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# Perceptions of Primary Care Among Breast Cancer Survivors: The Effects of Weight Status

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## Abstract

**Background:** Obese breast cancer survivors (BCSs) are impacted by diminished quality of life (QOL), multiple comorbid conditions, and poor disease outcomes. Despite national guidelines recommending a healthy weight to improve QOL and outcomes posttreatment, support and education are not routinely provided to BCSs in primary care. To fill this gap, we assessed perceptions of primary care received among BCSs by weight status.

**Methods:** Cross-sectional surveys were administered to early-stage BCSs (N = 188) from 2 New Jersey cancer centers between May 2012 and July 2013. Sociodemographics, medical history, functional health status, perceived satisfaction with one's primary care provider (PCP), and PCP involvement in follow-up care were assessed.

**Results:** In total, 82% of overweight BCSs and 30% of obese BCSs reported not being told by their doctor that they were overweight or obese, despite these conditions being highly prevalent (35% and 35%, respectively). Obese BCSs were more likely than healthy weight BCSs to be African American, have a higher comorbidity score, poorer functional health, and greater satisfaction with their PCPs.

**Conclusion:** The PCP-patient encounter may represent an opportunity for PCPs to correct misperceptions and promote weight reduction efforts among BCSs, thus improving QOL and disease outcomes.

## Keywords

breast cancer survivors, obesity, primary care, perceptions of care

## Introduction

Breast cancer is the most common invasive cancer among women in developed countries and is the second most common cause of cancer death among women in the United States.<sup>1,2</sup> The high incidence of breast cancer coupled with diagnostic and treatment advances have led to over 2.7 million breast cancer survivors (BCSs) in the United States.<sup>3</sup> Approximately 90% of BCSs are alive 5 years postdiagnosis.<sup>3</sup> Survivors are at increased risk of recurrence, secondary cancers, late effects of treatments, and comorbid conditions which may have a significant impact on their physical health, quality of life (QOL), and long-term outcomes.<sup>4</sup>

Obesity is a major risk factor for breast cancer recurrence and morbidity in both pre- and postmenopausal women.<sup>5-9</sup> Obese women diagnosed with breast cancer are 35% more likely than normal weight women to die of their cancer and

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41% more likely to die of any cause.<sup>10</sup> Approximately 70% of women are overweight at the time of their breast cancer diagnosis, and additional weight gain often results from the standard treatment regimens.<sup>11</sup> The link between obesity and cancer is so significant that the National Comprehensive Cancer Network survivorship guidelines recommended an active lifestyle and an ideal body weight (body mass index [BMI] 20-25 kg/m<sup>2</sup>) for optimal health and the American Cancer Society cites maintaining a healthy weight throughout the life as a key recommendation for the prevention of cancer.<sup>2,12</sup>

Posttreatment survivorship management that includes both follow-up care and health promotion is essential for BCSs.<sup>13</sup> With over 14 million cancer survivors in the United States today, projected to grow to more than 18 million by 2022, primary care providers (PCPs) play an instrumental role across the continuum of cancer care, from screening to treatment to survivorship.<sup>14</sup> Indeed, the existing literature shows that survivors are more likely to receive care from their PCPs than other providers.<sup>15</sup> In recognition of the importance of PCPs in the continuum of cancer care, the American Society of Clinical Oncology published guidelines recommending that PCPs take greater responsibility for survivorship care.<sup>16</sup> Long-term, comprehensive survivorship care should include ongoing discussions about care planning, coping skills, and preventive health behavior to manage long-term risks associated with being a cancer survivor.<sup>17</sup> Yet, research have consistently shown that BCSs have a number of unmet needs and feel that PCPs do not adequately address their concerns related to weight gain and body image.<sup>17-21</sup> Little is known about how weight status impacts BCS' perceptions of care delivered by PCPs. Therefore, we conducted this study among a cohort of BCSs to examine satisfaction with care delivered by PCPs and their involvement in follow-up care, by weight status. The purpose of this study was to determine whether there is a potential to leverage opportunities in the primary care setting to identify obese BCSs and provide referral or intervention for weight management.

## Materials and Methods

### Study Participants

This is a secondary analysis of data collected from a cross-sectional survey of 325 early-stage (I or II) breast and prostate cancer survivors.<sup>22</sup> A total of 213 early-stage (I or II), English-speaking BCSs were recruited from May 2012 to June 2013 from 2 cancer centers (1 academic and 1 community) that were part of the Rutgers Cancer Institute of New Jersey's Network of affiliated hospitals. Of the 213 participants, 25 in total were excluded because sample sizes were too small to meaningfully compare other groups in the models. Reasons for exclusion included being less than 2 years postactive cancer treatment (excluding hormonal maintenance therapies) at the point of recruitment (n = 9), being underweight (n = 4), and not racially identifying as either African American/black or

caucasian/white (n = 12). A total of 188 cases were included in the analysis.

The Institutional Review Board of the Rutgers Robert Wood Johnson Medical School approved this study, and written informed consent was received from all participants. Patients were approached about the study at the time of a follow-up visit or through identification from an on-site patient registry. Patients received a survey, consent form, and a letter from the study principal investigator that described the study. Reminders were sent at 2 weeks and 1 month. Those who did not return completed surveys were considered refusals. Response rates for the sites ranged from 20% to 85% with an average of 60%. Sites that used registries only reported lower response rates (20% and 61%) in contrast with the other recruitment method (77% and 85%). The written survey took approximately 15 minutes to complete.

### Measures

The survey ascertained sociodemographic characteristics, medical history, perceived health status, patient satisfaction with primary care, and PCP involvement in follow-up care. The Cognitive-Social Health Information Processing model was used to guide the development of the survey instrument and evaluate how cognitive-affective, patient support, and demographic factors affect how survivors use PCPs for follow-up care.<sup>23,24</sup>

#### Main independent variable

**Body mass index Status.** BMI was calculated using self-reported measures for height and weight. BMI was divided into 3 categories based on definitions provided by the Centers for Disease Control and Prevention (CDC): healthy weight (18.5-24.9 kg/m<sup>2</sup>), overweight (25.0-29.9 kg/m<sup>2</sup>), and obese ( $\geq 30.0$  kg/m<sup>2</sup>).<sup>25</sup>

#### Outcome variables

**Patient satisfaction with medical care.** The Patient Satisfaction Questionnaire Short-Form (PSQ-18) was utilized to assess 7 aspects of satisfaction with care from their PCPs with no reference to a specific time frame or visit.<sup>26</sup> Additionally, to assess satisfaction with PCP-based follow-up care, items from the Follow-Up Care Use among Survivors (FOCUS) survey were used.<sup>27-29</sup>

**Patient perception of care Processes.** The Components of Primary Care Instrument assessed BCS' perceptions of their receipt of patient-centered medical home (PCMH) constructs of comprehensive care, coordination of care, and personal relationship over time.<sup>30-32</sup>

#### Patient characteristics

**Sociodemographics.** Sociodemographic items included age, gender, race/ethnicity (white vs black and/or African American), educational attainment (high school, some college, 4-year college, or masters/graduate school), employment status (full-

time, part-time, not employed, and retired), and marital status (married/living with partner vs not married).

**Medical history.** Participants reported whether they had been told by a doctor or health professional that they had any of a number of health conditions. Disease burden and comorbidities were measured by the Charlson Comorbidity Index and supplemented with a list of additional late and long-term effects commonly experienced by long-term cancer survivors (eg, high blood pressure and depressive disorders).<sup>33</sup> Length of time since treatment was assessed in the following phases posttreatment: 2 to 5, 6 to 10, or 10+ years. Type of treatment site (academic vs community) was also noted.

**Perceived health status.** The Medical Outcomes Study Short Form-12 (SF-12) Health Survey with standard (4 weeks) recall was utilized to measure perceived functional health status and health-related QOL (HRQOL).<sup>34,35</sup> Two summary scores, physical component summary (PCS) score and mental component summary score, were constructed.

### Statistical Analysis

Means and standard deviations (SDs) or frequencies were used to summarize survivor demographics, functional health status, and perceptions of care. Percentages summarized the level of satisfaction (with care and PCP involvement in follow-up care) among those who were healthy weight versus overweight or obese. Logistic regression analyses assessed the association of BMI status with patient satisfaction with primary care and with PCPs involvement in follow-up care. Backward stepwise selection identified control variables (ie, race and comorbidity) that had statistically significant effects on the outcome variables. Confirmatory analyses estimated the association of BMI status with the outcome, controlling for race and comorbidity. Statistical significance was assessed at an  $\alpha$  of .05. The analysis was carried out in SAS version 9.3.

### Results

Table 1 presents the demographic characteristics of the participants, overall and by weight status. Most participants were white, married, had some college or higher education, retired or unemployed, from an academic site, and 2 to 5 years posttreatment, and the average age of our sample was 61 years (SD = 10.5). This study included a high prevalence of overweight (35%) and obese (35%) female BCSs. Yet, 82% of overweight BCSs and 30% of obese BCSs reported never being told by a doctor or health professional that they were overweight or obese. The average Charlson Comorbidity Index score was 2.30 (SD = 1.7), and 18% of the sample reported that a doctor told her she had depressive disorder (including depression, major depression, dysthymia, or minor depression). Significantly more obese than healthy weight BCSs had been told by a doctor or health professional that they had high blood pressure (56% vs 25%,  $P = .0007$ ), diabetes (24% vs 2%,  $P = .006$ ), and osteoporosis (25% vs 5%,  $P = .004$ ).

Physical functioning as measured by the mean SF-12 PCS scale was 48.4, and the mean for mental functioning was 51.2. Functional health and well-being among BCSs by BMI status is presented in Table 2. In univariate analyses, obese BCSs were more likely than healthy weight BCSs to have a lower physical and mental component score. However, this association became nonsignificant after controlling for race and comorbidity.

Overall, BCSs had generally high levels of satisfaction with their PCPs (Table 3). Satisfaction did not vary by BMI status with the exception of the accessibility and convenience subscale, with obese BCSs reporting a higher mean score than healthy weight BCSs. Supplemental data from the FOCUS survey demonstrated similarly high levels of satisfaction among all BCSs, with no difference in BMI status (data not shown). Of 9 FOCUS questions, 7 received a response of 85% and above.

Figure 1 displays the PCMH mean satisfaction scores with  $P$  values from the corresponding logistic regression models, adjusting for race and comorbidity. Obese BCSs were significantly more likely to report satisfaction with PCPs in regard to comprehensive care ( $P = .02$ ), coordination of care ( $P = .002$ ), and personal relationship ( $P = .04$ ) than healthy weight BCSs. An individual item in this instrument worth highlighting is the question "This doctor (PCP) knows whether or not I exercise, eat right, smoke or drink alcohol." Obese BCSs were significantly more likely than healthy weight BCSs (98% vs 89%,  $P = .04$ ) to agree with the statement, after adjusting for race and comorbidity.

### Discussion

The growing number of cancer survivors in the United States requires timely and active engagement by PCPs in cancer survivorship care and follow-up cancer coordination. In the United States, most early-stage BCSs receive cancer follow-up care from PCPs.<sup>36,37</sup> The PCP-centered follow-up has been shown to be equivalent or superior to oncologist-centered follow-up in terms of recommended preventive care and outcomes among BCSs.<sup>38-40</sup> Primary care visits may provide PCPs with opportunities to identify, educate, and intervene with obese BCSs who are at increased risk of poor clinical, functional, and psychosocial outcomes by focusing on the whole patient and providing guidance on risk-reducing behavioral modifications. This study aimed to examine BCS perceptions of primary care, by BMI status, to determine BCS satisfaction with their PCPs and potential receptivity to education and counseling offered during a primary care encounter.

In this study, BCSs reported high levels of satisfaction with PCP-provided care and, overall, satisfaction did not vary by weight status. Further, obese BCSs had enhanced perceptions of comprehensive care, coordination of care, and personal relationship with/from their PCPs than healthy weight BCSs. Our data build on previous research which has demonstrated that BCSs express higher satisfaction with follow-up and higher quality of noncancer-related health care from PCPs than follow-up by specialists.<sup>37,41,42</sup> Of particular note, obese BCSs

**Table 1.** Characteristics of Study Population: Overall and by Weight Status.

Variable	Categories	Healthy Weight (n = 56)			Obese (n = 66)	P Value, Healthy vs Overweight	P Value, Healthy vs Obese	P Value, Overweight vs Obese	P Value, Healthy vs Overweight vs Obese
		Overall (n = 188)	Mean (SD) or n (%)	Overweight (n = 66)					
Age		61 (10.5)	59 (10.0)	65 (10.0)	.008	.43	.007	<.0001	
Married		129 (67%)	39 (70%)	46 (70%)	.045	.75	.045	.05	
Education		48 (26%)	14 (25%)	17 (26%)	.61	.27	.16	.30	
	High school	63 (33%)	15 (27%)	20 (31%)					
	Some college	37 (19%)	13 (23%)	9 (14%)					
	4-Year degree	42 (22%)	14 (25%)	19 (29%)					
	Masters/graduate school	164 (86%)	53 (95%)	59 (89%)	.30	.006	.03	.003	
Race <sup>a</sup>	White	28 (14%)	3 (5%)	7 (11%)					
	African American/black	68 (36%)	24 (43%)	20 (30%)	.04	.38	.65	.19	
Employment status	Full time	23 (12%)	10 (18%)	5 (8%)					
	Part time	28 (15%)	4 (7%)	14 (21%)					
	Not employed	73 (37%)	18 (32%)	27 (41%)					
	Retired	154 (81%)	48 (86%)	49 (74%)	.12	.72	.20	.23	
Treatment site	Academic	38 (19%)	8 (14%)	17 (26%)					
	Community	103 (54%)	32 (57%)	31 (48%)	.03	.93	.04	.02	
Years since cancer treatment	Early (2-5 years)	60 (32%)	20 (36%)	16 (25%)					
	Mid (6-10 years)	27 (14%)	4 (7%)	17 (27%)					
	Long (10+ years)	2.30 (1.70)	1.79 (1.29)	2.45 (1.80)	.03	.009	.64	.009	
Charlson comorbidity <sup>a</sup>		58 (31%)	0 (0%)	12 (18%)	.97	.93	<.0001	<.0001	
Obesity <sup>b</sup>		77 (41%)	14 (25%)	26 (39%)	.09	.0007	.056	.002	
High blood pressure <sup>a,b</sup>		23 (12%)	1 (2%)	6 (9%)	.06	.006	.08	.001	
Diabetes <sup>a,b</sup>		16 (9%)	1 (2%)	9 (14%)	.04	.12	.41	.06	
Prescribed blood thinners <sup>b</sup>		36 (19%)	14 (25%)	19 (29%)	.64	.004	.001	.0008	
Osteoporosis <sup>a,b</sup>		34 (18%)	10 (18%)	10 (15%)	.69	.64	.37	.66	
Depressive disorder <sup>b</sup>									

Abbreviations: BCSs, breast cancer survivors.

<sup>a</sup> Significant difference at  $P < .05$  between healthy versus obese BCSs.<sup>b</sup> Patient reported that a doctor or health professional told her that she had this.

**Table 2.** Functional Health and Well-Being Among Breast Cancer Survivors by BMI Status.

SF-12	Mean (SD)	Unadjusted Odds Ratio (95% CI)	Adjusted Odds Ratio (95% CI) <sup>a</sup>
Physical component score			
Overall	48.01 (10.56)		
Healthy Weight	51.34 (9.30)	1.00	1.00
Overweight	47.84 (10.37)	0.96 (0.93-1.00)	0.98 (0.94-1.02)
Obese	45.36 (11.11)	0.94 (0.91-0.98) <sup>b</sup>	0.96 (0.92-1.00)
Mental component score			
Overall	51.28 (9.58)		
Healthy Weight	53.12 (8.11)	1.00	1.00
Overweight	51.73 (9.11)	0.98 (0.94-1.02)	0.99 (0.94-1.03)
Obese	49.27 (10.86)	0.96 (0.92-1.00) <sup>b</sup>	0.97 (0.93-1.01)

Abbreviations: BMI, body mass index; CI, confidence interval; SD, standard deviation; BCSs, breast cancer survivors; SF, Short Form-12.

<sup>a</sup> Adjusted for race and comorbidity, reference category is healthy weight.

<sup>b</sup> Significant difference at  $P < .05$  between healthy weight and obese BCSs.

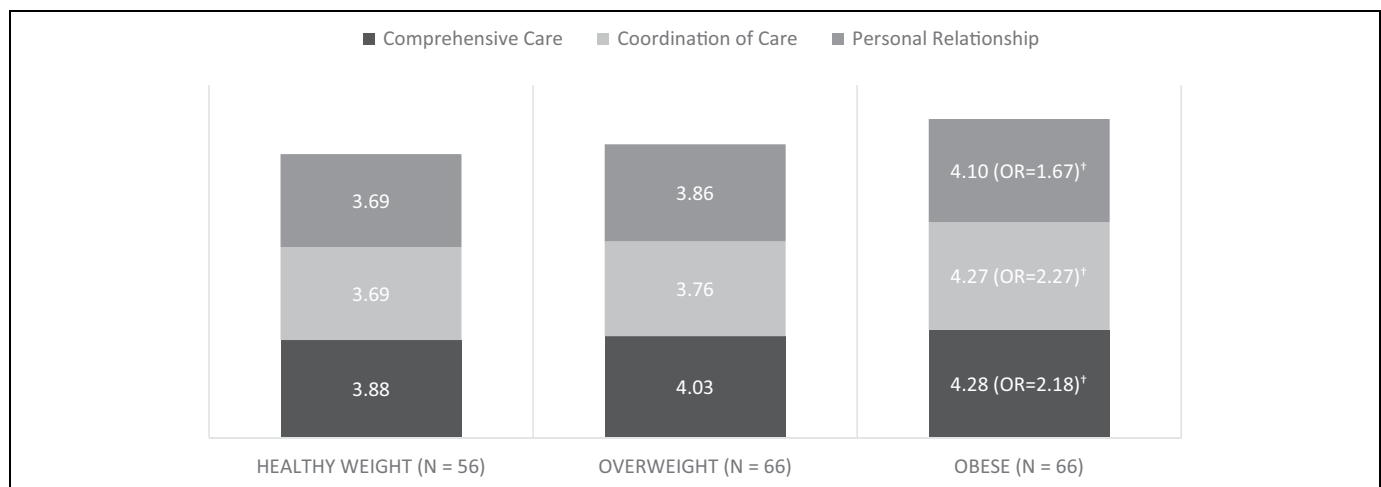
**Table 3.** Breast Cancer Survivors' Satisfaction With Primary Care by BMI Status.

	Overall	Healthy Weight	Overweight	Obese	Adjusted Odds ratio for Obese P Value, OR (95% CI) <sup>a</sup>
		(n = 56)	(n = 66)	(n = 66)	
		Mean (SD)			
PSQ-18 subscales					
Overall score	3.92 (0.52)	3.86 (0.53)	3.90 (0.50)	4.00 (0.53)	.10, 0.54 (0.26-1.13)
General satisfaction (items 3 and 17)	3.94 (0.96)	3.80 (0.96)	3.95 (0.98)	4.05 (0.94)	.17, 0.76 (0.50-1.13)
Technical quality (items 2, 4, 6, and 14)	3.63 (0.49)	3.55 (0.47)	3.62 (0.55)	3.71 (0.45)	.11, 0.49 (0.20-1.18)
Interpersonal manner (items 10 and 11)	4.31 (0.71)	4.34 (0.58)	4.23 (0.79)	4.35 (0.73)	.70, 0.89 (0.50-1.60)
Communication (items 1 and 13)	4.14 (0.72)	4.05 (0.65)	4.10 (0.69)	4.28 (0.78)	.08, 0.62 (0.36-1.07)
Financial aspects (items 5 and 7)	3.91 (0.90)	3.84 (0.90)	4.01 (0.73)	3.88 (1.04)	.76, 0.94 (0.63-1.40)
Time spent with doctor (items 12 and 15)	3.92 (0.93)	3.93 (0.94)	3.79 (0.87)	4.03 (0.97)	.42, 0.84 (0.56-1.28)
Accessibility and convenience (items 8, 9, 16, and 18)	3.88 (0.72)	3.73 (0.76)	3.90 (0.69)	3.98 (0.71)	.02, <sup>b</sup> 0.52 (0.29-0.91)

Abbreviations: BMI, body mass index; CI, confidence interval; SD, standard deviation; BCSs, breast cancer survivors; OR, odds ratio; PSQ, Patient Satisfaction Questionnaire Short-Form.

<sup>a</sup> Adjusted for race and comorbidity, reference category is healthy BMI.

<sup>b</sup> Significant difference at  $P < .05$  between healthy weight and obese BCSs.



**Figure 1.** Satisfaction\* with primary care clinician by body mass index (BMI) status. \* indicates mean scores from the PCMH Survey; †, significant difference at  $P < .05$  between healthy weight and obese BCSs in a multivariate model adjusted for race and comorbidity.

in our study were more likely than healthy weight BCSs to agree that their PCPs know whether they exercise, eat right, smoke, or drink alcohol. These data suggest that although PCPs may ask about major behavioral risk factors, it is unclear whether this line of inquiry is coupled with counseling obese BCSs about weight. In fact, our results suggest that most overweight (82%) and obese (30%) BCSs are not informed of their BMI status by their PCPs. Previous research has demonstrated that there is a high prevalence (65%) of unmet information needs related to health promotion among cancer survivors and nearly a third of survivors do not report health promotion discussions with their medical teams.<sup>28,29</sup> Thus, opportunities exist in the primary care setting to offer behavioral risk factor counseling to BCS, particularly to those who are obese, in an effort to reduce risk of recurrence and poor clinical outcomes.

Existing literature has shown that excess weight and a higher number of comorbid conditions have been associated with poor functional ability, increased symptoms, declining overall general health, and QOL among cancer survivors.<sup>43-47</sup> Among BCSs, high BMI has been associated with lower physical aspects of HRQOL and postdiagnosis weight gain has been associated with poorer HRQOL.<sup>48</sup> Our data are consistent with these findings, showing that obese BCSs were more likely than healthy weight BCS to have diminished functional health (physical and mental) and a significant association between comorbid illnesses and BMI status. Prior studies have indicated a positive correlation between comorbid conditions and utilization of PCP services suggesting that obese BCSs with multiple comorbid conditions may be more avid consumers of primary care services.<sup>46</sup> Thus, PCP visits may represent a teachable moment for PCPs to communicate and intervene with BCS, particularly those who are obese, not engaging in protective health behaviors (ie, physical activity), and who are dealing with competing illnesses in the face of late effects of cancer therapies.

This study has 4 limitations that should be considered in interpreting the findings. First, this is a cross-sectional design using a subsample of cancer survivors with a wide range in length of survivorship, and it is likely that perceptions of care may change over time. However, years out from treatment did not vary between obese and healthy weight BCSs. Second, due to small sample sizes of minority groups, this substudy was limited to comparisons between white/caucasian and African American/black cancer survivors; thus, studies of more racially diverse populations of survivors are needed. Third, the study relied on self-report and is not a direct measure of the quality of care provided by PCPs. Nonetheless, patients' perceptions are important indicators of health care delivery. Self-reported height and weight were also used, yet self-reported height and weight data have been found to be valid for identifying relationships in epidemiological studies.<sup>49</sup> Fourth, our study did not evaluate quantity or quality of PCP visits, a direct measure of obesity management or the perspective of patients about information preferences, especially those related to weight management. Despite the limitations, to our knowledge, this is the first study to quantify the perceptions of BCSs regarding

PCP-related care by weight status. In future work, there is a need to explore informational needs and preferences surrounding weight in this population and to identify the concerns specific to obese BCSs to inform the development of targeted BCS educational materials.

## Conclusion

Obese BCSs represent a population at increased risk of diminished functional status, multiple comorbidities, and poor clinical outcomes resulting from their cancer diagnosis and treatments as well as from their excess weight. National guidelines recommend cancer survivors maintain a healthy body weight to improve QOL and reduce the risk of recurrent and new cancer. The PCPs play an integral role in providing comprehensive survivorship care to BCSs, particularly to those who are obese or struggling with multiple comorbid conditions. Activating PCPs to provide support and education to increase patient adherence to cancer survivorship guidelines, particularly those related to weight management, may result in improved health outcomes, specifically QOL, and result in longer overall survival for BCSs.

## Declaration of Conflicting Interests

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