

Mental Health, Family Function and Obesity in African-American Women

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Context: African-American women are disproportionately affected by obesity and its related diseases. How psychological and psychosocial factors that affect this population differ across weight categories remains poorly understood.

Purpose: To determine whether poor mental health and family functioning are associated with obesity in African-American women.

Methods: African-American women patients aged 21-65 years were interviewed at three primary care centers. Four well-established assessment tools were used to measure general mental and physical health status, family functioning, depressive symptoms and anxiety levels. Demographics, health behaviors and family and personal histories of overweight were assessed.

Results: Among 113 patients, after controlling for age and parity, obese women had significantly higher anxiety levels, poorer perception of their physical health, more often were overweight as a child, had overweight parents or siblings and experienced more psychosocial problems in their family growing up, compared to overweight and normal weight women.

Conclusions: The observed findings of poor mental health, perception of physical health and family function in obese African-American women support a need for clinical attention and further study.

Key words: African-American ■ women ■ obesity ■ mental health ■ psychosocial factors

INTRODUCTION

African-American women have the highest rates of overweight and obesity and as such, have substantial morbidity and mortality from diabetes, hypertension and cardiovascular disease.¹⁻⁹ Studies have postulated that this obesity disparity is due to cultural, environmental, genetic and behavioral factors.¹⁰⁻¹⁴ However, a better understanding of the mental health and psychosocial correlates of body weight would be helpful in effectively tailoring weight-management strategies for this population. Despite the often-cited notion that overweight and obese individuals are at higher risk for psychological disorders, such as emotional eating, anxiety and depression, the relationship between depression, anxiety and obesity remains unclear.¹⁵⁻¹⁸ Poor family functioning, which is a potential source of psychological stress, particularly in the family of origin, may not only shape health risk behaviors and attitudes, but have implications for the development of overweight and obesity.^{19,20} Only a few studies have investigated the relationship of family functioning and obesity in the general population and none, to our knowledge, have looked specifically at African-American women.¹⁹⁻²¹ Therefore, we examined the associations of mental health, family function and obesity in African-American women. We hypothesized that obese African-American women would have more anxiety and depressive symptoms and greater dysfunctional family relationships, compared to those of normal or overweight.

METHODS

Study Design and Population

This was a cross-sectional study of 113 African-American nonpregnant women aged 21-65 years who were patients at one of three ambulatory care facilities in northern New Jersey. Sites were selected to ensure diversity in participants' socioeconomic and educational status; two sites were private practices (urban and suburban) and the third was located

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within an academic setting.

African-American women entering each facility, during the time an interviewer was present, were invited to participate. Women agreeing to participate were weighed by the interviewer or nurse. Women were weighed to the nearest pound on an office scale in light clothing without their shoes. Standing height

was measured without shoes to the nearest centimeter. After obtaining written informed consent, one of three trained African-American female medical students conducted a 20–25 minute interview prior to the physician encounter. Using a survey guide, interviewers assessed participants' perceptions of their general physical and mental health, family-of-origin function-

Table 1. Differences in Demographic, Health Perceptions, Psychosocial and Behavioral Characteristics across Weight Categories in 113 African-American Women

Participant Characteristics	All n=113	Normal BMI <25 kg/m² n=24	Overweight BMI 25–<30 kg/m² n=34	Obese BMI ≥30 kg/m² n=53	P Value
<i>Demographic</i>					
Age in years, mean (SD)**	42.7 (11.0)	37.4 (11.9)	43.7 (10.7)	44.6 (10.0)	0.02
Married, n (%)	53 (49.9)	12 (46.2)	17 (50.0)	24 (45.3)	0.91
Annual household income, n (%) greater than \$30,000	52 (46.0)	10 (38.5)	20 (58.8)	22 (41.5)	0.19
Number of birth children, n (%) two or more	68 (60.2)	10 (38.5)	20 (58.8)	38 (71.7)	0.02
<i>Mental & Physical Health</i>					
Anxiety score (SAS), mean(SD)	35.9 (10.6)	32.5 (8.9)	34.2 (10.4)	38.6 (10.9)	0.03*
Depression scores (CES-D), mean (SD)(scores ≥27 positive for depressive symptoms)	21.1 (8.7)	19.6 (7.5)	20.0 (8.5)	22.5 (9.2)	0.26
Mental component (SF12-MCS), mean (SD)	46.8 (11.8)	50.7 (9.9)	47.3 (11.2)	44.5 (12.6)	0.08
Physical component (SF12-PCS), mean (SD)	44.1 (9.4)	45.9 (9.9)	46.6 (8.8)	41.7 (8.9)	0.03*
Overweight as a child <13 years, n (%)	19 (16.8)	1 (3.8)	3 (8.8)	15 (28.3)	0.008*
Overweight parents or siblings, n (%)	55 (48.7)	9 (34.6)	12 (35.3)	34 (64.2)	0.008*
<i>Family System Assessment (FSAT)⁺</i>					
Triangulation, mean (SD); pop norm 14.5 (3.47)	12.3 (3.2)	12.4 (3.1)	13.1 (2.8)	11.7 (3.4)	0.13
Individuation, mean (SD); pop norm 17.9 (4.49)	15.4 (4.1)	16.5 (3.7)	15.5 (4.1)	14.8 (4.3)	0.20
Intimacy, mean (SD); pop norm 16.0 (4.06)	13.1 (2.4)	13.7 (1.8)	13.4 (2.8)	12.6 (2.3)	0.12
Cutoff, mean (SD); pop norm 19.1 (4.47)	15.9 (4.8)	16.2 (4.9)	16.6 (4.5)	15.3 (4.9)	0.46
Distancing, mean (SD); pop norm 13.7 (3.51)	11.7 (3.4)	11.8 (3.5)	12.3 (3.2)	11.2 (3.5)	0.36
Psychosocial, mean (SD); pop norm 18.8 (4.10)	16.6 (4.0)	17.8 (4.1)	17.3 (3.3)	15.6 (4.3)	0.04*
Family illness, mean (SD); pop norm 16.1(2.98)	13.5 (3.2)	14.4 (2.7)	13.4 (2.7)	13.0 (3.6)	0.24
<i>Health Behaviors</i>					
Current smoker, n (%)	27 (23.9)	4 (15.4)	8 (23.5)	15 (28.3)	0.49
Nondrinker of alcohol, n (%)	106 (93.8)	25 (96.2)	32 (94.1)	49 (92.5)	0.81
Exercise ≥3 times per week, n (%)	40 (45.4)	11 (27.5)	6 (15.0)	23 (57.5)	0.03*
Eat more when depressed, n (%)	41 (36.6)	8 (30.8)	10 (29.4)	23 (43.4)	0.29

** SD: standard deviation; * All probabilities were p≤0.05 after adjustment for age and parity; + Includes the population means and standard deviations for the family system assessment subscales; higher mean scores are indicative of more positive family functioning.

ing, depressive symptoms, anxiety levels, demographic information, health behaviors (smoking, physical activity, drinking and eating habits) and family and personal history of overweight or obesity.

Assessment Tools

Four well-established instruments were used in this study. The short form of the Medical Outcome Survey (SF-12) assessed patients' perceptions of their physical and mental health status.²² We assessed seven subscales of family functioning in the family of origin using the Family Systems Assessment Tool (FSAT).²³ We postulated that how families manage interpersonal stress and conflict may contribute more to one's development of health risk behaviors and attitudes. The subscales of Intimacy and Individuation measured positive dynamics, such that higher scores represented families that experienced closeness and emotional sharing (Intimacy) and in which members were able to maintain their individual identities (Individuation). Family dysfunction was measured by: Triangulation (involvement of family members instead of resolving conflict one on one); Cutoff (one avoids or is shunned by the family); Distancing (one's behavior keeps physical and emotional distance from family members); Psychosocial problems (family uses psychosocial problems of family members as a way of diverting attention from family conflict); and Illness Behavior (family uses illness as a way of diverting attention from family conflict). Higher scores represent lower levels of the concepts being measured.²³ In answering these questions, participants were asked to reflect and report the age that they associated with answering the questions.

The Center for Epidemiologic Studies Depression Scale (CES-D) was used to measure depressive symptoms, due to its sensitivity and specificity in the African-American population and extensive use in epidemiologic studies.²⁴⁻²⁶ Scores of 27 or greater were considered a positive screen for depressive symptoms.²⁴⁻²⁶ Finally, the Zung Self-Rating Anxiety Scale (SAS) was used to screen for anxiety symptoms because of its well-known reliability in screening for anxiety symptoms in the general population.^{27,28} Higher levels of anxiety symptoms are determined by higher anxiety scores. Scores that were greater than 45 were consistent with the diagnosis of generalized anxiety disorder.

Our main outcome variable was body mass index (BMI) calculated as weight in kilograms divided by the height in meters squared. We categorized BMI according to the accepted World Health Organization Criteria into the three categories: BMI less than or equal to 25 kg/m² (normal); BMI greater than 25 kg/m² and less than 30 kg/m² (overweight); and BMI greater than or equal to 30 kg/m² (obese).²⁹

This study was approved by the Institutional Review Board at University of Medicine and Dentistry of New Jersey—New Jersey Medical School.

Statistical Methods

We used Pearson's Chi Square and Fisher exact tests to assess the differences in the categorical health behavior and demographic variables across the three weight categories. We performed ANOVA with Scheffe procedures to test the differences in means of our independent variables (depression, anxiety, physical and mental health and family function scores) across the three weight categories. We chose a significance level of $p \leq 0.05$ to test *a priori* hypotheses. A second-level analysis of covariance was performed to compare mean mental and physical health variables across the three weight groups, controlling for relevant differences in demographics. All analyses were done using SPSS statistical software.³⁰

RESULTS

Table 1 shows comparisons of the demographic, clinical and health behavior characteristics of our study population across weight categories. Obese women in this sample tended to be older, have higher parity, higher anxiety scores, lower perception of physical health and more negative psychosocial problems in their family of origin, compared to the normal and overweight women. Approximately 21% of the women screened positive for generalized anxiety disorder, and 39% of the women screened positive for depressive symptoms. Compared to norms for the general population, women in this sample had greater family dysfunction as indicated by the low scores on all subscales (Table 1). However, the weight groups only differed significantly on one subscale; obese women had more psychosocial problems than overweight or normal weight women ($p=0.04$). Obese women tended to reflect back to a younger age (median age of 15 years) when answering the family functioning questions than the overweight (median age of 16.5 years) or normal weight (median age of 17 years) groups. Furthermore, women answering yes ($n=41$) to "Do you eat more when you are depressed?" were significantly heavier (mean BMI of 32.7 kg/m², SD=8.0) than women ($n=71$) answering no (mean BMI of 29.2 kg/m², SD=6.6, $p \leq 0.01$), adjusting for age and parity.

After adjusting for age and parity, the differences remained statistically significant ($p \leq 0.05$) across the weight categories observed for the following variables: being overweight as a child; having an overweight parent or sibling; exercising more than three times per week; higher anxiety scores; poorer perception of physical health; and having negative psychosocial problems .

DISCUSSION

This study supports the established contributing factors that obese women tend to be overweight as children, have overweight parents and siblings and higher parity, compared to normal and overweight women.^{2,5,10,31} We found significant associations of obese women having higher anxiety levels, poorer perceptions of physical health and more psychosocial problems in the family of origin than the normal or overweight women. Despite the use of multiple assessments for depressive symptoms, there was no statistically significant difference in levels of depressive symptoms among the three weight categories in our sample. This is consistent with recent findings from studies that have failed to demonstrate a direct association of depression and obesity in general population samples.^{15,16,32} The finding that patients who ate more when they were depressed also had higher body mass indices is interesting, since there has been a report that women who ate more under stress were more likely to have abnormal obesity genes and more psychiatric symptoms.¹⁴

Our study of African-American women seen in primary care settings may not be generalizable to other populations. Our finding that obese women reported greater frequency of exercise, 45.4% compared to the national average of 31.4% for African-American women,³³ may be attributed to perception bias (had a broader view of the term exercise) and social desirability (gave the acceptable answer), as evidenced in the low reporting of smoking and alcohol intake, due to the face-to-face interviews. This underscores the importance of ascertaining health behavior related information using an anonymous self-report instrument. We only examined depression and anxiety symptoms experienced as an adult. It is possible that anxiety and other mental health factors experienced during childhood may have greater influence on obesity development in adult women and should be further examined in a prospective study. Finally, as with all cross-sectional studies, causal relationships or the direction of the effect cannot be determined and thus, a prospective study is required to further clarify these relationships.

Despite these limitations, this study provides evidence for a relationship between mental health, and poor family functioning and obesity in African-American women. More qualitative research would provide deeper exploration into how poor mental health and family functioning influences the development of health beliefs, attitudes and behaviors in obese African-American women. Further study may elucidate opportunities for more effective targeting of weight-management interventions by incorporating strategies that concentrate on improving mental health and family function. This would include an exploration of the association of obesity with family

function in the current family. It may be prudent to provide more support to the psychological state and family functioning needs of obese African-American women, particularly those with anxiety, poorer health perception and family functioning.

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