Correlations between weight gain and physical health among African American breast cancer survivors

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ABSTRACT

Purpose—Weight gain after diagnosis is common among women with breast cancer and may affect physical functioning and recurrence; yet few studies have addressed this problem among African American breast cancer survivors. The purpose of our study was to examine associations between weight gain and physical functioning in a population with disparities in overweight/obesity, health-related quality of life (HR-QoL), and breast cancer recurrence.

Procedures—The effects of weight gain were examined in a cohort of 235 African-American women diagnosed with breast cancer. Participants completed a 45-minute assessment that recorded weight and breast cancer history, physical health, and general well being. Chi-Square analysis was used to assess the association between weight gain and HR-QoL. Multivariate analyses were used to determine the effects of demographic variables on weight gain after breast cancer diagnosis.

Results—More than half of those in the study sample (n=124) gained weight (≥10 pounds) after breast cancer diagnosis. Predictors for weight gain included: 1) breast cancer recurrence-74% (p=0.0453); 2) annual income- from $25,000 to $49,999- 54% (p=0.0369); and 3) high school graduate-52% (0.0369).

Conclusions—These results show that, after breast cancer diagnosis, some groups of African American women tend to gain weight. Such changes may affect their prognosis.

RESEARCH SUPPORT

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INTRODUCTION

In the United States, breast cancer survivors (BCS) account for 41% of the total cancer survivors. This population presents with problems that relate to the management of their condition. Weight gain after diagnosis, which is common among women with breast cancer, may affect physical functioning and recurrence.

Higher body mass index and body weight (overweight or obesity) are risk factors for recurrent disease and decreased survival. Possible mechanisms for weight gain include fatigue and reduced physical activity, reductions in lean body mass and resting energy expenditure, and increased ingestion of food as a means to cope or because of treatment-related increases in appetite. In adipose tissues of obese women, there may be enhanced conversion of androgens to estrogens. Other mechanisms through which obesity may influence survival include decreased levels of sex hormone-binding globulin, increased insulin and insulin-like growth factors (IGF-1and IGFBP-3), and alterations in cytokines (leptin, adiponectin, IL-6, TNF-α, and IL-1β).

For BCS, there is now considerable interest in their HR-QoL, which is a multidimensional population health outcome that supplements more traditional measures of mortality and morbidity and is useful in providing broad summary measures of perceived health. HR-QoL constructs include measures of overall health, physical health, mental health, and social functioning.

BCS groups are heterogeneous in terms of their demographic profile (e.g., age, race/ethnicity, level of education, and socioeconomic status), behavioral profile (e.g., smoking status, alcohol consumption, and obesity), disease pathophysiology, treatment protocols, symptoms, and side effects. Consequently, the wisdom of summarizing the findings of HR-QoL studies across such disparate groups is questionable. Few studies have addressed the problem of weight gain among African American breast cancer survivors and the correlation between weight gain and physical health in this population. The focus of the present study was to examine associations between weight gain and physical functioning in a population with disparities in overweight/obesity, health-related quality of life (HR-QoL), and breast cancer recurrence.

METHODS

Participants/Data Source—African-American women (235) were recruited from SISTAAH Talk, a breast cancer support group in Miami, Florida. A Lifestyle Assessment Tool (LAT) that included scales related to dietary intake/physical activity, weight loss history, HR-QoL, and cancer risk was administered to study participants. LAT scales were derived from: 1) the Behavioral Risk Factor Surveillance System (BRFSS) physical activity questionnaire; 2) the National Health and Nutrition Examination Survey (NHANES) weight history questionnaire; and 3) the National Health Interview Survey (NHIS) Cancer Control Supplement Questionnaire. Additional factors assessed were demographics, breast cancer diagnosis and treatment history, HR-QoL, weight history, physical activity, and dietary intake. There were three modes of administration: self-administered online or from a mailed copy or facilitator-administered through a telephone interview. The Institutional Review Board at Morehouse School of Medicine approved the study protocol; participants received information on the study and consented to participation.

Measures—*Socio-Demographic variables* assessed included self-reported age (18-34 years, 35-54 years, and 55 years and older); education (less than high school diploma, high school graduate, or some college); income ($0-$24,00, $25,000-$49,999, or $50,000+), and marital status (single, currently married, or separated/widowed/divorced). *HR-QoL* was assessed using the Patient-Reported Outcomes Measurement Information System (PROMIS) Global 10-item Health Scale of HR-QoL domains, including physical and mental health. This study focused on physical health variables coded into two categories as Good HR-QoL: (Excellent-Good) and Poor HR-QoL: (Fair-Poor).

Analytic Plan—SAS version 9.2 was used to analyze all data. Sample characteristics for those who did not gain weight, gained weight, or lost weight after breast cancer treatment were obtained. Chi-square analysis or Fisher's Exact tests were performed to examine differences between the groups according to demographic and clinical characteristics (age, income, education, marital status, and breast cancer recurrence) and also differences for each group by HR-QoL status. P-values were determined for each outcome and were deemed significant if the values were <0.05. A multivariate analysis was conducted modeling those who gained weight after breast cancer treatment by each demographic variable and each HR-QoL variable.

RESULTS

Table 1.
Demographics by Weight Status After Breast Cancer (BC) Treatment

Demographics Table (n=235)	Did not Gain Weight After BC Treatment (n=16)	Gained Weight after BC Treatment (n=124)	Lost Weight after BC Treatment (n=95)	p-value*
Age				0.8089
18-34	3 (19%)	32 (26%)	19 (21%)	
35-54	12 (75%)	87 (70%)	73 (76%)	
55+	1 (6%)	5 (4%)	3 (3%)	
Income				**0.0127**
$0-$24,000	9 (60%)	33 (27%)	25 (27%)	
$25,000-$49,999	2 (7%)	68 (54%)	52 (54%)	
$50,000+	5 (33%)	23 (19%)	18 (19%)	
Education				**0.0369**
Less than high school	2 (12%)	15 (12%)	1 (1%)	
High school graduate	2 (12%)	64 (52%)	21 (22%)	
Some College	12 (76%)	45 (36%)	73 (77%)	
Marital Status				0.6852
Single	7 (40%)	56 (45%)	35 (38%)	
Married	4 (27%)	42 (34%)	40 (40%)	
Widowed or Divorced	5 (33%)	26 (21%)	20 (22%)	
Breast Cancer Recurrence				**0.0453**
Yes	2 (12%)	91 (74%)	1 (1%)	
No	12 (76%)	30 (24%)	92 (97%)	
Don't know	2 (12%)	3 (2%)	2 (2%)	

* p-values <0.05 are significantly different.

RESULTS

Table 2.
Physical Health HR-QoL by Weight Status After Breast Cancer

Demographics Table (n=235)	Did not Gain Weight After BC Treatment (n=16)	Gained Weight after BC Treatment (n=124)	Lost Weight after BC Treatment (n=95)	p-value**
Overall Quality of Life				0.6378
Excellent-Good	14 (88%)	113 (91%)	89 (94%)	
Fair-Poor	2 (12%)	11 (9%)	6 (6%)	
Physical Health				0.7385
Excellent-Good	13 (81%)	102 (82%)	82 (86%)	
Fair-Poor	3 (19%)	22 (18%)	13 (14%)	
Physical Functioning				
Excellent-Good	15 (94%)	111 (89%)	89 (94%)	0.5084
Fair-Poor	1 (6%)	13 (11%)	6 (6%)	

**p-values <0.05 are significantly different.

Table 3.
Physical Health HR-QoL by Weight Status After Breast Cancer (BC) Treatment (Adjusted)

Variables	Weight Gain After Breast Cancer Treatment	
	OR	95% Confidence Interval
Income		
$0-$24,000 vs. $50,000+	0.566	0.185 – 1.730
$25,000-$49,000 vs. $50,000	0.906	0.347-2.367
Marital Status		
Single vs. Widowed	0.992	0.412-2.367
Married vs. Widowed	0.861	0.363-2.041
Education		
Less than high school vs. Some college	5.214	0.516-52.704
High school vs. Some college	1.715	0.810-3.628
Age		
35-54 years vs. 17-35 years	1.273	0.223-7.261
55 years older vs. 17-35 years	0.566	0.109-2.946
Quality of Life		
Excellent-Good vs. Fair-Poor	1.449	0.418-5.020
Quality of Life: Physical Health		
Excellent-Good vs. Fair-Poor	1.084	0.410-2.867
Physical Functioning		
Excellent-Good vs. Fair-Poor	0.412	0.130-1.299

DISCUSSION/CONCLUSIONS

- 235 African American breast cancer survivors, 18-55+ years of age, were assessed for weight gain after breast cancer treatment.
- More than half of the population (53%) gained weight.
- Income level ($25K-50K) and education (high school graduate) correlated with weight gain [p=0.012 and 0.037, respectively].
- 74% of the women who gained weight had BC recurrence [p=0.045]
- Women who had less than high school education were five times more likely to gain weight after BC treatment than those who had some college education [OR= 5.214 (95% C.I=0.516-52.704)].
- There was no significant difference in the overall quality of life and physical functioning reported by women who gained weight and those who did not.
- Weight control after BC diagnosis and treatment appears to be a factor in the management of African American breast cancer survivors.

SISTAAH Talk