

BODY IMAGE AND PHYSICAL ACTIVITY AMONG LATINA AND AFRICAN AMERICAN WOMEN

Objectives: Obesity in African American (AA) and Hispanic or Latina (HL) women has been partly attributed to low physical activity (PA) and cultural influences on body image. The purpose of this study was to determine the relationship among body mass index ($BMI=kg/m^2$), body image perception (perceived and desired) and PA.

Design: The current study is a cross-sectional, secondary data analysis of the Health Is Power (HIP) project (1R01CA109403).

Setting: Women residing in Harris County, Houston and Travis County, Austin, Texas were recruited to participate in the study.

Participants: Over four hundred ($N=410$) AA ($N=262$) and HL ($N=148$) women participated in the HIP project and were included in the current study.

Main Outcome Measures: BMI, Pulvers' body image, PA and demographic data were collected from each participant.

Results: Women (mean age=45.2 yrs) were educated (44% college graduates) and obese (mean $BMI=34.6 kg/m^2$). Less than half perceived themselves correctly regardless of actual weight and ethnicity ($P<.001$). Nearly three-fourths of AA (73.9%) and less than half of HL (42.9%) women who were normal weight desired to be obese, and only 39.4% of AA and HL women desired to be normal weight. Women varied on measures of PA ($P<.05$). Regression analyses showed objectively measured PA was significantly associated with BMI and ethnicity ($P<.01$).

Conclusions: Results reveal dichotomous distortion in body images. Women need strategies to perceive normal weight as desirable for health and beauty, leading to increased PA and reducing obesity. (*Ethn Dis.* 2011;21(3): 281-287)

Key Words: Body Image, Physical Activity, Obesity, Minority Health, Women

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INTRODUCTION

The majority of US African Americans and women are overweight or obese, and predicted increases in overweight and obesity make obesity prevention and treatment one of the greatest public health priorities.¹⁻³ Overweight and obesity are associated with numerous chronic health conditions,⁴ highlighting the need for researchers to gain a clearer understanding of factors contributing to the rise in obesity prevalence to address this complex and growing problem.

Previous studies have shown body image, defined as the way a woman sees and feels about her body, influences obesity.⁵⁻⁹ Perceived body image may be an indicator of awareness of health risks and weight status and varies by ethnicity.^{8,10-15} African American women often underestimate their body size and are less likely to report body image dissatisfaction compared to Caucasians.^{11,16,17} Hispanic or Latina women are also more likely to misperceive their body size than non-Hispanic Whites and report body image dissatisfaction,^{8,18} but the literature is inconsistent, suggesting weight-control beliefs and body image dissatisfaction may be related to ethnic identification and varies in these populations.^{19,20}

Although studies exploring body image exist, many are done in an eating disorder context,²¹⁻²³ and fail to incor-

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porate health behaviors, such as physical activity, which may influence body image perceptions and contribute to obesity.^{16,24,25} Studies have shown women who are more satisfied with their body size are more likely to report regular physical activity.²⁶ However, few studies have explored this relationship using objective measurements.

The relationship between body mass index ($BMI=kg/m^2$) and perceived and desired body image is not well understood, especially among ethnic minorities. Few studies have addressed body image and physical activity among African American and Hispanic or Latina women, and none have looked at this relationship using objective measures of physical activity. The purposes of this study were to determine: (1) the association between BMI and body image perceptions; (2) whether there is a discrepancy between perceived and desired body images; and (3) the association between body image perceptions and physical activity.

METHODS

The present study is a secondary, cross-sectional data analysis of data collected as part of the Health Is Power

(HIP) project, a five-year, longitudinal study to increase physical activity in ethnic minority women. Participants were recruited in Houston and Austin, Texas using direct and indirect recruitment strategies. Between the two project sites, 262 African American and 148 Hispanic or Latina women (Total $N=410$) enrolled in the study.

Measures

Body Image

Pulvers' culturally relevant body image questionnaire, adapted to reflect differences of body shape and size across ethnic groups, was used to measure perceived and desired body images.²⁷ Participants were asked to choose a figure that most closely resembled them currently (perceived body image) and a figure they would like to look like (desired body image) from figures A–I, while unaware of the corresponding BMI. The questionnaire was validated for use in this population (Cronbach's $\alpha=.96$).²⁷

Physical Activity

The International Physical Activity Questionnaire (IPAQ) long form was used to measure self-reported physical activity by type and intensity.²⁸ Participants reported frequency and duration of activity over the last seven days. The IPAQ is widely used, reliable ($r=.8$) and has shown adequate validity ($r=.3$) in comparison to accelerometry.²⁹

Objective physical activity data were collected using an ActiGraph GT1M accelerometer, chosen for its established strong validity and overall reliability.^{30,31} Accelerometer data were collected as activity counts and translated into minutes spent in moderate to vigorous physical activity (MVPA) per day for a seven-day period using an established protocol.³²

Anthropometry

Anthropometric measures of BMI were collected by trained personnel

using established protocols in the primary study. Body weight was measured using a Tanita TBF-310 body composition analyzer,³³ and height was measured using a portable stadiometer.

Procedures

Women who met study inclusion criteria³⁴ completed interviewer-administered questionnaires to assess body image and physical activity and completed anthropometric measures of BMI. At the end of the assessment, participants were given a run-in packet to complete at home. Women ($N=209$) who returned completed run-in packets were eligible to complete the accelerometer assessment, and 84.6% of women ($N=177$) completed the accelerometer protocol correctly and had usable data. All protocols were approved by the University of Houston Committee for the Protection of Human Subjects, and all participants gave written informed consent to participate in the study.

Statistical Analyses

Descriptive analyses were performed to describe the study sample. Raw silhouette data were translated into BMI using the validated protocol. The silhouettes corresponded to BMIs of 16–40 kg/m², and increased in increments of three BMI units.²⁷ BMI was then coded into a normal weight, overweight or obese weight status category. Due to small cell counts in obese classes II–III, obese classes I–III were collapsed into one category for use in chi-square analyses. An analysis of variance was used to compare physical activity among weight status groups and between African American and Hispanic or Latina women. Linear regression analyses were performed to determine the relationships between measured, perceived and desired BMI and self-reported and measured physical activity, controlling for age, income and education.

RESULTS

Sample Characteristics

Information about this sample has been reported previously and is briefly summarized here.³⁴ The majority of study participants were middle-aged (mean age=45.2 years, $SD=9.3$) and obese (mean BMI=34.6 kg/m², $SD=8.7$), reported an average annual income 301–400% of the 2007 Federal poverty level or between \$62,156 and \$82,600³⁵ and had completed some college or were college graduates (88.5%).

Body Image

Study participants perceived themselves to be obese (mean BMI=30.2 kg/m², $SD=6.5$) and desired to be overweight (mean BMI=26.7 kg/m², $SD=6.5$). Chi-square analyses show measured and perceived weight status were associated in both African American ($X^2=52.1$, $df=4$, $P<.001$) and Hispanic or Latina ($X^2=21.7$, $df=4$, $P<.001$) women. Two-thirds (66%) of Hispanic or Latina and 56.8% of African American women perceived their body image correctly. Of those who did not perceive themselves correctly, African American women (33%) were twice as likely as Hispanic or Latina women (15%) to perceive themselves as smaller. Normal weight Hispanic or Latina women perceived themselves as overweight or obese 100% of the time compared to only 61% of African American women. On the other hand, overweight women perceived themselves accurately about half of the time (52.5% in African American women; 48.1% in Hispanic or Latina women). Overweight African American women were more likely to perceive themselves as normal weight (28.8%) than obese (18.6%), while overweight Hispanic or Latina women were more likely to perceive themselves as obese (44.4%) than normal (7.4%). Obese African American women perceived themselves accurately less frequently

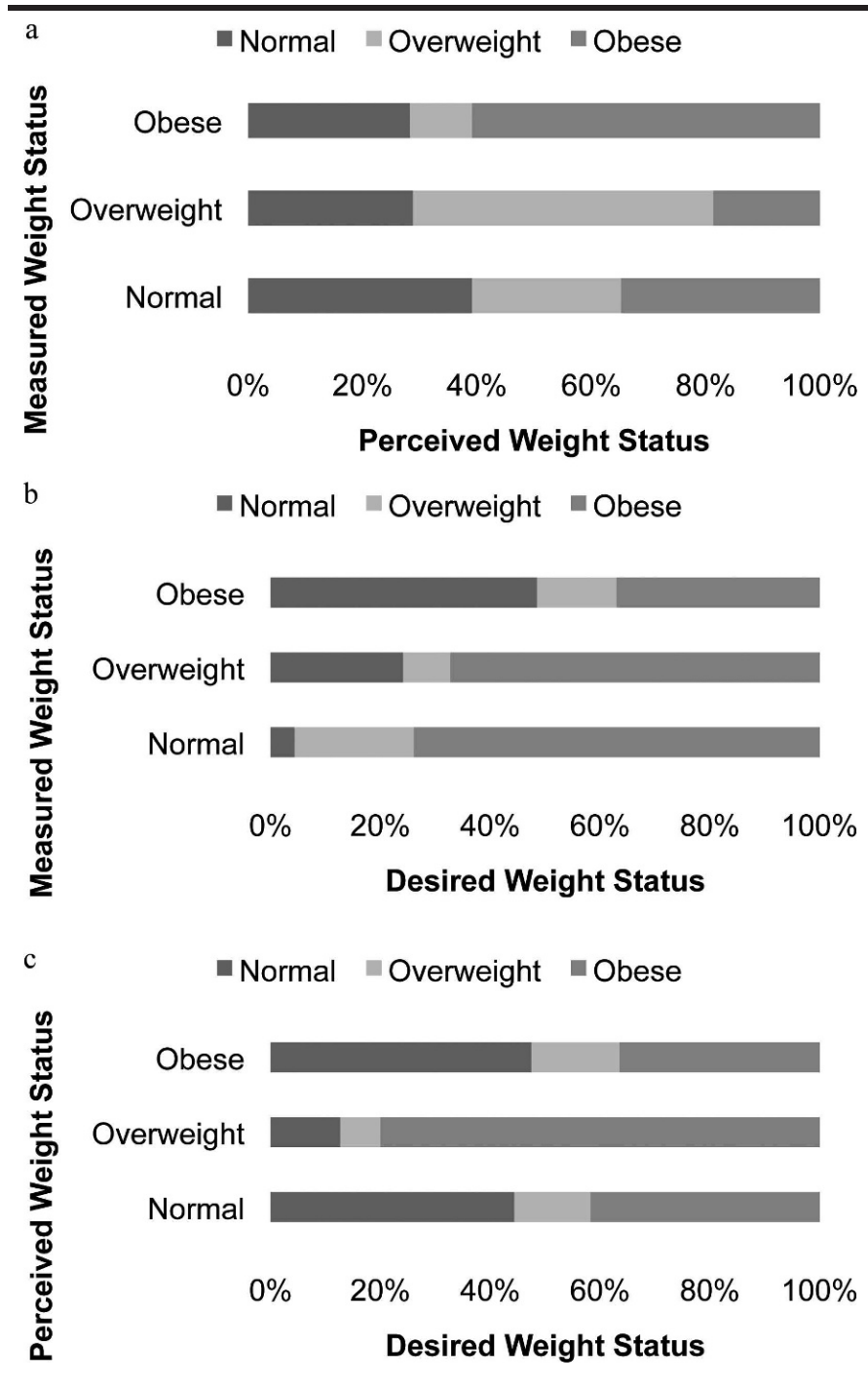


Fig 1. Body image comparisons (measured, perceived and desired) in African American women

(60.8%) than obese Hispanic or Latina women (80.3%) and perceived themselves as normal more frequently (28.3% vs 10.6%). Graph *a* in figures 1 and 2 shows the relationships between measured and perceived weight status in

African American and Hispanic or Latina women, respectively.

A chi-square contingency table was also used to determine the relationship between measured and desired weight status in African American and Hispanic

or Latina women. Measured and desired weight status were associated in both African American ($X^2=28.5$, $df=4$, $P<.001$) and Hispanic or Latina ($X^2=10.8$, $df=4$, $P=.029$) women. Results can be seen in graph *b* in Figures 1 and 2. Only 27% of African American and 21% of Hispanic or Latina women desired their current body shape and size, as depicted by the silhouette. Most (42.2%) African American women desired a larger body size and shape versus only 9% of Hispanic or Latina women. Over two-thirds (70%) of Hispanic or Latina women desired to be smaller, while only 48% of African American women desired to be smaller, regardless of their actual BMI. Only 4% of normal weight African American women desired to be normal weight compared to 57.1% of normal weight Hispanic or Latina women. Obese African American women were either content with their current weight (37%) or desired to be normal weight (49%), and obese Hispanic or Latina women largely desired to be normal (33.3%) or overweight (53%). More overweight African American women desired to be obese (67%) than they desired to be normal weight (24%), but the opposite was true for Hispanic women, who desired to be normal weight (48.1%) more often than they desired to be obese (22.2%).

Chi-square analyses were also used to determine the association between perceived and desired weight status in African American and Hispanic or Latina women and indicated a statistically significant relationship between perceived and desired weight status in both African American ($X^2=30.4$, $df=4$, $P<.001$) and Hispanic or Latina ($X^2=24.6$, $df=4$, $P<.001$) women. Results can be seen in graph *c* of Figures 1 and 2. Most (48%) African American women perceived themselves as and desired to be obese, while the majority of Hispanic or Latina women perceived themselves as obese (68%) but desired to be smaller (82%). African

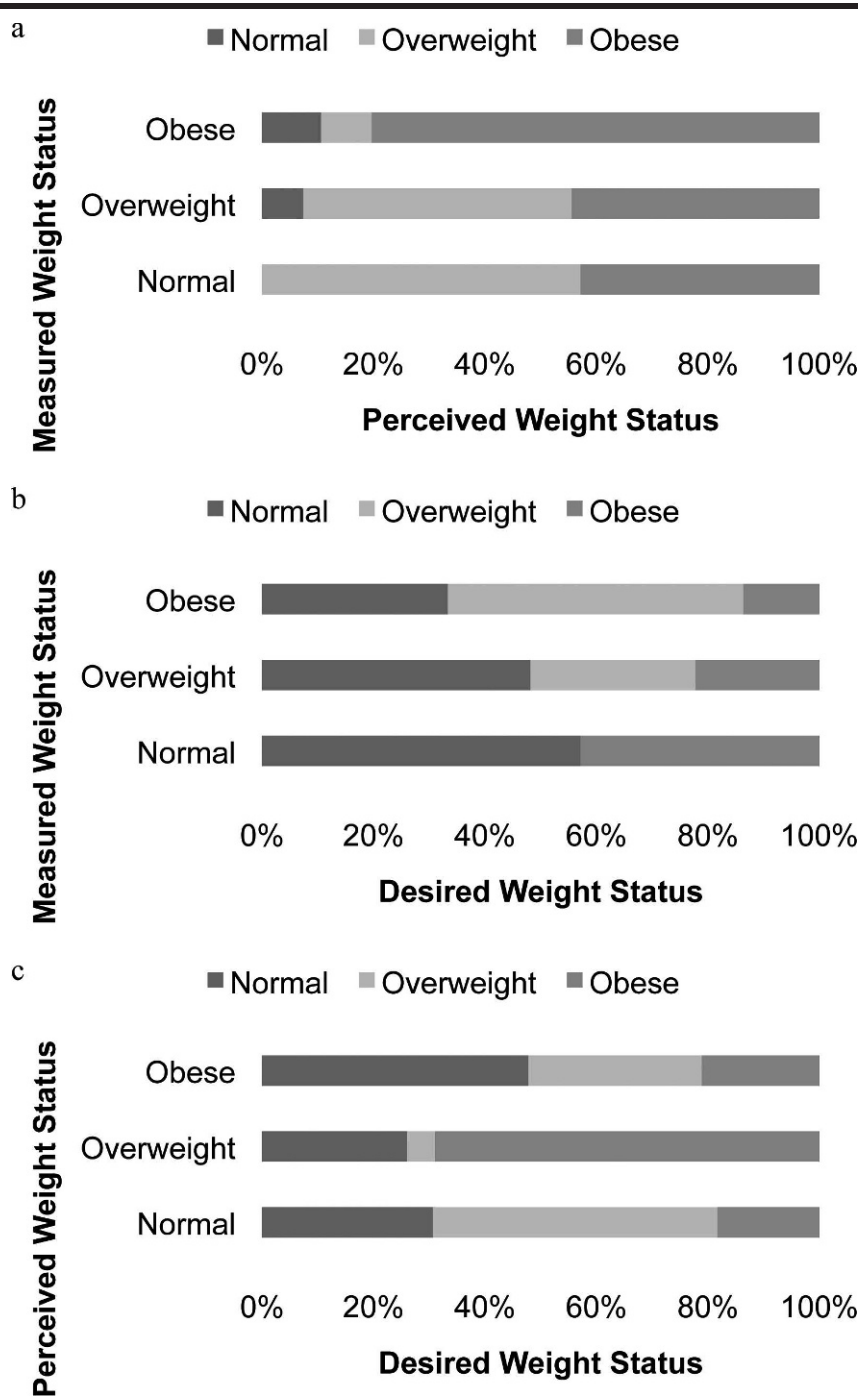


Fig 2. Body image comparisons (measured, perceived and desired) in Hispanic or Latina women

American women who perceived themselves as normal weight desired to be normal weight (44.4%) or obese (41.7%), as did those who perceived themselves as obese (47.5% desired to be normal; 36.4% desired to be obese).

Physical Activity

Participants did not meet recommended daily physical activity guidelines as measured by an accelerometer (mean=19.4 minutes of MVPA/day, SD=19.1). Self-reported physical activ-

ity varied by type (work-related, transportation, gardening/housework, or leisure-time), intensity (walking, moderate or vigorous) and ethnicity. Mean physical activity by ethnicity, type and intensity are shown in Table 1.

Body Image and Physical Activity

Objectively measured physical activity was significantly different by weight status ($F(2,176)=3.869, P=.023$) and ethnicity ($F(1,176)=21.9, P<.001$). Linear regression indicated BMI was significantly associated with accelerometer-measured physical activity ($B=-.282, P=.001$), after controlling for age, income, education and ethnicity. Perceived and desired BMI were not significantly associated with objective physical activity, and body image perceptions were not significantly associated with any self-reported physical activity measures.

DISCUSSION

The purpose of this study was to explore the relationship between body image and physical activity in African American and Hispanic or Latina women enrolled in the HIP study.³⁴ Findings suggest body image distortion and weight misperceptions among African American and Hispanic or Latina women in all weight classes and indicate

Findings suggest body image distortion and weight misperceptions among Latina and African American women in all weight classes and indicate women were unaware of their true body size and shape.

Table 1. Mean physical activity (type and intensity) for all weight groups by ethnicity

Physical Activity	African American		Hispanic or Latina	
	Mean (SD)	95% Confidence Interval	Mean (SD)	95% Confidence Interval
Type of physical activity (MET-min per week)				
Occupational	905.4 (2069.0)	516.2, 1294.6	1024.4 (2095.8)	473.3, 1575.5
Transportation	304.0 (1169.7)	84.0, 524.0	129.3 (215.7)	72.6, 186.0
Gardening/housework	803.1 (926.5)	628.8, 977.3	1114.1 (1433.1)	737.3, 1490.9
Leisure-time	365.9 (716.0)	231.2, 500.6	235.5 (407.9)	128.3, 342.8
Intensity of physical activity (MET-min per week)				
Walking	987.6 (2306.2)	553.8, 1421.4	512.4 (759.9)	312.6, 712.2
Moderate	1040.9 (1220.8)	811.3, 1270.5	1451.7 (1813.9)	974.8, 1928.7
Vigorous	349.9 (853.9)	189.3, 510.5	539.3 (1522.4)	139.0, 939.6
Total IPAQ physical activity	2378.4 (3066.0)	1801.7, 2955.1	2503.4 (2949.5)	1727.8, 3278.9
Accelerometer physical activity (minutes of MVPA per day)	24.0 (21.2)	20.0, 28.0	10.4 (8.6)	8.1, 12.6

women were unaware of their true body size and shape. Hispanic or Latina women mostly misperceived themselves as larger, while African American women mostly misperceived themselves as smaller. These results are consistent with previous studies which show African American women are more likely to underestimate their body size.^{7,11}

The results also show body image dissatisfaction in both ethnic groups. However, this did not result in a desire to be thin among African American women who found an overweight or obese body size and shape more desirable than normal weight, regardless of their BMI. In 1993, Kumanyika and colleagues found the social environment of African American women to be more tolerant of obesity and that obesity may not be considered unattractive—regardless of well documented obesity-related poor health outcomes. Several studies suggest African American women may perceive an obese body size and shape desirable for health and beauty.^{10,18,26,36}

Although study findings were generally consistent with the literature, an unusual and novel finding in this study was the desire of normal weight African American women to be obese, as indicated by choosing an obese silhouette, and obese African American wom-

en to be normal weight. This dichotomy was not present among Hispanic or Latina women, who generally desired to be normal weight or smaller than their current size or shape. Although women were unaware of the BMI or weight status that corresponded to the silhouette they chose, this does not explain the differences we found between ethnic groups. Studies have suggested that African American women of higher socioeconomic status may desire normal weight bodies. This may help explain these seemingly divergent findings,^{12,13} but was not directly tested in this study. It remains in question whether limited awareness of BMI cutoffs for overweight and obese may be to blame for high levels of satisfaction with an overweight or obese body size or shape.⁷ Women with higher educational attainment may have greater health literacy related to these issues, yet greater resources, promoting overeating and weight gain.

Physical activity measures did not vary significantly by group for perceived or desired body images. Women self-reported meeting physical activity recommendations for healthy adults, 150 minutes of moderate-intensity physical activity per week or 500 MET-minutes.³⁷ However, accelerometer-measured activity found women were falling short of daily recommendations. Normal weight women did more phys-

ical activity, as one would expect, but women who desired a smaller body size did not do significantly more physical activity than women who desired to be overweight or obese. These findings contradict the literature, which has shown body image perception is a strong predictor of health behavior adoption, such as physical activity, that may control or prevent weight gain in young adult African American women.³⁸ This suggests physical activity may not be the weight loss method of choice among ethnic minority women, despite evidence that physical activity is inversely related to weight gain,³⁹ and supports previous reports that suggest that African American and Hispanic or Latina women may have limited knowledge of effective weight loss strategies.⁴⁰

The current study supports and expands on the current body of literature by incorporating additional measures of body image perception and measured physical activity in a sizeable sample of African American and Hispanic or Latina women. Although there was no significant association between desired body image and physical activity in the current study, findings suggest further work is needed to fully understand this relationship and other contributing factors. A strong association between BMI and measured physical activity but no relationship with self-

reported physical activity may indicate that self-reported activity is not sufficient to impact weight.

The homogenous samples of African American and Hispanic or Latina women used in this study allow us to draw certain conclusions that may not be drawn in a sample with increased heterogeneity. Improved objective measures of BMI and accelerometry and culturally appropriate assessments of body image perceptions increase confidence in conclusions, but cost constraints limited their use to a subsample of women and lack of adherence to the accelerometer protocol may have affected the power to detect relationships. An additional limitation of this study was the lack of other measures of body image satisfaction and dissatisfaction. It is difficult to gauge whether participants' body image perceptions would change given the corresponding BMI and weight status for each silhouette. Triangulation of body image measurement may increase validity of study results. The study's cross-sectional design also limited our ability to make causal inferences about the relationship between body image and physical activity; additional studies are needed to investigate longitudinal relationships to determine causal pathways and determine how changes in perceptions and attitudes about one's body shape and size may influence physical activity behavior or vice versa. Other factors that may influence body image perceptions such as body fat distribution and body composition merit further research.

In conclusion, this study found body image distortion and dissatisfaction among African American and Hispanic or Latina women in all weight groups. Findings suggest cultural differences in normative ideals of body shape and size exist, leading to body image dissatisfaction. Research and health promotion efforts are needed to increase awareness of normal weight as desirable for health and beauty among African American and Hispanic or Latina women and provide a

better understanding of the relationship between physical activity and body composition. Additional formative research may be needed to understand normative ideals of body shape and size among minority women and changing secular trends that may explain paradoxical study findings indicating a larger body shape and size are ideal. Health practitioners should address body image misperceptions and dissatisfaction in an effort to increase physical activity and improve satisfaction with normal weight as desirable for health and beauty.

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