Published in final edited form as:

Patient Educ Couns. 2017 July ; 100(7): 1360–1366. doi:10.1016/j.pec.2017.02.010.

Cardiovascular Risk and Communication among Early Stage Breast Cancer Survivors

Allison H. Christian, Ed.D.^{1,2}, Denalee O'Malley, M.S.W.³, Ana Barac, M.D., Ph.D.⁴, Suzanne M. Miller, Ph.D.⁵, and Shawna V. Hudson, Ph.D.^{2,6}

¹Department of Health Education and Behavioral Science, Rutgers, The State University, School of Public Health, Piscataway, NJ

²Rutgers Cancer Institute of New Jersey, New Brunswick, NJ

³Rutgers School of Social Work, New Brunswick, NJ

⁴MedStar Heart & Vascular Institute, MedStar Washington Hospital Center, Washington, DC

⁵Fox Chase Cancer Center/Temple University Health System, Philadelphia, PA

⁶Department of Family Medicine and Community Health, Rutgers Robert Wood Johnson Medical School, Somerset, NJ

Abstract

Objective—African American (AA) women have disproportionately high rates of cardiovascular (CV) risk factors that, coupled with potentially cardiotoxic breast cancer (BC) therapies, place them at risk of adverse CV outcomes. The purpose of this study was to assess CV risk factors among white and AA BC survivors and perceptions of patient-provider CV-related communication and post-treatment information needs.

Methods—Early-stage, English-speaking BC survivors were recruited through community-based survivorship organizations/clinics in New Jersey. Qualitative, semi-structured interviews and a brief survey of socio-demographics and comorbidities were conducted.

Results—BC survivors reported high rates of CV risk factors. Most reported their health as good/excellent despite their cancer history and CV risk profile. Approximately half of overweight/obese BC survivors reported no weight-related conversation with their health care team and, among those who reported discussion, 36% indicated it was self-initiated and dismissed. More than half of BC survivors' reported a desire for lifestyle-related information and guidance.

Conclusion—BC survivors may not understand how their separate, yet cumulative, health issues can impact their CV risk.

Correspondence: Allison H. Christian, Ed.D., Assistant Professor, Department of Health Education and Behavioral Science, Rutgers School of Public Health, 112 Paterson Street, Suite 436, New Brunswick, NJ 08901, christah@sph.rutgers.edu, Phone: 848-932-0210.

Publisher's Disclaimer: This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final citable form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

Practice Implications—Patient-provider communication on behavioral risk factor modification and CV risk is needed, particularly among at-risk subgroups such as AA and obese BC survivors, to improve BC and CV outcomes.

Keywords

Breast cancer; obesity; cardiovascular; patient education; risk; communication

Introduction

Breast cancer (BC) is the most frequently diagnosed cancer among both African American (AA) and Caucasian women and is the second most common cause of cancer death among women in the United States (US) [1, 2]. Overweight and obese post-menopausal women are three times more likely to develop breast cancer during their lifetime when compared to their normal weight peers [3, 4]. In developed countries like the US up to one-third of all cancer cases have been associated with key behaviors - obesity, physical inactivity, and poor nutrition - all of which are shared risk factors for cardiovascular disease (CVD) [5]. Moreover, evidence consistently demonstrates that obese BC survivors have poorer survival outcomes [6, 7]. Improvements in early detection and innovations in cancer treatments have resulted in substantial survival gains among BC survivors; however, these survival benefits are not experienced equally by all populations [8-10]. Despite a six percent lower incidence rate for breast cancer among AA compared to Caucasian women, the mortality rates in AA women remain significantly higher [11]. Additionally, compared to women who are Caucasian and other racial/ethnic minorities, AA women have the highest rates of comorbidity (76%), like CVD and diabetes [12].

Due to shared behavioral (e.g., obesity) and/or clinical pathways (e.g. inflammation), CVD risk is an important potential health problem for BC survivors [13]. In fact, risk of cardiovascular (CV) death in cancer survivors is higher than the actual risk of cancer recurrence among older females [14, 15]. Cancer treatments can cause or exacerbate existing CV health problems including increased risk of cardiac dysfunction, heart failure, arrhythmias, valvular heart disease, accelerated atherosclerosis and pericardial disease [16]. AA women have disproportionately high rates of CV risk factors that, coupled with potentially cardiotoxic breast cancer therapies, place AA BCS at substantial risk of adverse CV outcomes [8, 17]. Despite the elevated CV risk posed and national guidelines recommending that traditional CV risk factors be assessed every 4-6 years in all people 20-79 years, reports indicate that AA BC survivors are not receiving CV risk assessment as part of routine follow-up care [18, 19]. In fact, cancer survivors are less likely to receive CV preventive care as compared to the general population [18]. Cardiovascular disease and cancer risk both increase with age and, due to demographic shifts nationally, both the elderly and minority populations are projected to increase in coming decades suggesting that the prevalence of CVD among survivors will become a more pressing concern and may be a potential lever to address disparate outcomes among BC survivors [20].

Guidelines for behavioral risk factor management have been recently developed for healthcare providers delivering follow-up care to BCS and include maintaining a healthy

weight, engaging in regular physical activity, adhering to a diet rich in fruits, vegetables and whole grains, reducing dietary fat consumption and limiting alcoholic intake [2, 21-23]. Many BC survivors have characterized the post-primary treatment experience as lacking information and preparation for follow-up and providing inadequate support to address many of their care needs [24]. Although BC survivors may be aware of the relationship between lifestyle behaviors (e.g., smoking, risking drinking, weight management) and risk of BC recurrence, adherence to behavioral risk factor guidelines aimed at reducing recurrence are suboptimal [25, 26].

Previous research has shown that 20% of cancer survivors smoke, only 37% have a weight in the 'normal range' based on body mass index (BMI) values, and only 52% exercise at a moderate-vigorous intensity three or more times per week [27]. In another study, those with a history of cancer had similar smoking and alcohol consumption behaviors as reported by those without a cancer history [28]. In a convenience sample of the Sisters Network (n=470), almost half (47%) of the AA BC survivors surveyed were found to be obese (47%) and the majority were not meeting guidelines for physical activity (53%), had hypertension (53%) and many had diabetes (21%) [29]. In a recent study, more than 90% of AA BC survivors reported that their physician did not mention diet or physical activity as ways to improve quality of life and health as a cancer survivor [30]. Further, research studies have shown that a substantial proportion of cancer survivors at risk for CVD (15–30%) do not discuss health promotion with their providers [14]; and AA BC survivors, in particular, have expressed the need for more information about co-morbid illnesses management and health promotion [31].

Evidence-based information and guidelines for follow-up care need to be provided to BC survivors especially those with increased CV risk, to improve clinical outcomes. The current study evaluates CV risk factors among AA and white BC survivors. It also aims to explore BC survivors' perceptions of patient-provider CV-related communication and BC survivors' post-treatment information needs, overall and by race.

Methods

Setting

In November 2014 – April 2015 we conducted an exploratory, qualitative research study that recruited BC survivors in New Jersey (NJ). This study was approved by the Institutional Review Board at Rutgers Biomedical and Health Sciences.

Sampling Frame—We recruited a purposive sample of ambulatory, early stage (I or II), English-speaking BC survivors. Patients who were required, because of their disease, to see primarily oncologists for follow-up were excluded (i.e., those diagnosed with lymph node or distant metastasis [stage III or IV] or those within 1-2 years of their active treatment). Participants could be on hormonal therapy. Patients received a description of the study by phone, were screened for eligibility, and, if qualified, an interview date/time was scheduled. Patients who were evaluated to be overweight or obese during telephone screening, based upon self-reported height and weight, were asked if they would complete a moderately longer interview that contained weight-specific questions. If they were not interested (n=3)

they completed the general interview. The final sample included thirty-four breast cancer survivors – 12 healthy weight and 22 overweight/obese.

Data Collection

In-depth, individual interviews were conducted. These intensive interviews with a small number of respondents are recommended as a qualitative research technique to explore perspectives on a particular idea, program, or situation. Survivors were recruited to the study through community-based survivorship organizations (Sisters Network of Central NJ, Susan G. Komen North Jersey, Young Survival Coalition, Breast Cancer Resource Center of the YWCA), local oncology (n=1) and primary care (n=1) practices, and the Rutgers Faculty and Staff online bulletin. We oversampled African-Americans by employing a purposeful sampling technique to achieve a similar number of White and AA BC survivors to allow for analysis of potential differences in their CV risk and communication. Study investigators worked with the directors of these organizations and individual clinicians at practices to identify eligible patients. At the time of the interview, each participant was asked to review and sign an informed consent form. Participants received a \$20 American Express gift card for completing the interview.

Interviews that ranged from 75 to 90 minutes were conducted in-person at Rutgers research offices by master's and doctoral-prepared interviewers with extensive qualitative interviewing experience. A semi-structured interview script was developed to elicit information about the needs and concerns of BC survivors out of active cancer treatment. Among overweight/obese BC survivors (n=22), specific domains of interest were identified by the research team (i.e., body image, risk perception, weight management, physician-patient communication regarding weight, preferences for health information) and used to guide the qualitative interview. Responses to the following questions were used in the current analyses: 1) "Has anyone on your health care team discussed weight management with you," 2) "What do you think are the most important informational needs for people who have finished cancer treatment," and 3) "What would a health and wellness program for individuals who have been treated for cancer need to have to make you want to participate in it?"

Forty-five BC survivors were screened for study inclusion; 7 in total were excluded. Reasons for exclusion included having stage 0, III or IV breast cancer (n=4) or living out of state (n=3). Two women deemed eligible opted out of participation due to schedule conflicts. Participation rate was 95%. Interviews were digitally recorded and transcribed. In addition, interviewers provided field notes for each interview.

Participant characteristics including age, gender, race/ethnicity, educational attainment, employment status and marital status were evaluated. Traditional risk factors for CVD including weight status (calculated using self-reported measures for height and weight and divided into three categories based on CDC definitions: healthy weight [18.5 – 24.9 kg/m²], overweight [25.0 – 29.9 kg/m²] and obese [30.0 kg/m²]), smoking status, and the presence of high blood pressure, high cholesterol or diabetes were evaluated for all subjects (n=34) via self-report using standardized interviewer-assisted questionnaires. Perceived physical activity level was measured using one question from the NHIS Physical Fitness Supplement:

“Would you say that you are physically more active, less active or about as active as other persons your age?” [32]. Research has suggested that self-perception of physical activity compared with peers has reasonable validity [33, 34]. Perceived (or self-rated) health was assessed utilizing one question from the SF-36: “In general, how would you rate your health?” [35, 36]. Responses ranging from excellent to poor were rated using a 5-point Likert scale. This single self-rated health question is a widely used, valid and reliable measurement of general health in epidemiologic and population health research [37, 38].

Thematic Analysis and Coding

Our qualitative analysis used a multistep immersion/crystallization approach using ATLAS.ti software [39, 40]. This approach consisted of an iterative process that included cycles of reading, summarizing, and rereading the data [39, 41, 42]. Sections of text were reviewed by a sociologist, an oncology social worker and a behavioral scientist (SVH, DOM and AC). From the first cycle of transcript reviews, a series of distinct characteristics began to emerge from the data. We began to see common sets of needs and concerns expressed by patients that suggested that constructing themes would be useful for understanding weight-related communication with their health care providers and desire for health information. Patients' were grouped together based on their level of concern about their weight and whether they had conversation with their providers. Once we were clear about the concepts, we conducted a second, more focused round of reading and summarizing the transcripts. AC and DOM then separately and independently read through the data and applied codes to segments of the transcripts. A consensus coding approach was used for coded text where there was discrepancy between coders, determination of final code assignment was achieved through discussion and group consensus; we, therefore, achieved 100% agreement in terms of inter-rater reliability for coded text segments used to construct our group summaries.

Descriptive analyses including proportions and means were utilized to examine socio-demographics and CV variables. Chi square tests were used to describe the association between CV risk factors and race/ethnicity using SAS® version 9.4.

Results

The baseline characteristics of the study population are presented in Table 1. The mean age of participants was 63 years. Self-reported race and ethnicity were 56% white and 44% African American. A little more than half of the sample (59%) were married. Across the sample, CV risk was high, (hypertension 44%, overweight 35%, obese 29%, high cholesterol 18%) except for smoking and diabetes (3% each), with almost a quarter of BC survivors interviewed citing the presence of multiple CV risk factors (Figure 1). The only significant difference between AA and white BC survivors was in hypertension (67% versus 33%, $p=0.01$), though notably AA BC survivors reported higher rates of all CV risk factors. Most BC survivors (85%) reported good to excellent health despite their cancer history and CV risk profile.

We asked survivors “Has anyone on your health care team discussed weight management with you?” and probed about whether or not these conversations were helpful. Approximately half of overweight/obese BC survivors (52%) reported no weight-related

conversation with their health care team. Among those who reported a weight management discussion, 36% indicated that it was self-initiated and described the discussion as being dismissive in nature. For example, a provider's advice was recalled, "The only risk factor you have is your age. You handled it. It's done. It's over;" (participant survivor [PS] 50) indicating that weight was not as important a focus as the cancer treatment. This issue of prioritization was reported by other survivors, with statements from providers including "We're not worrying about that right now" (PS 51). Almost half of survivors (47%) expressed a desire for more patient-physician communication about weight. One survivor noted:

"The most conversation that my doctor has had with me is to say 'well, if you could lose ten pounds it would help,' but never anything else. Never recommendations on how to do that. Never discussions about talking to a nutritionist. I'm educating myself about it because no one told me about that and I think that's a part of the conversation that was missing. I've had to navigate on my own" (PS 63).

Another stated, "I don't know where to get weight information. I'm relying on the doctors to help me as far as that's concerned" (PS 54).

There were differences in the level of concern about weight management between AA BC survivors and white BC survivors. All white, overweight/obese BC survivors (100%) were concerned about their weight; however, only half of overweight/obese AA BC survivors felt their weight needed to be addressed. From the question "Has anyone on your health care team discussed weight management with you?" it was common for white BC survivors to express disappointment with this omission from their care. For example, one white BC survivor said, "No, and that was one of the things I seriously think was lacking" (P56). Whereas, AA BC survivor responses indicated that this type of care was not an expectation services or that they had the information they need already. One AA BC survivor explained "I know what I should do" (P53) while other AA BC survivors described that "my weight is normal" (P66) and "the same as it has been for twenty years" (P64).

Among survivors who reported that their providers had discussed their weight with them, only two overweight/obese BC survivors (9%) described an interaction where providers expressed how weight was a risk factor for CV disease or cancer recurrence. Even in the few examples where these types of connections were made, these discussions were brief and non-instructional in nature: "If you can lose weight it's good because fat isn't good for cancer" (PS 60) and "My oncologist told me to see a cardiologist because my [blood] pressures were still high and he saw the weight I gained" (PS 71).

The most common informational need endorsed by all BCS was the need for information about modifiable lifestyle factors. Approximately half of BC survivors interviewed (53% AA and 56% white) desired lifestyle-related information and guidance when asked "What do you believe are the most important information needs for people who have finished their cancer treatment?" and "What would a health and wellness program, for individuals who have been treated for cancer, need to have to make you want to participate in it?" (Table 2). When describing their preferences for information, participant's desired support to manage

their weight and specific instruction related to recommended diet and exercise for BC survivors. One survivor stated:

“It would have to have a nutritional component, fitness component, health experts, small lecture type components. It would almost be good if someone said ‘Okay, you’re done now. These are the things you need to do.’ Should I exercise? Here’s an eating plan” (PS 56).

While some reported a desire for information strictly others indicated a desire for more ongoing, instrumental support to facilitate a weight loss. For example, one survivor described her needs for, “A nutritionist. A personal trainer. Somebody could give you goals and help you to be accountable. A health focus” (PS 67).

Other areas of informational need included addressing psychosocial factors (desired by 33% AA and 17% white BC survivors) and navigating follow-up care (endorsed by 20% AA and 28% white BC survivors); additional types of information which may, when communicated effectively, have the potential to improve a BC survivor's quality of life and CV- and BC-related clinical outcomes.

Discussion & Conclusion

Discussion

This study documented that more than half of BC survivors have one or more CV risk factors. Importantly, AA BC survivors in this study had a higher prevalence of CV risk factors and were significantly more likely to have high blood pressure compared with white BC survivors. Previous literature has indicated that demographic variables such as race are related to an increased risk for certain diseases such as breast cancer and CVD [9]. In a recent study that examined comorbidities among BC survivors, 44% of AA BC survivors had hypertension and 49% had a CV comorbidity [9]. Another study of AA BC survivors reported hypertension among 49% [43]. AA BC survivors in our sample had a higher prevalence of hypertension (67%); higher than that of AAs in the general population in which estimates run below 43% [10]. The prevalence of overweight/obesity in the study by Highland et al was similar to ours (67% and 64%, respectively) and were comparable to national estimates for women (64%) [9]. The increased prevalence of CV risk factors among BC survivors, particularly AA BC survivors, highlights the importance of addressing the parallel mechanisms that may impact risk of cancer and CVD.

Despite the risk imposed from their cancer history and CV risk profile, most BC survivors interviewed (85%) perceived their health as good to excellent suggesting that they may not understand how their separate, yet cumulative, health issues (breast cancer, hypertension, weight) can impact their CV risk. These data imply that systematic CV risk factor screening among BC survivors during routine, post-treatment PCP visits may assist with identification and intervention of high-risk individuals.

This study found that BC survivors, regardless of race, desire lifestyle-related support and education. These findings correspond with Royak-Schaler et al. and Smith et al. [30, 44]. In a randomized clinical trial of overweight/obese AA BC survivors, adherence to a multimodal

lifestyle intervention and rates of study completion were high suggesting that AA BC survivors may be motivated to make lifestyle changes necessary to reduce risk of recurrence and CVD [45]. Yet, African American BC survivors in this study were less likely to feel their weight needed to be discussed. These differences may be attributable to socio-cultural perspectives on weight and body image among AA women [46]. Cultural barriers related to changing dietary and exercise behaviors among AA women have been documented including the difficulty of avoiding unhealthy traditional foods, avoidance of exercise due to hair care practices and the perception that weight loss programs are costly [47-49]. A recent study of disparities in barriers to survivorship follow-up care also found that AA BC survivors were more likely to cite the following barriers compared to white survivors: 1) out-of-pocket medical costs; 2) cannot afford other costs associated with getting care; 3) worry related to doctors' visits; and 4) transportation [46]. Many of the follow-up care barriers reported could also have an impact on weight management and physical activity; issues of costs and accessibility need further exploration within this population.

The study has several limitations that should be considered. This was a small, purposive sample primarily comprised of well educated women. As such, results may not generalize to other populations and further evaluation of CV risk and communication among women with lower educational attainment is needed. CV risk factors were self-reported and preferences for receiving CV risk information were not explored and, therefore, further research is needed to determine the most valid, timely, and efficient method of assessing and communicating CV risk, particularly among samples of women from diverse ethnic groups. The small sample size was small and, therefore, adjusted statistical analyses were not conducted. Studies with larger samples are needed to allow for robust analyses to compare CV risk and communication between White and African American BC survivors and control for potential confounders such as education and age. Nevertheless, this was an exploratory analysis and findings should be considered for future analyses rather than as definitive associations.

Conclusion

A substantial proportion of BC survivors in this study had CV risk factors yet BC survivors may not understand how their separate health issues (breast cancer, hypertension, weight) impact their CV risk and their health overall. Opportunities to inform BC survivors about their risk are being missed. Specifically, weight issues are infrequently or inadequately addressed and need to be culturally tailored. Data from this pilot study may justify the development of an interventional study to change weight-related behavior and, hopefully, clinical CV and BC outcomes by providing educational materials and/or proactive follow-up recommendations to BC survivors by PCPs versus usual care.

Practice Implications

Given the higher rates of obesity and lower breast cancer survival rates among AA women, attention to reducing the risk of CVD among this group should be a priority [50, 51]. Awareness of risk is an essential step in taking action to change lifestyle to reduce risk. Tailored health messages which describe risks and address socio-cultural barriers

surrounding obesity, along with education and support, warrant future study. Further, various formats for communicating CV risk (i.e., risk calculation versus likelihood of developing, graphic versus verbal communication) may be tested in the primary care setting, especially among women of different races, to determine if providing a preferred method results in improved awareness and management of risk factors. Interventions to evaluate the impact of CV risk assessment and communication on behavioral risk factor modification are needed, particularly among at-risk subgroups such as AA and obese BC survivors, to improve clinical outcomes and quality of life among BC survivors.

Acknowledgments

We would like to acknowledge Dr. Heather S. Lee for her assistance with data collection.

Funding: Dr. Allison H. Christian (R01 CA176838-03S1), Dr. Shawna Hudson (K01 CA131500, R03 CA154063, R01 CA176838), and Dr. Suzanne M. Miller (R01 CA158019, P30 CA06927) were supported by grants from the National Cancer Institute. Denalee O'Malley was supported through a Doctoral Training Grant in Oncology Social Work (DSW 13-279-01) from the American Cancer Society. Dr. Ana Barac was supported in part by a grant from the National Institutes of Health (5KL2TR000102-04).

References

1. AICR/WCRF. Food, nutrition, physical activity, and the prevention of cancer: a global perspective. World Cancer Research Fund; London, England: 2007.
2. Kushi LH, Doyle C, McCullough M, Rock CL, Demark-Wahnefried W, Bandera EV, Gapstur S, Patel AV, Andrews K, Gansler T. American Cancer Society Guidelines on nutrition and physical activity for cancer prevention: reducing the risk of cancer with healthy food choices and physical activity. *CA Cancer J Clin.* 2012; 62(1):30–67. [PubMed: 22237782]
3. Gunter MJ, Hoover DR, Yu H, Wassertheil-Smoller S, Rohan TE, Manson JE, Li J, Ho GYF, Xue X, Anderson GL, Kaplan RC, Harris TG, Howard BV, Wylie-Rosett J, Burk RD, Strickler HD. Insulin, Insulin-Like Growth Factor-I, and Risk of Breast Cancer in Postmenopausal Women. *Journal of the National Cancer Institute.* 2009; 101(1):48–60. [PubMed: 19116382]
4. Morimoto LM, White E, Chen Z, Chlebowski RT, Hays J, Kuller L, Lopez AM, Manson J, Margolis KL, Muti PC, Stefanick ML, McTiernan A. Obesity, body size, and risk of postmenopausal breast cancer: the Women's Health Initiative (United States). *Cancer Causes & Control.* 13(8):741–751.
5. Siegel RL, Miller KD, Jemal A. Cancer statistics, 2015. *CA: a cancer journal for clinicians.* 2015; 65(1):5–29. [PubMed: 25559415]
6. Protani M, Coory M, Martin JH. Effect of obesity on survival of women with breast cancer: systematic review and meta-analysis. *Breast cancer research and treatment.* 2010; 123(3):627–635. [PubMed: 20571870]
7. Chlebowski RT, Aiello E, McTiernan A. Weight loss in breast cancer patient management. *Journal of clinical oncology.* 2002; 20(4):1128–1143. [PubMed: 11844838]
8. Mozaffarian D, Benjamin EJ, Go AS, Arnett DK, Blaha MJ, Cushman M, de Ferranti S, Després JP, Fullerton HJ, Howard VJ, Huffman MD, Judd SE, Kissela BM, Lackland DT, Lichtman JH, Lisabeth LD, Liu S, Mackey RH, Matchar DB, McGuire DK, Mohler ER, Moy CS, Muntner P, Mussolino ME, Nasir K, Neumar RW, Nichol G, Palaniappan L, Pandey DK, Reeves MJ, Rodriguez CJ, Sorlie PD, Stein J, Towfighi A, Turan TN, Virani SS, Willey JZ, Woo D, Yeh RW, Turner MB. Heart disease and stroke statistics--2015 update: a report from the American Heart Association. *Circulation.* 2015; 131(4):e29–322. [PubMed: 25520374]
9. Highland KB, Hurtado-de-Mendoza A, Stanton CA, Dash C, Sheppard VB. Risk-reduction opportunities in breast cancer survivors: capitalizing on teachable moments. *Support Care Cancer.* 2015; 23(4):933–41. [PubMed: 25239599]
10. Mozaffarian D, Benjamin EJ, Go AS, Arnett DK, Blaha MJ, Cushman M, Das SR, de Ferranti S, Després JP, Fullerton HJ, Howard VJ, Huffman MD, Isasi CR, Jiménez MC, Judd SE, Kissela BM, Lichtman JH, Lisabeth LD, Liu S, Mackey RH, Magid DJ, McGuire DK, Mohler ER, Moy CS,

Muntner P, Mussolino ME, Nasir K, Neumar RW, Nichol G, Palaniappan L, Pandey DK, Reeves MJ, Rodriguez CJ, Rosamond W, Sorlie PD, Stein J, Towfighi A, Turan TN, Virani SS, Woo D, Yeh RW, Turner MB. Executive Summary: Heart Disease and Stroke Statistics-2016 Update: A Report From the American Heart Association. *Circulation*. 2016; 133(4):447–54. [PubMed: 26811276]

11. DeSantis C, Naishadham D, Jemal A. Cancer statistics for African Americans, 2013. *CA: A Cancer Journal for Clinicians*. 2013; 63(3):151–166. [PubMed: 23386565]
12. Tammemagi C, Nerenz D, Neslund-Dudas C, Feldkamp C, Nathanson D. Comorbidity and survival disparities among black and white patients with breast cancer. *JAMA*. 2005; 294(14):1765–1772. [PubMed: 16219879]
13. Barac A, Murtagh G, Carver JR, Chen MH, Freeman AM, Herrmann J, Iliescu C, Ky B, Mayer EL, Okwuosa TM, Plana JC, Ryan TD, Rzeszut AK, Douglas PS. Cardiovascular Health of Patients With Cancer and Cancer Survivors: A Roadmap to the Next Level. *J Am Coll Cardiol*. 2015; 65(25):2739–46. [PubMed: 26112199]
14. Weaver KE, Foraker RE, Alfano CM, Rowland JH, Arora NK, Bellizzi KM, Hamilton AS, Oakley-Girvan I, Keel G, Aziz NM. Cardiovascular risk factors among long-term survivors of breast, prostate, colorectal, and gynecologic cancers: a gap in survivorship care? *J Cancer Surviv*. 2013; 7(2):253–61. [PubMed: 23417882]
15. Patnaik JL, Byers T, DiGuseppi C, Dabelea D, Denberg TD. Cardiovascular disease competes with breast cancer as the leading cause of death for older females diagnosed with breast cancer: a retrospective cohort study. *Breast Cancer Res*. 2011; 13(3):R64. [PubMed: 21689398]
16. Yeh ET. Onco-cardiology: the time has come. *Tex Heart Inst J*. 2011; 38(3):246–7. [PubMed: 21748048]
17. Singla A, Kumar G, Bardia A. Personalizing cardiovascular disease prevention among breast cancer survivors. *Curr Opin Cardiol*. 2012; 27(5):515–24. [PubMed: 22874128]
18. Sabatino SA, Coates RJ, Uhler RJ, Pollack LA, Alley LG, Zauderer LJ. Provider counseling about health behaviors among cancer survivors in the United States. *J Clin Oncol*. 2007; 25(15):2100–6. [PubMed: 17513816]
19. Goff DC, Lloyd-Jones DM, Bennett G, Coady S, D'Agostino RB, Gibbons R, Greenland P, Lackland DT, Levy D, O'Donnell CJ, Robinson JG, Schwartz JS, Shero ST, Smith SC, Sorlie P, Stone NJ, Wilson PW. 2013 ACC/AHA guideline on the assessment of cardiovascular risk: a report of the American College of Cardiology/American Heart Association Task Force on Practice Guidelines. *J Am Coll Cardiol*. 2014; 63(25 Pt B):2935–59. [PubMed: 24239921]
20. Guidry JJ, Torrence W, Herbelin S. Closing the divide: diverse populations and cancer survivorship. *Cancer*. 2005; 104(S11):2577–2583. [PubMed: 16258930]
21. Runowicz CD, Leach CR, Henry NL, Henry KS, Mackey HT, Cowens-Alvarado RL, Cannady RS, Pratt-Chapman ML, Edge SB, Jacobs LA, Hurria A, Marks LB, LaMonte SJ, Warner E, Lyman GH, Ganz PA. American Cancer Society/American Society of Clinical Oncology Breast Cancer Survivorship Care Guideline. *CA: A Cancer Journal for Clinicians*. 2016; 66(1):43–73. [PubMed: 26641959]
22. Denlinger CS, Ligibel JA, Are M, Baker KS, Demark-Wahnefried W, Dizon D, Friedman DL, Goldman M, Jones L, King A, Ku GH, Kvale E, Langbaum TS, Leonardi-Warren K, McCabe MS, Melisko M, Montoya JG, Mooney K, Morgan MA, Moslehi JJ, O'Connor T, Overholser L, Paskett ED, Peppercorn J, Raza M, Rodriguez MA, Syrjala KL, Urba SG, Wakabayashi MT, Zee P, McMillian NR, Freedman-Cass DA. Survivorship: nutrition and weight management, Version 2.2014. Clinical practice guidelines in oncology. *J Natl Compr Canc Netw*. 2014; 12(10):1396–406. [PubMed: 25313179]
23. Kroenke CH, Chen WY, Rosner B, Holmes MD. Weight, weight gain, and survival after breast cancer diagnosis. *J Clin Oncol*. 2005; 23(7):1370–8. [PubMed: 15684320]
24. Urquhart R, Folkes A, Babineau J, Grunfeld E. Views of breast and colorectal cancer survivors on their routine follow-up care. *Curr Oncol*. 2012; 19(6):294–301. [PubMed: 23300354]
25. Partridge A, Adloff K, Blood E, Dees EC, Kaelin C, Golshan M, Ligibel J, de Moor JS, Weeks J, Emmons K, Winer E. Risk perceptions and psychosocial outcomes of women with ductal carcinoma in situ: longitudinal results from a cohort study. *J Natl Cancer Inst*. 2008; 100(4):243–51. [PubMed: 18270338]

26. Blanchard CM, Courneya KS, Stein K. Cancer survivors' adherence to lifestyle behavior recommendations and associations with health-related quality of life: results from the American Cancer Society's SCS-II. *J Clin Oncol*. 2008; 26(13):2198–204. [PubMed: 18445845]
27. Findley PA, Sambamoorthi U. Preventive health services and lifestyle practices in cancer survivors: a population health investigation. *J Cancer Surviv*. 2009; 3(1):43–58. [PubMed: 19067178]
28. Bellizzi KM, Rowland JH, Jeffery DD, McNeel T. Health behaviors of cancer survivors: examining opportunities for cancer control intervention. *J Clin Oncol*. 2005; 23(34):8884–93. [PubMed: 16314649]
29. Paxton RJ, Taylor WC, Chang S, Courneya KS, Jones LA. Lifestyle behaviors of African American breast cancer survivors: a Sisters Network, Inc. study. *PloS one*. 2013; 8(4):e61854. [PubMed: 23626740]
30. Royak-Schaler R, Passmore SR, Gadalla S, Hoy MK, Zhan M, Tkaczuk K, Harper LM, Nicholson PD, Hutchison AP. Exploring patient-physician communication in breast cancer care for African American women following primary treatment. *Oncol Nurs Forum*. 2008; 35(5):836–43. [PubMed: 18765331]
31. Ashing-Giwa K, Tapp C, Brown S, Fulcher G, Smith J, Mitchell E, Santifer RH, McDowell K, Martin V, Betts-Turner B, Carter D, Rosales M, Jackson PA. Are survivorship care plans responsive to African-American breast cancer survivors?: voices of survivors and advocates. *Journal of Cancer Survivorship*. 2013; 7(3):283–291. [PubMed: 23471728]
32. N.C.f.H. Statistics. Data File Documentation, National Health Interview Survey, 2012. National Center for Health Statistics, Centers for Disease Control and Prevention; Hyattsville, Maryland: 2013. (machine readable data file and documentation)
33. P R, Caspersen C. Validity of global self-reports of physical activity in epidemiology. *CVD Epidemiology Newsletter*. 1988
34. Weiss TW, Slater CH, Green LW, Kennedy VC, Albright DL, Wun CC. The validity of single-item, self-assessment questions as measures of adult physical activity. *J Clin Epidemiol*. 1990; 43(11): 1123–9. [PubMed: 2243250]
35. K M, Ware JE, Keller SD. A 12-Item Short-Form Health Survey: construction of scales and preliminary tests of reliability and validity. *Medical Care*. 1996; 34(3):220–233. [PubMed: 8628042]
36. Ware JE, Gandek B. Overview of the SF-36 Health Survey and the International Quality of Life Assessment (IQOLA) Project. *J Clin Epidemiol*. 1998; 51(11):903–12. [PubMed: 9817107]
37. Zajacova A, Dowd JB. Reliability of self-rated health in US adults. *Am J Epidemiol*. 2011; 174(8): 977–83. [PubMed: 21890836]
38. National Health and Nutrition Examination Survey Data 2007–2008. National Center for Health Statistics, Centers for Disease Control and Prevention, US Department of Health and Human Services; Hyattsville, MD: 2010.
39. Crabtree, BF., Miller, WL. *Doing Qualitative Research*. Sage Publications; Thousand Oaks, Calif: 1999.
40. Muhr, T. *ATLAS.ti. Scientific Software Development*. Berlin: 2006.
41. Denzin, NK., Lincoln, YS. *Handbook of Qualitative Research*. Sage Publications; Thousand Oaks, Calif: 2000.
42. Miles, MB., Huberman, AM. *Qualitative Data Analysis: An Expanded Sourcebook*. Sage Publications; Thousand Oaks, Calif: 1994.
43. Ashing K, Rosales M, Lai L, Hurria A. Occurrence of comorbidities among African-American and Latina breast cancer survivors. *J Cancer Surviv*. 2014; 8(2):312–8. [PubMed: 24473830]
44. Smith SL, Singh-Carlson S, Downie L, Payeur N, Wai ES. Survivors of breast cancer: patient perspectives on survivorship care planning. *J Cancer Surviv*. 2011; 5(4):337–44. [PubMed: 21643836]
45. Sheppard VB, Hicks J, Makambi K, Hurtado-de-Mendoza A, Demark-Wahnefried W, Adams-Campbell L. The feasibility and acceptability of a diet and exercise trial in overweight and obese black breast cancer survivors: The Stepping STONE study. *Contemp Clin Trials*. 2016; 46:106–13. [PubMed: 26655430]

46. Palmer NR, Weaver KE, Hauser SP, Lawrence JA, Talton J, Case LD, Geiger AM. Disparities in barriers to follow-up care between African American and white breast cancer survivors. *Supportive Care in Cancer*. 2015; 23(11):3201–3209. [PubMed: 25821145]
47. Russell BE, Gurrola E, Ndumele CD, Landon BE, O'Malley JA, Keegan T, Ayanian JZ, Hicks LS. Perspectives of non-Hispanic Black and Latino patients in Boston's urban community health centers on their experiences with diabetes and hypertension. *Journal of general internal medicine*. 2010; 25(6):504–509. [PubMed: 20180156]
48. Hall RR, Francis S, Whitt-Glover M, Loftin-Bell K, Swett K, McMichael AJ. Hair care practices as a barrier to physical activity in African American women. *JAMA dermatology*. 2013; 149(3):310–314. [PubMed: 23682367]
49. Setse R, Grogan R, Cooper LA, Strobino D, Powe NR, Nicholson W. Weight Loss Programs for Urban-based, Postpartum African-American Women: Perceived Barriers and Preferred Components. *Maternal and Child Health Journal*. 2007; 12(1):119–127. [PubMed: 17554614]
50. Baruth M, Wilcox S, Egan BM, Dowda M, Laken M, Warren TY. Cardiovascular disease risk factor clustering among African American adults. *Ethn Dis*. 2011; 21(2):129–34. [PubMed: 21749014]
51. Ogden CL, Carroll MD, Kit BK, Flegal KM. Prevalence of childhood and adult obesity in the United States, 2011-2012. *JAMA*. 2014; 311(8):806–14. [PubMed: 24570244]

Highlights

Cardiovascular (CV) risk factors are prevalent among breast cancer survivors (BCS).

BCS may not understand how their cumulative health issues can impact their CV risk.

Weight-related communication between BCS and their health care team is suboptimal.

BCS desire lifestyle-related information and guidance.

Opportunities to inform BCS about their risk are being missed.

Figure 1. Cardiovascular Risk Factors among Breast Cancer Survivors

Table 1
Demographic Characteristics of Subjects, Overall and by Race/Ethnicity

	Overall	White	African American
	N (%)	N (%)	N (%)
N	34	19 (56%)	15 (44%)
Mean Age, years	63	56	69
Age			
35-49	5 (15%)	3 (16%)	2 (13%)
50-65	21 (62%)	13 (68%)	8 (53%)
65+	8 (23%)	3 (16%)	5 (33%)
Ethnicity			
White	19 (56%)	---	---
Black	15 (44%)	---	---
Married	20 (59%)	13 (68%)	7 (47%)
Employed full-time	18 (53%)	12 (63%)	6 (40%)
Education			
High School	5 (15%)	2 (11%)	3 (20%)
Some College	10 (29%)	7 (37%)	3 (20%)
College	11 (32%)	5 (26%)	6 (40%)
Some Graduate School	1 (3%)	1 (5%)	---
Graduate Degree	7 (21%)	5 (26%)	2 (13%)
Breast cancer stage *			
Stage I	14 (41%)	7 (37%)	7 (47%)
Stage II	18 (56%)	10 (53%)	8 (53%)
Years from treatment			
0-2 years	7 (21%)	4 (21%)	3 (20%)
2-5 years	13 (38%)	12 (63%)	1 (7%)
6-10 years	6 (18%)	3 (16%)	3 (20%)
10+ years	8 (24%)	1 (5%)	7 (47%)
CV risk factors			
High blood pressure	15 (44%)	5 (26%)	10 (67%) [†]
Overweight	12 (35%)	5 (26%)	7 (47%)
Obese	10 (29%)	4 (21%)	6 (40%)
High cholesterol	6 (18%)	2 (11%)	4 (27%)
Diabetes	1 (3%)	---	1 (7%)
Smoker	1 (3%)	1 (3%)	---
Physical Activity Level **			
Less	7(21%)	3 (16%)	4 (27%)
Same	9 (27%)	5 (26%)	4 (27%)

	Overall	White	African American
	N (%)	N (%)	N (%)
More	17 (52%)	11 (58%)	6 (40%)

Note:

* out of 32 BC survivors because stage of two subjects was unclear.

** out of 33 because one subject said “don't know.”

[†] significant difference between white and AA at $p < 0.05$.

Table 2
Informational Needs of Early Stage Breast Cancer Survivors Post-Treatment

Category	Race	
	African American (n=15)	White (n=18)*
Diet	<p>"I think we really need to deal with nutrition" (PS 06).</p> <p>"Diet, watching their diet and having annual check-ups" (PS 66).</p> <p>"Wellness. What do you do now? Have a wellness program set up – nutrition, your dieting, the possibilities of what can happen when you're on Tamoxifen or whatever other medication they say that you may have to go on" (PS 71).</p>	<p>"Teach me how to cook" (PS 07).</p>
Exercise	<p>"It needs to be fun, not mundane. A fun exercise, like Zumba. Have a line dancer come in" (PS 57).</p> <p>"A component of walking. Have a dance class. Having the time be convenient" (PS 70).</p>	<p>"Exercise classes" (PS 02).</p>
Lifestyle	<p>"Exercise, a list of what [screenings] you need, healthy cooking, social or emotional part" (PS 12).</p> <p>"It would need to be nutrition, diet, information about the particular cancer, survivor groups. We need information on wellness, exercise" (PS 53)</p> <p>"Knowing what foods to eat, knowing what's good for you. The exercise, what exercise is good. Trying to prevent stress" (PS 62).</p>	<p>"It would need to have fitness classes, nutrition classes, guest speakers, webinars. Things you can do to reduce risk of recurrence and how often you should be having what tests, blood work and imaging. Heart disease after treatment and nutrition" (PS 01).</p> <p>"Where do I go from here. Vitamins, foods, new information, be aware of your body" (PS 09).</p> <p>"The times. Educational programs, physical programs. How to take care of yourself better. How important weight it, important diet is" (PS 10).</p> <p>"Information on body image. How to cope with the changes that have occurred. I think, of course, physical activity, nutrition, lifestyle changes, coping with stress, and how to deal with well-meaning friends and family members [laughter]. It needs to be individualized" (PS 50).</p> <p>"Stress management, nutrition, physical activity" (PS 54).</p> <p>"You probably need to be reminded of those things, like weight, exercise" (PS 55).</p> <p>"It would have to have a nutritional component, fitness component, health experts, small lecture type components. It would almost be good if someone said 'Okay, you're done now. These are the things you need to do.' Should I exercise? Here's an eating plan" (PS 56).</p> <p>"A nutritionist. A personal trainer. Somebody could give you goals and help you to be accountable. A health focus" (PS 67).</p>
Psychosocial	<p>"I wish I had known prior [to being diagnosed]. I think they need some psychological help" (PS 57).</p> <p>"It's good to have someone who has actually walked the walk and is still walking. Guest speakers. Women should have an ongoing relationship with their doctor. They should follow-up, keep their appointments, and have a support group" (PS 58).</p> <p>"It varies depending on the person and what is happening in their life. We often hear 'everything will return to normal' but this is not the case for everyone. One has to adjust to the new normal" (PS 59).</p> <p>"What's next? What do you do now? What do you do for the rest of your life?" (PS 63).</p> <p>"I had more emotional needs when I was dealing with my breast surgeries and change in appearance. Those needs are more important than the physical" (PS 64).</p>	<p>"I believe support groups. Emotional support is the most important, that's my belief. Realistic diets that are not costly and are not making them feel deprived" (PS 51).</p> <p>"Emotional support, managing anxiety and fear of recurrence. The thing that I found tough was being sick and sitting on the couch not doing anything to being finished with treatment and trying to go back to life as normal" (PS 52).</p> <p>"Emotional support. 'I think the emotional part is the most important' (PS 60).</p>
Survivorship & Follow-Up Care	<p>"Information that's trustworthy. Some place that you can easily get to. Hours that were conducive for the schedule" (PS 61).</p> <p>"Probably the internet; talking to others" (PS 65).</p> <p>"They need to talk to their doctor" (PS 69).</p>	<p>"That when you finish cancer treatment you haven't really finished cancer treatment. Ways to prevent cancer. The latest research. Emotional support. It needs to be more interactive, where members can interact" (PS 08).</p> <p>"A referral site for people. [New] research. I shouldn't have to do that myself" (PS 03).</p> <p>"Chat or message boards or communication" (PS 05).</p> <p>"New information" (PS 68).</p>

Category	Race	
	African American (n=15)	White (n=18) *
		"I'm not sure because I didn't get any. Isn't that funny?" (PS 11).

Note:

* indicates n=33 because one subject did not answer the question.