Research Square

Preprints are preliminary reports that have not undergone peer review.
They should not be considered conclusive, used to inform clinical practice,
or referenced by the media as validated information.

Breast cancer and obesity: a qualitative analysis of a diverse population of breast cancer patients' perspectives on weight management

Genevieve A. Fasano
New York-Presbyterian, Weill Cornell Medicine
Solange Bayard
New York-Presbyterian, Weill Cornell Medicine
Josh Johnson
New York-Presbyterian, Weill Cornell Medicine
Ashley Gordon
New York-Presbyterian, Brooklyn Methodist Hospital
Mia Harris
New York-Presbyterian, Brooklyn Methodist Hospital
Evelyn Taiwo
New York-Presbyterian, Brooklyn Methodist Hospital
Jennifer Yeung
New York-Presbyterian, Brooklyn Methodist Hospital
Michael Zenilman
New York-Presbyterian, Brooklyn Methodist Hospital
Lisa Newman
New York-Presbyterian, Weill Cornell Medicine
Vivian J. Bea (vjb9003@med.cornell.edu)
New York-Presbyterian, Brooklyn Methodist Hospital

Research Article

Keywords: breast cancer, obesity, weight management

Posted Date: May 13th, 2022

DOI: https://doi.org/10.21203/rs.3.rs-1638326/v1

License: This work is licensed under a Creative Commons Attribution 4.0 International License.
Read Full License

Abstract

Purpose

Obesity and weight gain in breast cancer survivors leads to a greater risk of recurrence and a decreased chance of survival. A paucity of data exists regarding strengths, weaknesses, and barriers for implementing culturally sensitive, patient-centered interventions for weight management among minority communities. The objective of this study was to evaluate breast cancer patients' experience and perspectives regarding weight management in a racially diverse population.

Methods

Semi-structured qualitative interviews were conducted with breast cancer patients with a body mass index ≥ 25 kg/m^2 regarding their experience with weight management. Interviews were transcribed verbatim, and a thematic analysis was conducted.

Results

Participants (n = 17) mostly identified as non-Hispanic Black (70.6%). Nearly all participants felt comfortable being approached about weight management, yet less than half (41.2%) reported that they knew about the link between breast cancer and body weight prior to the interview. Four themes emerged: (1) lack of knowledge regarding the link between body weight and breast cancer risk, (2) barriers to weight management including family stressors, high cost, mental health issues, and chronic medical conditions, (3) previous attempts at weight loss including bariatric surgery, and (4) best practices for approaching weight management including discussion of weight management prior to survivorship.

Conclusion

There is a need for a multidisciplinary, patient-centered weight management program for minority breast cancer patients that improves awareness of the link between weight and breast cancer risk. Weight management should be introduced early on as an element of the treatment plan for breast cancer.

Introduction

In the United States, breast cancer is the second leading cause of cancer related death in women and the most common cancer among women (1). Robust data demonstrates that obesity and weight gain in breast cancer survivors leads to a greater risk of recurrence and a decreased chance of survival (2–7). In the U.S., more than 40% of adults are obese. Additionally, non-Hispanic black adults have the highest prevalence of obesity compared to other races with the highest prevalence among black women (8).

The National Comprehensive Cancer Network (NCCN) and American Society of Clinical Oncology (ASCO) have identified weight management as an important area of breast cancer survivorship management (9–10). Current recommendations for breast cancer survivors include maintaining daily physical activity, increasing intake of whole grains, fruits, vegetables, and limiting alcohol, processed food, and tobacco (9–11). However, the implementation of clinical interventions to promote sustainable weight loss is complex and requires adequate screening, counseling, and referral (12). A paucity of data exists regarding strengths, weaknesses, and barriers for implementing successful culturally sensitive, patient-centered interventions for weight management among minority communities. The objective of this study is to evaluate breast cancer patients' experience and perspectives regarding weight management in a racially diverse academic hospital on New York City.

Methods

This is a qualitative study utilizing semi-structured interviews to develop an understanding of breast cancer patients' opinions, feelings, experiences, and knowledge related to weight management. Interviews as opposed to focus groups were chosen given the sensitive nature of weight management to enable patients to speak freely about their experience. This study represents the first phase of a larger implementation project to develop a patient-centered comprehensive weight management program for breast cancer patients.

Participant sampling

Eligible participants were identified through a prospective database of all newly diagnosed breast cancer patients at the New York-Presbyterian Brooklyn Methodist Hospital (NYPBMH) breast center. Eligibility was defined as women diagnosed with in situ or non-metastatic invasive breast cancer from January 2020 to December 2021, body mass index (BMI) of 25 kg/m^2 or greater as documented in the last breast center clinic note, English speaking, and 18 years or older. All participants had completed surgery and chemotherapy and/or radiation treatment. Eligible participants were contacted by telephone and invited to participate in a virtual interview to discuss their experiences with weight management.

Data collection

Semi-structured one-on-one interviews were completed after informed consent. This study was conducted according to the guidelines within the Declaration of Helsinki and all procedures involving research study participants were approved by the NYPBMH Institutional Review Committee. The interview questions were open-ended and related to comfort discussing weight management, preference in providers, preferred words, perception of overweight and obesity, prior attempts at weight loss, barriers and obstacles to weight loss, knowledge regarding the link between body weight and breast cancer risk, optimal timing to discuss weight management, and ideal resources a weight management program should provide (Fig. 1). Individual interviews were moderated by a researcher (GF) who had no clinical relationship with the participants. All interviews were conducted from February 2022 to April 2022

utilizing a virtual platform (Zoom) and were transcribed using Descript Software (San Francisco, CA) and manually reviewed for errors. Demographic and disease-related characteristics were obtained from review of the electronic medical record. Race/ethnicity was self-reported.

Analysis

A thematic analysis was utilized to analyze the data. First, GF and JJ reviewed all transcripts line by line for accuracy and to become familiar with the data. An open coding method was utilized to generate subthemes directly from the data. Subthemes were generated based on the frequency that concepts were mentioned by participants. If a concept was mentioned more than three times, it was categorized as a subtheme. Major themes were established by combining similar subthemes. Most concepts were repeated throughout the transcripts, and no new subthemes emerged from analysis of the last three transcripts, suggesting adequate sampling and thematic saturation. Themes and subthemes were reviewed by GF, JJ, and SB for agreement. If disagreement was encountered, the transcripts were reviewed and discussed until consensus was reached. Quotations were selected from the transcripts by each reviewer (GF, JJ, and SB) to illustrate the major themes.

Results

A total of 17 women participated in this study. The median age was 58 but ranged from 43 to 75 years old. Most participants (70.6%) identified as non-Hispanic Black; 11.8%, 11.8%, and 5.9% of participants self-identified as Hispanic, non-Hispanic White, and Asian, respectively. The median BMI was 34.6 kg/m^2 and ranged from 26.6 to 51.8 kg/m^2. More than half of patients (58.9%) were privately-insured, with 41.1% insured by Medicaid and Medicare. Nearly half of participants (47.1%) were diagnosed with stage 2 disease. Most patients underwent either lumpectomy or bilateral mastectomy; 11.8% of participants had unilateral mastectomy. Over 75% of participants reported receiving adjuvant radiation, and 70.6% were taking adjuvant endocrine therapy. Nearly half of patients (47.1%) had either neoadjuvant or postoperative chemotherapy (Table 1).

Table 1
Characteristics of participants (n = 17)

Variable	N	Percentage (%)
Demographics		
Age		
40–50 years	3	17.6
51–60 years	6	35.3
61–70 years	5	29.4
71–80 years	3	17.6
Race/Ethnicity		
Asian	1	5.9
Hispanic	2	11.8
Non-Hispanic Black	12	70.6
Non-Hispanic White	2	11.8
Body Mass Index (BMI) (kg/m^2)		
25–30	6	35.3
31–40	7	41.2
> 40	4	23.5
Insurance		
Medicaid	3	17.6
Medicare	4	23.5
Private	10	58.9
Marital Status		
Divorced	1	5.9
Married	8	47.1
Single	7	41.2
Widowed	1	5.9
Treatment Characteristics		

*AJCC = American Joint Committee on Cancer

Variable	N	Percentage (%)
AJCC Stage*		
0	5	29.4
1	1	5.9
2	8	47.1
3	3	17.6
Type of Breast Surgery		
Lumpectomy	8	47.1
Unilateral mastectomy	2	11.8
Bilateral mastectomy	7	41.2
Received Adjuvant Radiation	13	76.5
Received Adjuvant Endocrine Therapy	12	70.6
Chemotherapy	8	47.1
*AJCC = American Joint Committee on Cancer		

All but one participant felt comfortable being approached about weight management, yet less than half (41.2%) of participants reported that they knew about the link between breast cancer and body weight prior to the interview.

Themes

The major themes that emerged were lack of knowledge, barriers to weight management, previous attempts at weight loss, and approach (Table 2).

Major theme: Lack of knowledge

A major theme that emerged was that breast cancer patients lack the knowledge that body weight is linked to breast cancer risk. One participant reported that “I don’t really know anything. I’ve never really heard anything, um, about that. I really, I had no idea.” Another stated, “I don’t really know anything. I accept that there is a link, but I don’t know what it is exactly.”

Other participants expressed the motivation to learn more about the topic through self-directed reading. For example, one participant stated, “I can’t give you an answer on how the weight activates or deals with the cancer and stuff like that because honestly that part I didn’t know but it gives me something to go and research about.” Another stated “I’m a little familiar because I love to read, and I knew a lot of things

about why I have the breast cancer and trying to read and see what was the reason why that happened to me beside my genetic things." Another participant commented on doing her own research, "I can't say I did a whole lot of reading, but I did reading on my own and looked up things."

Several participants also expressed their own beliefs and understanding about the link between body weight and breast cancer risk. For example, one participant stated, "I've heard rumors, I don't know how true it is that staying away from sugar, you know, when it comes to cancer, I've heard that." Another explained that "maybe the cells have a larger area to grow, or the body is sort of compromised when its obese. I have no idea really, but I feel that anything when you're not your ideal weight your body is kind of prone to attract any, like, anything and everything."

Another subtheme that emerged was the lack of education provided to patients by members of their breast cancer care team. For example, one patient expressed how shocking it was to find out about the link only after her treatment was complete: "it was only a couple of months ago…that was the first time that I knew that being overweight had a connection with cancer…It really shook me up, really, really. I almost cried it really shook me up because if I knew that before maybe I would have done something positive." Others reported not discussing weight management in the context of breast cancer risk factors at all, or if they did not in detail. For example, one participant stated, "we talked about it, but not really at length or at least I don't remember talking about it at length."

Theme: Barriers to weight management

This theme encompasses four distinct barriers to successful weight management that participants identified throughout and after their treatment.

First, some participants described that it was difficult to maintain healthy habits for themselves while managing the expectations and responsibilities of providing for their families. One patient said, "I didn't know what to do anymore to get rid of the weight because your life, your [children], home, husband… you're shopping separate for you, you're cooking separate for you, and it becomes a bigger chore." Another participant reported, "I have a big family, so different things do come into play that didn't make it the best situation. Right after my surgery, I had some family members that needed to move into my house. You know, the term was supposed to be two weeks, turned into three months and it kind of made it a little hard to stay focused on, uh, just myself."

Second, participants expressed concerns over the high cost of healthier foods. Patients reported dealing with high family grocery bills that did not allow them the ability to choose foods for the purpose of their individual dietary needs. For example, one participant, in relation to meal preparatory services stated, "…to go to the supermarket and buy what [my family] likes and then spend the money to order from those places which is costly, it may seem like $35 but it turns into a huge cost per month, right?"

Third, participants described the negative effects of mental health disorders on their weight. One participant stated, "When you get depressed you want to eat, there's a sense of like security in food but it doesn't comfort you it only puts on weight." Participants also noted that providers should be particularly

attuned to identifying patients with mental health issues and help to address them: "…you have to figure out people's mental…I know I have to lose weight, but there is some depression there," one participant says.

Fourth, some participants noted that chronic medical conditions that affected their mobility limited their ability to maintain a healthy weight. Participants described dealing with cardiopulmonary disease, endocrine disorders, and orthopedic issues that made exercising a challenge. "I still have nerve damage to my feet, the chemo exacerbated the neuropathy that I have", one participant noted. Another participant stated, "It's the mobility also because I got both knees replaced and I do have like a kind of backbone issue." While another participant said, "I have PCOS, so my weight tends to fluctuate even though I exercise and try to stay away from certain food, like carbs."

Major theme: Previous attempts at weight loss

All 17 participants expressed prior attempts at weight loss. The subtheme of good food versus bad food was apparent based on how several participants described the need to change their diet to lose weight. For example, one participant stated, "If I get in the mood, I'll throw away everything in the house that I know shouldn't be in here. Another participant noted "I don't eat too much bad food." Several other participants commented on what they should and should not eat. Another noted that even growing up, "there was good food and bad food."

Other participants reported utilizing structured weight loss programs to lose weight, such as Weight Watchers and Nutrisystem. However, these programs seemed to offer limited success at long term weight management. As one participant noted, "what I discovered with those diets is that once you get off their food, unless you're really, really, very careful about how you're eating and choosing your foods, you gain the weight back."

The use of medical and surgical weight loss also emerged as a subtheme within previous attempts at weight loss. One participant reported that she "actually took Ozempic, the shot" and "saw a weight loss management doctor." Additionally, two participants reported having had bariatric surgery years before being diagnosed with breast cancer. However, both reported that they gained the weight back, even after surgery. One participant described "I just couldn't maintain the eating regimen."

Major theme: Approach

Most participants expressed that they felt comfortable being approached regarding weight management by any member of their breast cancer team. As one participant stated, she felt comfortable talking to "everybody who would listen to me if they can help me."

Another subtheme that emerged was that participants felt that weight management should be introduced early on in their breast cancer journey as opposed to waiting until survivorship. It became apparent that while receiving a breast cancer diagnosis can be overwhelming, given the link between weight and breast cancer risk, it should be discussed sooner rather than later as part of the treatment plan. For example, one

participant noted, “I think the topic should be discussed the minute you’re diagnosed with breast cancer and all the things you have to do…in treating the cancer weight is part of it.” Another participant felt that for patients planned for chemotherapy, a conversation about weight management should happen before beginning chemotherapy. One participant felt that “there is no too early a time to discuss it.”

Discussion

This study provides a detailed analysis of breast cancer patients experience and knowledge regarding weight management within a racially diverse population. Our data found that while almost all participants felt comfortable being approached about weight management by their breast cancer team, less than half (41.2%) had prior knowledge about the link between breast cancer and body weight prior to the interview. While the need for a comprehensive weight management program is evident, this study also identified barriers to weight loss including prior attempts as well as details regarding best practices for providers to approach the topic.

These findings are consistent with population-based studies that have evaluated whether patients are aware that there is a link between breast cancer risk and being overweight or obese. A 2014 survey of women presenting for bariatric weight loss surgery found that only 48.4% of women felt that their obesity increases their risk of cancer (13). Another study of over 1500 surveys to women in Houston found that only half (54%) of respondents were aware that obesity increases the risk for breast cancer (14). Most recently in 2017, Connor and colleagues evaluated women with a diagnosis of endometrial cancer who were at least 3 months out from treatment and found that less than half of women (49.6%) correctly identified obesity as a risk factor for breast cancer. Most strikingly, only 38% reported that they had discussed weight management with their oncologist (15). Similarly, Phillips et al also found that among Black breast cancer survivors, 63% reported never discussing with their provider weight gain and its relationship to breast cancer recurrence (16). In our study, we found that participants frequently reported not only a lack of knowledge, but also that this was not discussed with their breast cancer provider. These findings underscore the need for programs to improve patient education and discussion about modifiable risk factors for breast cancer prevention and recurrence.

A common theme that emerged was that participants had previously attempted weight loss with limited success. Frequently reported were attempts to eat healthier and increase physical activity. Others reported utilizing medical weight loss therapies such as medications and two participants had previously had bariatric surgery. Most described limited success or a period of success followed by weight gain.

Importantly, our study also identified significant barriers to weight management that consisted largely of social stressors such as family life and the high cost of healthy foods. While previous work has shown that lifestyle, exercise, and nutrition-based interventions result in significant improvements in body weight for breast cancer survivors, population-based studies are mostly comprised of non-Hispanic White patients who may not experience the same risk factors for weight gain as Black women (17–19). Additionally, Black women have been found to lose less weight compared to non-Hispanic White women

and weight loss has been shown to be more challenging for Black women compared to non-Hispanic White women (20–21).

Explanations for this disparity in weight management may be due to Black women experiencing higher levels of socioeconomic deprivation creating obesogenic environments and chronic psychosocial stress (22–24). Therefore, a weight management program that is specific for this patient population is essential. A strength of our study is that the majority of our population (70.6%) identified as non-Hispanic Black; thus, findings from this study can help inform patient-centered weight management interventions for minority breast cancer patients

Another strength of our study is that it provides direct feedback from breast cancer patients regarding their preferences for being approached about weight management. Participants also described how their own experience can inform the development of patient-centered weight management programs. One of the most frequently discussed topics was that the concept should be introduced sooner rather than later within the breast cancer journey. This contrasts with major oncologic guidelines which tend to include weight management as an element of survivorship (9–11). Some of our participants explained that by introducing the link between weight and breast cancer risk early on, patients can be empowered that this is an element of their treatment that is within their control. Also, for patients planned for chemotherapy, meeting with a nutritionist early on can better equip patients to make healthier food choices during a time when their appetite is decreased.

Limitations

One of the limitations of our study is that it was comprised of participants from a single institution, limiting generalizability outside our hospital. However, by studying the population of NYPBMH, we were able to include a large proportion of minority breast cancer patients. While we did collect insurance status, we did not collect additional data regarding address, education level or employment status which would provide more information regarding deprivation. Therefore, we could not ascertain whether these findings may be limited to women of one socioeconomic group. Given the nature of recruitment, we also recognize that the results may be skewed to only reflect the experience of patients who were willing to discuss weight management.

Conclusion

Our data provide a detailed evaluation of the knowledge and experience of weight management among predominantly Black breast cancer patients at a racially diverse academic hospital in New York City. Results of this study support the need for a multidisciplinary, patient-centered weight management program for minority breast cancer patients that improves awareness of the link between weight and breast cancer risk. Additionally, our data suggest that the program should be introduced early in the breast cancer journey as opposed to waiting until survivorship.

Declarations

Funding: No funding was received to assist with the preparation of this manuscript. Dr. Bea receives funding from the American Cancer Society and Pfizer. Dr. Newman receives funding from the Susan G. Komen and Fashion Footwear Association of New York Charitable Foundation.

Competing interests: The authors have no competing interests to declare that are relevant to the content of this article.

Authors' contributions: All authors contributed to the study conception and design. Material preparation, data collection and analysis were performed by Genevieve Fasano, Josh Johnson, and Solange Bayard. The first draft of the manuscript was written by Genevieve Fasano and all authors commented on previous versions of the manuscript. All authors read and approved the final manuscript.

Ethics approval: The questionnaire and methodology for this study were performed in accordance with the 1964 Helsinki Declaration and its later amendments or comparable ethical standards. The study was approved by the New York-Presbyterian Brooklyn Methodist Hospital Institutional Review Committee.

Consent to participate: Informed consent was obtained from all individual participants included in the study.

Consent to publish: Consent for publication of the work contained in the manuscript was obtained by all authors.

References

1. DeSantis CE, Ma J, Gaudet MM, Newman LA, Miller KD, Goding Sauer A, Jemal A, Siegel RL (2019) Breast cancer statistics. CA Cancer J Clin 69:438-451. https://doi.org/10.3322/caac.21583
2. Dal Maso L, Zucchetto A, Talamini R, Serraino D, Stocco CF, Vercelli M, Falcini F, Franceschi S (2008) Prospective analysis of case-control studies on environmental factors and health (PACE) study group. Effect of obesity and other lifestyle factors on mortality in women with breast cancer. Int J Cancer 123:2188-94. https://doi.org/10.1002/ijc.23747
3. Majed B, Moreau T, Asselain B; Curie Institute Breast Cancer Group (2009) Overweight, obesity and breast cancer prognosis: optimal body size indicator cut-points. Breast Cancer Res Treat 115:193-203. https://doi.org/10.1007/s10549-008-0065-7
4. Majed B, Moreau T, Senouci K, Salmon RJ, Fourquet A, Asselain B (2008) Is obesity an independent prognosis factor in woman breast cancer? Breast Cancer Res Treat 111:329-42. https://doi.org/10.1007/s10549-007-9785-3
5. Kroenke CH, Chen WY, Rosner B, Holmes MD (2005) Weight, weight gain, and survival after breast cancer diagnosis. J Clin Oncol 23:1370-8. https://doi.org/10.1200/JCO.2005.01.079

6. Chlebowski RT, Aiello E, McTiernan A (2002) Weight loss in breast cancer patient management. J Clin Oncol 20:1128-43. https://doi.org/10.1200/JCO.2002.20.4.1128
7. Ligibel JA, Strickler HD (2013) Obesity and its impact on breast cancer: tumor incidence, recurrence, survival, and possible interventions. Am Soc Clin Oncol Educ Book 2013:52-9. https://doi.org/10.14694/EdBook_AM.2013.33.52
8. Hales CM, Carroll MD, Fryar CD, Ogden CL (2020) Prevalence of obesity and severe obesity among adults: United States, 2017-2018. NCHS Data Brief. 360:1-8
9. National Comprehensive Cancer Network (2022) NCCN Clinical Practice Guidelines in Oncology: Breast Cancer Risk Reduction. National Comprehensive Cancer Network https://www.nccn.org/professionals/physician_gls/pdf/breast_risk.pdf. Accessed 29 April 2022.
10. Ligibel JA, Basen-Engquist K, Bea JW (2019) Weight management and physical activity for breast cancer prevention and control. Am Soc Clin Oncol Educ Book 39:e22-e33. https://doi.org/10.1200/EDBK_237423
11. WCRF International (2022) Cancer prevention recommendations. https://www.wcrf.org/diet-and-cancer/cancer-prevention-recommendations/ Accessed 14 April 2022
12. Massetti GM, Dietz WH, Richardson LC (2017) Excessive weight gain, obesity, and cancer: opportunities for clinical intervention. JAMA 318:1975-1976. https://doi.org/10.1001/jama.2017.15519
13. Henretta MS, Copeland AR, Kelley SL, Hallowell PT, Modesitt SC (2014) Perceptions of obesity and cancer risk in female bariatric surgery candidates: highlighting the need for physician action for unsuspectingly obese and high risk patients. Gynecol Oncol 133:73-7..https://doi.org/10.1016/j.ygyno.2014.01.016
14. Soliman PT, Bassett RL Jr, Wilson EB, Boyd-Rogers S, Schmeler KM, Milam MR, Gershenson DM, Lu KH (2008) Limited public knowledge of obesity and endometrial cancer risk: what women know. Obstet Gynecol 112:835-42. https://doi.org/10.1097/AOG.0b013e318187d022
15. Connor EV, Raker CA, Clark MA, Stuckey AR (2017) Obesity risk awareness in women with endometrial cancer. Arch Gynecol Obstet 295:965-969. https://doi.org/10.1007/s00404-017-4301-4
16. Kiplagat K, Antoine F, Ramos R, Nahid M, Forte V, Taiwo E, Godfrey K, Butryn M, Phillips E (2021) An acceptance based lifestyle intervention in black breast cancer survivors with obesity. J Immigr Minor Health https://doi.org/10.1007/s10903-021-01261-0. Epub ahead of print.
17. Wang S, Yang T, Qiang W, Zhao Z, Shen A, Zhang F (2022) Benefits of weight loss programs for breast cancer survivors: a systematic reviews and meta-analysis of randomized controlled trials. Support Care Cancer 30:3745-3760. https://doi.org/10.1007/s00520-021-06739-z
18. Nguyen V, Chen J, Lord R, Preda V (2022) The impact of multidisciplinary weight management on body weight and body mass composition in women with breast cancer post-adjuvant chemotherapy:

a retrospective chart review. Oncology https://doi.org/10.1159/000524519. Epub ahead of print.

19. Harrigan M, Cartmel B, Loftfield E, Sanft T, Chagpar AB, Zhou Y, Playdon M, Li F, Irwin ML (2016) Randomized trial comparing telephone versus in-person weight loss counseling on body composition and circulating biomarkers in women treated for breast cancer: the Lifestyle, Exercise, and Nutrition (LEAN) Study. J Clin Oncol 34:669-76. https://doi.org/10.1200/JCO.2015.61.6375
20. Kumanyika SK, Obarzanek E, Stevens VJ, Hebert PR, Whelton PK (1991) Weight-loss experience of black and white participants in NHLBI-sponsored clinical trials. Am J Clin Nutr 53:1631S-S1638
21. Tussing-Humphreys LM, Fitzgibbon ML, Kong A, Odoms-Young A (2013) Weight loss maintenance in African American women: a systematic review of the behavioral lifestyle intervention literature. J Obes 2013:437369. https://doi.org/10.1155/2013/437369
22. James SA, Fowler-Brown A, Raghunathan TE, Van Hoewyk J (2006) Life-course socioeconomic position and obesity in African American women: the Pitt County study. Am J Public Health 96:554-60
23. Lovasi GS, Hutson MA, Guerra M, Neckerman KM (2009) Built environments and obesity in disadvantaged populations. Epidemiol Rev 31:7-20. https://doi.org/10.1093/epirev/mxp005
24. Qin B, Kim K, Goldman N, Rundle AG, Chanumolu D, Zeinomar N, Xu B, Pawlish KS, Ambrosone CB, Demissie K, Hong CC, Lovasi GS, Bandera EV (2022) Multilevel factors for adiposity change in a population-based prospective study of black breast cancer survivors. J Clin Oncol https://doi.org/0.1200/JCO.21.02973. Epub ahead of print.

Table 2

Table 2 is available in the Supplementary Files section.

Figures

- Would you feel comfortable being approached about weight management?
- From your breast cancer team, who would you feel comfortable talking about this with?
- What specific words or language should health care professionals use to make you comfortable talking about body weight? What words should they avoid?
- What do you consider overweight or obese?
- Have you attempted weight loss before? If so, how?
- If you have tried weight loss programs/treatments in the past, what were some of the challenges or obstacles you've encountered?
- What do you know about the link between body weight and cancer risk?
- When would be the best point in your breast cancer journey to start a conversation about this topic and introduce the weight management program?
- What are the ideal resources that you would need to achieve your weight loss goals?
- Is there anything else you would want in a weight management program?

Figure 1

Semi-structured interview questions

Supplementary Files

This is a list of supplementary files associated with this preprint. Click to download.

- Table2.jpg
- Table2a.jpg