self-awareness and knowledge of breast health, screening mammography, screening guidelines, and importance of early detection, and (3) to reduce barriers associated with access to breast screening services via navigation among our target population.

Methodology and Program Design

Lay Breast Health Educator Model

Our training curriculum was adapted from the UNC North Carolina Breast Cancer Screening Program (NC-BCSP) curriculum [14], which is an evidence-based lay health advisor intervention designed to increase mammography use among Black women living in rural NC communities [14]. The curriculum included the following topics: breast cancer, breast health, how to be an effective health educator, and a detailed overview of the PCBWI-E program. The training consisted of a 12-h training program delivered in a 2-day workshop and employed a variety of teaching and learning strategies, such as didactic lectures, group activities, role-playing, and return demonstration.

LBHEs were selected via existing community partnerships and the application process consisted of a resume, interview, and a personal reference attesting to the applicant's ability to work as a LBHE in our communities. Priority was given to community members who were involved in their respective communities and demonstrated a potential for high impact on breast health education, breast cancer awareness and effectively increasing access to breast cancer screening among our target population. Among the nine trained LBHEs, four were bilingual, three were breast cancer survivors, and all were either Black or Latina. In addition to the nine community members, the authors trained 14 East Carolina University students in the Bachelor of Science program in Public Health Studies (BSPH), who worked alongside the LBHEs and gained valuable field experience during their public health internships with PCBWI.

In an effort to tailor the program, LBHEs were asked about their expectations of the training and goals working as a LBHE in their respective communities. Discussions throughout included LBHEs current breast health and breast cancer knowledge, breast cancer myths, effective strategies for implementing the breast health education sessions in the community, and helping navigate women from our target population to existing breast cancer screening services. During the second year, two LBHEs from year one assisted in training the new cohort by giving them an overview and familiarizing them with logistics of the PCWBI-E program. This strategy helped maintain the cultural relevance of the program and enhanced the learning environment for the second cohort of LBHEs. PCBWI-E's LBHEs were compensated for successful completion of training and also received a stipend for their outreach and navigation efforts. These stipends compensated the LBHE's investment in helping increase breast health awareness among target communities and their additional support of program participants.

PCBWI-E Program Design

Education Component

Table 1 provides a summary of program activities for PCBWI-E during the 2-year period. Community-based educational sessions lasted approximately 10 min, were conducted by LBHEs. Major teaching points were "knowing your normal," potential signs and symptoms of breast cancer, age-appropriate breast cancer screening guidelines, and modifiable risk factors (i.e., obesity, nutrition, physical activity, breast-feeding, and family history). In the first year of the program, 38 educational sessions were provided to 345 uninsured/underinsured women age 25 and older in conjunction with community clinics (faith-based and federally qualified health

Table 1 Results of PCWBI-E program activities

	Year one	Year two	Total
Trained lay breast health educators*	13	10	23
Number of community-based educational events	38	52	90
Number of educated women	345	390	735
Number of navigated women	135	230	365
Gas cards	4	15	19
Interpretation	64	77	141
Assistance filling out NC-BCCCP application	22	78	100
Assessed for breast health needs	127	172	299
Recommended for a mammogram	78	115	193
Received a mammogram via *PCBWI***	55	84	139

**Trained LBHEs include the nine community members and 14 B.P. ECU students*

***During year 1, mammograms were paid for by the PCBWI screening grant. During year 2, mammograms were paid for by the PCBWI screening and education grants*

centers), health departments, community organizations, and breast cancer screening clinics coordinated by the PCBWI screening grant team. In the subsequent year, 390 women were educated via 52 educational sessions with the same partners, and added local businesses that served our target population (i.e., supermarkets, food banks, soup kitchens, and health fairs). Over the course of this program, we were able to serve a total of 735 women and increase breast cancer awareness and access to existing services among uninsured/underinsured women in Pitt and Edgecombe counties. Results regarding efficacy of education component and screening will be reported in a separate paper.

Navigation Component

The navigation process consisted of a breast health assessment for a subset of woman educated using a 1-on-1 breast health assessment tool developed by the PCBWI screening grant team in their initial 2013 community health grant, and was based on a validated screening tool [15]. This assessment helped to identify women who needed age-appropriate breast cancer screening and those eligible for a free mammogram via PCBWI (covered by both the education and screening grants). Participants also received assistance with scheduling appointments (mammography and/or clinical breast exams), interpretation during appointments, transportation (gas cards), and assistance with filling out the NC Breast and Cervical Cancer Control Program (NC-BCCCP) application or any other form related to their screening. The NC-BCCCP program provides free or low-cost breast and cervical cancer screenings and follow-up to eligible women in North Carolina [16]. Working with NC-BCCCP facilitated the application process for women who were eligible and needed cervical cancer screening and more comprehensive follow-up breast care, and helped increase access to and awareness of this program.

During the second year, the navigation process was enhanced because the PCBWI screening grant, which provided coordinated breast cancer screening clinics, successfully completed its funding. To continue providing seamless access to breast cancer screening, the PCBWI-E team facilitated scheduling breast cancer mammography screening appointments with eligible participants, which included mailing a breast health questionnaire, instructions for their upcoming screening, and directions to the facility. In an effort to reduce no-shows, our navigators confirmed scheduled appointments with participants 2–3 days prior via phone, and addressed any questions, concerns, or rescheduled the appointment if needed. A PCBWI-E team member met all scheduled participants at their appointments to assist with any interpretation or logistical needs. As recommended by our radiology partners, we also added a 2-week phone follow-up after the screening to ensure participant received their results and understood them, encouraged them to share results with their primary care physician, answered any questions or concerns, and facilitated access for participants that needed diagnostic follow-up.

PCBWI-E Qualitative Evaluation

A qualitative summative evaluation was conducted to assess the efficacy of our education and navigation components, and the efficacy of LBHEs. We contacted program participants via telephone and administered an adapted 10-question interview guide in year one and a 13-question interview guide in year 2 [17]. Since we enhanced our navigation process during year 2, we added 3 additional questions to evaluate the navigation provided. We conducted evaluations with year one (Spring 2016) and year two (Summer 2017) participants. Among the 139 women that were both educated and received a mammogram via PCBWI, 80 (56%) were included in the evaluations. All participants were randomly selected among this subsample from years 1 and 2 for the purpose of this evaluation.

Three attempts were made via phone with all participants to provide feedback during this evaluation. These qualitative evaluations lasted between 5 and 15 min and were conducted in both English and Spanish.

Results

Sociodemographic Characteristics

During a 2-year period, a total of 299 women were educated and assessed for breast health needs via PCBWI-E. Sociodemographic characteristics for women ($n = 225$) who were eligible for a free mammogram and agreed to be contacted for follow-up mammogram scheduling are provided in Table 2. Overall, 66% of women in this sample were Latina, followed by 23% Black, and 11% White. Most women were between 40 and 59 years of age (83%) and were uninsured (81%). Just over half of the women (51%) reported having a medical home, and of those the majority reported using a free clinic, community clinic, and/or their local health department. Among our sample, two-thirds reported ever having a mammogram (66%), and among those women, the majority reported having a mammogram every 2 years or less (70%). Among participants recommended for a mammogram, 72% received a free mammogram from PCBWI during the 2-year span (funded by both the screening and education grants). Evaluation participants shared similar sociodemographic profile (see Table 2).

Evaluation Results

In an effort to evaluate the effectiveness of the program, two qualitative evaluations were conducted with PCWBI-E participants and a summary of those results and evaluation questions are displayed in Table 3. When participants were asked what helped them decide to get screened and how PCBWI-E helped them with their decision to get screened, the majority of participants mentioned having access to a free mammogram as the main way PCBWI-E helped them. Some participants did not get screened due to lack of insurance and inability to pay out-of-pocket, despite having breast health concerns such as pain/discomfort or lumps in the breast, family history of breast cancer, and being overdue for a mammogram. Increased awareness about breast health and the importance of screening was evident in the evaluation responses. Many women referenced some of the main messages from the education sessions, which included knowing your normal (i.e., knowing what is normal for them as far as their breasts), encouraging women to consult with their doctor if something abnormal appeared, knowing the appropriate age-related screening guidelines, potential signs and symptoms for breast cancer, and knowing that breast cancer can happen at any age.

When asked about the LBHEs and navigators, many women felt that our LBHEs were an excellent resource and provided the support they needed. Many stated they felt motivated to focus on their breast health and some even stated their overall health. Among our Latina participants, having Spanish-speaking LBHEs made them feel comfortable, helped them understand the importance of breast health and screening, gave them the opportunity to be heard and ask questions, which many felt they could not do because of their language barrier. Most participants also reported an appreciation for the follow-up that the PCBWI-E team provided whether it was by confirming their appointments, being present during screenings to assist them when needed, and also for year 2 participants receiving follow-up calls regarding their screening results. These two components of PCBWI-E provided our participants with a support system that increased access to existing breast cancer screening services, and ensured a seamless transition into the breast cancer continuum of care.

Discussion

The PCBWI-E bridged the gap in access to initial breast cancer screening by increasing breast health awareness among women served and increasing access to age-appropriate breast cancer screening exams. It has long been recognized that differences in access to mammography is a potential contributing factor in the observed disparity in breast cancer mortality [5–9]. Providing evidence-based, multi-component approaches such as outreach, education, navigation, and financial assistance are critical in helping medically underserved women access breast cancer screening and needed diagnostic follow-up [2, 18–22]. This type of systematic navigation during their initial screening fills a crucial gap in services and ensures access into the breast cancer continuum of care.

Our model takes into account shared cultural backgrounds, beliefs, and experiences of participants and understands thee are important factors that impact participants' decision-making and cancer screening behaviors. In addition to the success of the lay health model in education and navigation approaches, community partnerships are also critical for successful community-based cancer screening interventions, and must involve collaborative partnerships with cancer researchers, breast health providers, breast cancer survivors, key community organizations, faith-based organizations, and community leaders. Our program also recruited women from the targeted communities of interest as LBHEs, and they provided a support network for PCBWI participants through a continuum of breast cancer care services. Using personal experiences as breast cancer survivors, faith-based leaders, and community advocates, PCBWI-E LBHEs were uniquely poised to establish trusting relationships with women in our communities, and guide them through the complicated

Table 2 Characteristics for women educated and eligible for a mammogram ($N = 225$)

	$N = 149$ (66%) Latina	$N = 52$ (23%) Black	$N = 24$ (11%) White/other	$N = 80$ Evaluation participants
Age				
40–49	99 (66%)	10 (19%)	11 (46%)	55 (69%)
50–59	36 (24%)	24 (46%)	7 (29%)	20 (25%)
60+	14 (9%)	18 (35%)	6 (25%)	5 (6%)
Race				
Black				10 (13%)
Latina				63 (79%)
White/other				7 (9%)
Health insurance				
None	133 (90%)	31 (60%)	19 (79%)	69 (86%)
Medicaid/Medicare	4 (3%)	15 (29%)	3 (13%)	4 (5%)
Private/other	11 (7%)	6 (12%)	2 (8%)	7 (9%)
Medical home				
No	74 (50%)	25 (48%)	10 (42%)	40 (50%)
Yes	73 (50%)	27 (52%)	14 (58%)	39 (49%)
Type of medical home				
Free clinic	8 (12%)	4 (15%)	3 (21%)	3 (4%)
Community clinic	42 (63%)	8 (31%)	3 (21%)	21 (26%)
Health department	11 (16%)	1 (3%)	0 (0%)	7 (9%)
Medical practice/PCP	6 (9%)	13 (50%)	8 (57%)	5 (6%)
Ever had a mammogram				
No	55 (37%)	11 (21%)	10 (42%)	31 (40%)
Yes	94 (63%)	41 (79%)	14 (58%)	49 (61%)
Frequency of mammogram				
Yearly	16 (21%)	1 (3%)	0 (0%)	4 (5%)
Every 2 years	43 (57%)	17 (47%)	3 (2%)	22 (28%)
> 2 Years	17 (23%)	17 (47%)	9 (7%)	11 (14%)
Need transportation				
No	127 (85%)	27 (52%)	19 (79%)	61 (76%)
Yes	22 (15%)	25 (48%)	5 (21%)	19 (24%)
Need Spanish interpretation				
No	1 (.07%)	50 (96%)	21 (88%)	13 (16%)
Yes	144 (99.3%)	2 (4%)	3 (12%)	65 (81%)
Received mammogram from PCBWI				
No	49 (33%)	28 (54%)	14 (58%)	
Yes	92 (62%)	21 (40%)	7 (29%)	
No show	8 (5%)	3 (6%)	3 (13%)	

process of accessing breast cancer services as an uninsured/underinsured woman in rural eastern North Carolina.

The PCBWI-E was an effective model; however, there were some limitations and continued barriers during the implementation of the program. The retention and engagement of the LBHEs during the 2-year period proved to be challenging due to competing responsibilities and unexpected health problems. Strategies used to keep LBHEs engaged included monthly team meetings and quarterly program strategic planning sessions to review current outreach efforts and program education/navigation numbers, and discuss future outreach plans for larger community impact. Compensation for LBHEs was also revamped several times throughout the 2-year program period to meet the needs for both LBHEs and program. Another limitation of this program was the continued difficulty with completing the screening process among women identified as needing a mammogram due to several barriers. Approximately 30% of women who were recommended for a mammogram did not receive one due to the following reasons: lost to follow-up due to changes in contact information; fear of getting screened for breast cancer, even after participating in educational sessions; no-shows due to

Table 3 Qualitative evaluation results for PCBWI-E (years 1 and 2)

Questions	Results ($N = 78$)	Supporting quotes
Thinking back to when you were educated on breast health, what did you enjoy or remember the most?	- Women stated that LBHEs were courteous, professional, and helpful. - Latina participants appreciated the sessions being offered in Spanish and also having interpreters throughout the navigation process. - Women remembered some of the main messages from the education sessions: know your normal, tell your doctor if you notice something not normal, cancer can happen at any age. - Year 2 participants also mentioned: age and screening guidelines, and potential signs and symptoms of breast cancer.	"I enjoyed the service. I liked knowing how to check my breast. Knowing what to look for." "Lo que más me recuerdo es de los mitos de que uno piensa y ellos nos hicieron ver lo contrario a lo que uno piensa. Por ejemple que solo familias donde alguien ha sufrido de cáncer del seno tiene que hacerse la mamografía o que solamente que uno tenga algo en los senos tiene uno que hacerse la mamografía." *[English: What I remember most is the myths that you think and they made us see the opposite of what you think. For example, only families where someone has had breast cancer has to have a mammogram or only if one has/feels something in the breast, one has to have a mammogram]*
How did our program help you get a mammogram?	- Offering participants a free mammogram was identified as the most useful service of this program, followed by having bilingual. programming, LBHEs, and the free navigation. - Women liked being contacted by PCBWI staff to schedule a free mammogram for the PCBWI screening clinics. - Year 2 participants mentioned the added navigation services such as the confirmation phone calls, meeting a PCBWI team member at their appointment, and the follow-up calls as very helpful.	"I had just had surgery to remove a lump from my breast and then I didn't have insurance anymore so I couldn't go for a follow-up. It's like you all showed up at the perfect time." "A estar informadas porque realmente yo no sabía a donde tenía que ir, como me lo podía hacer, o a los cuantos años" *[English: To be informed because honestly, I did not know where to go, how to get it done, or at what age]*
What helped you decide to get a mammogram when you did?	- Participants did not have health insurance and the screening was free through PCBWI. - Participants never had a mammogram, and the educational sessions offered by PCBWI motivated them to get one. - Some participants were concerned about their own health (due to family cancer history) and knew they were overdue for a mammogram. - Latina participants were grateful for the opportunity to get this service due to their lack of insurance and for some their undocumented status.	"Normally to make a decision like that I think about it a lot because I do not have insurance, but this was free." "Financially I couldn't afford it so it was the first one I have had in 10 years" "En primer lugar gracias porque yo dinero no tengo, por eso decidí [hacerme la mamografía] y porque tenía mucho tiempo con molestia en uno de mis senos y no tenía ni dinero ni seguro. Entonces me ayudó mucho." *[English: First thing thank you because I don't have money, that is why I decided [to get mammogram] and because for some time I had discomfort in one of my breasts and I had no money or insurance. So this helped a lot]*
What can we do to improve our services in helping other women get mammograms?	- Participants felt that we should continue community outreach. - Women stated that our services can be advertised outside clinical settings and more in the community to reach more women in need. - Year 2 Latina participants suggested diversify our outreach efforts to faith-based organizations. - Year 2 participants also mentioned using program participants to educate women and provide testimonials of their experience with PCBWI and breast cancer screening.	"Que haiga más información porque la verdad yo no sabía nada. Se necesita más información porque yo conozco a personas que ya tienen mucho más de 40 y no saben que se tienen que hacer una mamografía" *[English: [M]ore information because I did not know anything. More information is needed because I know people who are already over 40 and do not know that they need to have a mammogram]* "Más reuniones en diferentes iglesias porque también hay iglesias aquí en Greenville cristianas que también necesitan su ayuda…." *[English: More meetings in different churches because there are also Christian churches here in Greenville that need your help...]*
What was your experience like with our lay breast health educator (LBHEs)?	- Women felt that the LBHEs were caring and concerned about their health. This motivated participants to be more concerned with their own breast health. - Women felt that the LBHEs were able to provide thorough information about breast health while	"[They] made me feel that someone was concerned about my problems." "[They] let me know that someone would help me if I was concerned about my health or results." "[Fue] muy paciente" *[English: She was very patient]*

Table 3 (continued)

Questions	Results ($N = 78$)	Supporting quotes
	being patient enough to answer questions and explain the information.	
What was your experience like with our navigation process? (Year 2 participants only)	- Women stated that the PCBWI navigators were very helpful and nice. - Latina participants expressed feeling comfortable having someone bilingual attend the appointment with them and assist them throughout the entire process. - Participants appreciated our follow-up call and being helped after their appointment to assure they received their results and understood them.	"They even helped me obtain my results. I never received my results in the mail and you guys called me afterwards to assist me with that. You put an interest in the person and their results."
What can we add to our program to make it more helpful to the women we serve?	- Women stated that the program should continue to provide current information about breast health. - Participants stated that more advertisement about our services throughout the community for all women. - Many participants asked that we continue to support Latinas by providing this service in Spanish. - Some participants mentioned having a better referral process for women in their social network who they think would benefit from this service.	"The service is great and helps a lot of women." "Está bien que promuevan la mamografía como lo hacen ustedes porque muchas mujeres no entienden la importancia"*[English: It's good to keep promoting mammography as [the program does]because many women do not understand its importance[of screening]]* "Pues en la forma de transporte para las personas que no tienen modo porque a veces por eso a veces dejan de ir a sus citas" *[English: Well in the form of transport for people who have no way [of getting there] because sometimes that's why [people miss]their appointments]*

unexpected family events (i.e., health or child related); no transportation; fear of seeking care due to lack of legal documentation; lack of Spanish interpretation during appointments; and changes to insurance status. Efforts to have bilingual staff included in breast health services teams and programs is critical in serving the Latina population in ENC and must be included as an effort to mitigate existing barriers to screening. Changes in the recommended guidelines for breast cancer screenings during the 2-year program period was a challenge, and PCBWI-E decided to continue with the recommended guidelines for yearly mammograms starting at 40 years old. A major strength of this initiative was that it addressed breast cancer needs across the continuum of breast cancer care. The collaborative partnerships between the PCBWI grantees and existing breast health providers were also critical in the success of this approach. Communication was key in developing processes that meet the needs of all partners involved. This approach was a process improvement strategy that decreased structural barriers to screening and streamlined the process of accessing preventive breast cancer services.

Conclusion and Practical Implications

PCBWI-E engaged uninsured/underinsured Black and Latina women living in rural communities in eastern North Carolina and provided culturally appropriate education and navigation services to increase breast cancer awareness and access to breast cancer screening services. Through the provision of education and navigation, the multi-component evidence-based approaches used in this program increased the percentage of women who entered the breast cancer continuum of care. Specifically, using a lay health community-based model coupled with strong collaborative community partnerships assisted with streamlining the process of accessing breast care and allowed this program to serve as a cultural mediator between medically underserved communities and health care service systems in an effort to reduce structural barriers in accessing screening services and diagnostic follow-up.

Acknowledgements We would like to thank Ms. Shawna O'Rorke (program coordinator), all of our Lay Breast Health Educators, and BSPH students that helped with the successful implementation of this project. We would also like to thank our community partners Eastern Radiologists, Inc., Carolina Breast Imaging Specialists, Ms. Virginia Jackson (Oncology Social Worker at Vidant Medical Center), Oakmont Baptist Church Medical Clinic, Churches Outreach Network, North Carolina Breast and Cervical Cancer Control Program, Pitt County Health Department, and Vidant Edgecombe Hospital.

Funding Susan G. Komen Triangle to the Coast Affiliate: Education Grant (CGFR-2016-NC101-EAHE69-00009; CGFR-2015-NC101-EAHE69-00009) and Screening Grant (GFR-2015-NC101-LEOJ69-00003).

References

1. American Cancer Society (2016) Cancer facts and figures for African Americans 2016–2018. American Cancer Society, Atlanta
2. Hunt BR, Allgood KL, Kanoon JM, Benjamin MR (2017) Keys to the successful implementation of community-based outreach and navigation: lessons from a breast health navigation program. J Cancer Educ 32(1):175–182. https://doi.org/10.1007/s13187-015-0904-2
3. Detailed Tables for the National Vital Statistics Report (NVSR) (2015) Deaths: final data for 2013. http://www.cdc.gov/nchs/data/nvsr/nvsr64/nvsr64_02.pdf. Accessed 1 Aug 2017
4. American Cancer Society (2015) Cancer facts and figures for Hispanics/Latinos 2015–2017. American Cancer Society, Atlanta
5. Elk E, Landrine H (2012) Cancer disparities: causes and evidence-based solutions. Springer Publishing Company, LLC, New York
6. Menashe I, Anderson WF, Jatoi I, Rosenberg PS (2009) Underlying causes of the black-white racial disparity in breast cancer mortality: a population-based analysis. J Natl Cancer Inst 101(14):993–1000. https://doi.org/10.1093/jnci/djp176
7. Elmore JG, Armstrong K, Lehman CD, Fletcher SW (2005) Screening for breast cancer. JAMA 293(10):1245–1256. https://doi.org/10.1001/jama.293.10.1245.
8. Gwyn K, Bondy ML, Cohen DS, Lund MJ, Liff JM, Flagg EW, Brinton LA, Eley JW, Coates RJ (2004) Racial differences in diagnosis, treatment, and clinical delays in a population-based study of patients with newly diagnosed breast carcinoma. Cancer 100(8):1595–1604. https://doi.org/10.1002/cncr.20169
9. North Carolina DHHS, State Center for Health Statistics (2015) Leading causes of death in North Carolina. http://www.schs.state.nc.us/interactive/query/lcd/lcd.cfm. Accessed 9 Aug 2017
10. Lea S (2012) A cancer profile of eastern North Carolina. https://wwwecuedu/cs-dhs/chsrd/Pubs/upload/0315_Cancer_Profile_of_ENCpdf. Accessed 10 Apr 2014
11. North Carolina Public Health, State Center for Health Statistics (2017) Female breast cancer. http://wwwschsstatencus/schs/pdf/FemaleBreastCancerpdf. Accessed 1 Aug 2017
12. Susan G Komen® North Carolina Triangle to the Coast (2015) Community profile report 2015. http://komennctcorg/wp-content/uploads/2013/10/FINAL-Komen-NCTC-2015-Community-Profile-Reportpdf. Accessed 1 Aug 2017
13. Susan G Komen® North Carolina Triangle to the Coast (2011) Community profile report 2011. North Carolina: Susan G Komen® North Carolina triangle to the coast.
14. Earp JA, Eng E, O'Malley MS, Altpeter M, Rauscher G, Mayne L, Mathews HF, Lynch KS, Qaqish B (2002) Increasing use of mammography among older, rural African American women: results from a community trial. Am J Public Health 92(4):646–654. https://doi.org/10.2105/AJPH.92.4.646
15. Bellcross CA, Lemke AA, Pape LS, Tess AL, Meisner LT (2009) Evaluation of a breast/ovarian cancer genetics referral screening tool in a mammography population. Genet Med 11(11):783–789. https://doi.org/10.1097/GIM.0b013e3181b9b04a
16. North Carolina DHHS (n.d.) Breast and cervical cancer control program. http://bcccpncdhhsgov/. Accessed 1 Aug 2017
17. Torres E, Erwin DO, Trevino M, Jandorf L (2012) Understanding factors influencing Latina women's screening behavior: a qualitative approach. Health Educ Res 28(5):772–783. https://doi.org/10.1093/her/cys106
18. Freeman HP (2006) Patient navigation: a community based strategy to reduce cancer disparities. J Urban Health 83(2):139–141. https://doi.org/10.1007/s11524-006-9030-0
19. Wells KJ, Battaglia TA, Dudley DJ, Garcia R, Greene A, Calhoun E, Mandelblatt JS, Paskett ED, Raich PC (2008) Patient navigation: state of the art or is it science? Cancer 113(8):1999–2010. https://doi.org/10.1002/cncr.23815 CrossRefPubMedPubMedCentralGoogle Scholar
20. Wells KJ, Luque JS, Miladinovic B, Vargas N, Asvat Y, Roetzheim RG, Kumar A (2011) Do community health worker interventions improve rates of screening mammography in the United States? a systematic review. Cancer Epidemiol Biomark Prev 20(8):1580–1598. https://doi.org/10.1158/1055-9965.epi-11-0276
21. Jandorf L, Hecht MF, Winkel G, Thelemaque LD, Saad-Harfouche FG, Bursac Z, Greene P, Erwin DO (2014) Increasing cancer screening for Latinas: examining the impact of health messages and navigation in a cluster-randomized study. J Racial Ethn Health Disparities 1(2):85–100. https://doi.org/10.1007/s40615-014-0014-6
22. Centers for Disease Control and Prevention (2013) National Breast and Cervical Early Detection Program. http://cdc.gov/cancer/nbccedp. Accessed 10 Nov 2014