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Self-perception of weight and its association with weight-related behaviors in young reproductive-age women

Mahbubur Rahman, MBBS, PhD, MPH and Abbey B Berenson, MD, MMS

Department of Obstetrics and Gynecology and the Center for Interdisciplinary Research in Women's Health

Abstract

Objectives—To examine weight misperceptions as well as their predictors and association with weight-related behaviors among low-income multiethnic reproductive-age women.

Methods—We assessed perceptions of body weight and weight-related behaviors of reproductive-age women (18–25 years old) attending one of five publicly funded reproductive clinics in Texas between August 2008 and March 2010. Data were collected through self-administered questionnaires and chart review. Overweight and normal weight women were divided into four categories based on self-perception of their body weight: overweight misperceivers, overweight accurate perceivers, normal weight misperceivers, and normal weight accurate perceivers. Multivariable logistic regression analyses were performed to examine the predictors of misperception and its association with weight-related behaviors.

Results—Twenty-three percent (267/1,162) of overweight and 16% (170/1,062) of normal-weight women were misperceivers. Overweight black women were more likely to consider themselves normal weight (28% compared with 15%; odds ratio [OR], 2.84; 95% confidence interval [CI], 1.79–4.50), whereas normal-weight black women were less likely than whites to consider themselves overweight (7% compared with 16%; OR 0.40; 95% CI 0.22–0.74). Overweight women who had at least some college education (14% compared with 29%; OR 0.53; 95% CI 0.32–0.86) and used the Internet (18% compared with 28%; OR 0.47; 95% CI 0.31–0.70) were less likely to misperceive their body weight. Normal-weight misperceivers were more likely to report healthy and unhealthy weight-reduction behaviors compared with normal-weight accurate perceivers, after adjusting for age, race, ethnicity, and body mass index. Opposite scenarios were observed for overweight misperceivers.

Conclusions—Weight misperception is common among both overweight and normal weight women of reproductive-age. Clinicians should provide patient-specific counseling related to healthy weight management goals that takes each patient's perceptions into consideration.

Keywords

Reproductive-age women; self-perception; body mass index; overweight; weight-related behavior

Correspondence Author: Mahbubur Rahman, MBBS, PhD, MPH, Center for Interdisciplinary Research in Women's Health, Department of Obstetrics & Gynecology, University of Texas Medical Branch, Galveston TX 77555-0587, Phone: 409-772-2978, Fax: 409-747-5129, marahman@utmb.edu.

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Introduction

The prevalence of obesity in the US has more than doubled in the last three decades (1). More than two-thirds of US adults are currently overweight or obese while blacks and Hispanics are at high risk (2). The World Health Organization (WHO) labeled obesity as the most blatantly visible, but most neglected public-health problem worldwide (3).

Self-perception of body weight is the degree of concordance between perceived and measured weight. Accurate perception of body weight is very important for the success of obesity prevention programs. Furthermore, behavioral intervention programs of any kind are not successful unless an overweight person recognizes that he or she is overweight. Earlier studies have shown that the accuracy in weight perception has been associated with age, gender, race/ethnicity, BMI, income, education and lifestyle behaviors (4–11). However, data are lacking on reproductive-age women and the association of their weight perception with healthy and unhealthy weight-related behaviors.

Determining the extent of misperception of body weight is especially important in reproductive-age women as they are more likely to be obese than similarly aged men (12). Over one-half of reproductive-age women in the US currently have a BMI >25 kg/m² (13), placing them at increased risk of developing Type 2 diabetes mellitus or cardiovascular disease at a young age. Minority women are at even higher risk, as an alarming 82% of Black and 75% of Mexican American women now meet the criteria for being overweight or obese. Moreover, reproductive-age women are prone to gain excess body weight during pregnancy and postpartum period (14–17). Greater misperception of body weight in this group means less weight loss behavior which may make them more vulnerable to cardiovascular disease risk factors and other obesity related diseases. Furthermore, it has not been determined in what extent reproductive-age women are practicing unhealthy weight-related behaviors due to misperception of their body weight. The purpose of this study was to examine misperception of body weight and its association with healthy and unhealthy weight-related behaviors in a multiethnic reproductive-age women population.

Methods

We conducted a cross sectional survey on health behaviors among women 16–25 years of age attending one of five publicly funded reproductive health clinics between August 2008 and March 2010. Surveys were self-administered and those who agreed to participate were reimbursed \$5 for their time. To assure that patients completed the survey only once during this 2 year interval, study personnel maintained a cumulative database containing the names of those who had previously completed the survey and compared it daily to the names of those appointed for a visit. Women who had previously completed the survey were not approached a second time. All procedures were approved by the institutional review board of the University of Texas Medical Branch.

This study focused on survey questions pertaining to sociodemographic variables, height, weight, weight perceptions, and weight-related behaviors among 18–25 years old participants. Age was calculated using years and months. Race and ethnicity were self-reported with choices including non-Hispanic white, non-Hispanic black, Hispanic, Asian, American Indian/Alaskan native, native Hawaiian/other Pacific Islander, or other. No classification was available for mixed race. We restricted our analysis in this paper to non-Hispanic white, non-Hispanic black and Hispanic women due to the limited sample size of other categories. Information about education level, marital status, work hours per week, and internet use were also obtained by self-report. Height and weight values were obtained from anthropomorphic data recorded in the medical chart. BMI was calculated as weight (in kg)

divided by the square of the height (in meter). Women with a BMI < 25 kg/m² and ≥ 25 kg/m² were considered as normal weight and overweight, respectively. Self-perception of weight was measured by asking, “How would you describe your weight?” Response options included “very underweight”, “slightly underweight”, “about the right weight”, “slightly overweight”, and “very overweight”. For analysis purpose these five response options were collapsed into two categories: (1) overweight (includes slightly overweight and very overweight) and (2) normal weight (includes very underweight, slightly underweight, and about the right weight). Using their calculated BMI and self-perception of weight, overweight and normal weight women were then divided into four categories: overweight misperceivers (overweight women who described themselves as underweight or normal weight), overweight accurate perceivers (overweight women who described themselves as overweight), normal weight misperceivers (normal weight women who described themselves as overweight), and normal weight accurate perceivers (normal weight women who described themselves as normal weight or underweight).

Eight questions were used to assess behaviors in the previous 30 days engaged in to lose weight or to keep from gaining weight. Behaviors assessed (yes or no) included, using diet pills, powder, or liquids, laxatives, diuretics, induced vomiting, skipping meals, eating less or differently, smoking more cigarettes and, not eating carbohydrates. Respondents were also asked about number of days they exercised or play sports for at least 30 minutes straight in the last week.

Statistical Analysis

Univariable comparisons were performed to compare the two groups (accurate perceivers vs. misperceivers in normal weight and overweight women) using the chi square test or Student *t* test, as appropriate. Multivariable logistic regression was used to identify correlates of overweight misperceivers and normal weight misperceivers. Variables were screened for inclusion in an initial multivariable model. Candidate variables with $P \leq .20$ were included in the initial multivariable model. Multivariable logistic regression was also used to compare weight-related behaviors of misperceivers with accurate perceivers, adjusting for age, race/ethnicity, and BMI. All analyses were performed using STATA 11 (Stata Corporation, College Station, TX).

Results

Of the 2224 women (18–25 years old) included in this study, 48.3% ($n = 1076$) were Hispanic (primarily Mexican or Mexican-American), 27.0% ($n = 601$) were white, 23.8% ($n = 529$) were African American, and 0.8% ($n = 18$) were from other racial/ethnic groups. The mean age of the sample was 21.4 years ($SD = 2.1$, range 18–25 years). Overall, 47.8% (1062/2224) of the women were normal weight (BMI < 25 kg/m²) while 52.2% (1162/2224) were overweight or obese (BMI ≥ 25 kg/m²). Tabulating self-perception of weight with actual weight status showed that 16% (170 of 1062) of normal weight women and 23.0% (267 of 1162) of overweight (36.8% of overweight and 10.5% of obese) women were misperceivers (Table 1).

Bivariate analyses showed that the mean age was the same for overweight misperceivers and overweight accurate perceivers, but normal weight misperceivers were slightly older than normal weight accurate perceivers (Table 2). The mean BMI of overweight accurate perceivers and normal weight misperceivers were significantly higher than their counterparts. Significantly more Hispanic (24.7%) and black (28.2%) women were overweight misperceivers compared with white respondents (14.8%) while significantly more white (16.0%) and Hispanic women (19.7%) were normal weight misperceivers compared with black women (7.4%). Women who were internet users, had some college

education, or employed >20 hours per week were less likely to be overweight misperceivers. Three correlates (BMI, race/ethnicity and education) which were significant in the bivariate analysis remained significant in multivariable logistic regression model while age, hours worked and internet use were not (Table 3)

Bivariate analyses between self-perception of body weight and weight-related behaviors showed that the overweight misperceivers were significantly less likely to report most of the healthy and unhealthy weight-related behaviors than the overweight accurate perceivers (Table 4). However, the opposite scenario was observed for normal weight accurate perceivers. The multivariable logistic regression model, after adjusting for age, race/ethnicity and BMI, showed the similar pattern (Table 5). Overweight misperceivers had significantly lower odds of dieting, skipping meals, and using diet pills/powders/liquids compared with their counterparts. On the other hand, normal weight misperceivers were significantly more likely than normal weight accurate perceivers to report both healthy and unhealthy weight-related behaviors. They were more than twice as likely to diet and skip meals, and smoke more cigarettes when compared with normal weight accurate perceivers. The respective odds were nearly 4 and 5 times with regard to using diet pills/powder/liquids and use of diuretics.

Discussion

We observed that a large number (23%) of overweight and normal weight (16%) reproductive-age women do not accurately perceive their BMI category. Our finding that nearly one in 4 overweight reproductive-age women misperceives their body weight is consistent with those of other population-based large studies that have examined this among adult women (4,5). Furthermore, our observations that underassessment of body weight was more common in blacks and in women with lower education levels and overassessment of body weight was more common in white and Hispanic women are consistent with other published reports (4,5,7). Together, these studies provide evidence that misperception of body weight is very common in adult women. This report adds to the literature the observation that among reproductive-age women, both overweight accurate perceivers and normal weight misperceivers frequently participate in both healthy and unhealthy weight-related behaviors.

Underassessment of body weight is very common among both adolescent/adult men and women (4–7,9–11,18,19). As reproductive-age women are more susceptible to gain weight than similar aged men, interventional programs should emphasize the consequences of underassessment of body weight and health risk associated with excess body weight. Overassessment of body weight is also common and well-documented (4). One notable finding in this study is, among reproductive-age women, normal weight misperceivers had significantly higher odds of reporting several unhealthy weight-related behaviors (i.e. diet pills/liquids/powder, diuretics, and smoking more cigarettes) which is a real concern. These sorts of behaviors have been found to be associated with adverse physical, psychological and nutritional outcomes, and disordered eating (20–26). Weight gain over time, increase in depressive symptoms, inadequate nutritional intake, bulimia and anorexia were reported to be higher in individuals with unhealthy weight-related behaviors. This finding may give clinicians a point of discussion when counseling reproductive-age women about obesity and weight loss issues. As a prevention program, clinicians should routinely inquire about unhealthy weight-related behaviors and counsel them appropriately.

Weight misperception is a threat to the success of obesity prevention program. The Health Belief Model (HBM) offers some potential explanation for the mechanisms underlying self-perception and behavior change to avoid obesity. The model is based on six components:

perceived susceptibility, perceived severity, perceived benefits, perceived barriers, cues to action, and self-efficacy. The first component is related to weight perception. If overweight individuals do not perceive that they are overweight, other components of the HBM would not work for them. In an earlier study in reproductive-age women, we observed that even perceived weight gain was not enough to increase weight loss behavior (27). It could be due to the fact that even after weight gain, they do not assume themselves as overweight. Thus, the first prerequisite of the success of obesity prevention program is that the target group needs to recognize themselves as overweight. Addressing misperception should be the first step for the obesity prevention ladder.

Our finding that weight misperception is a determinant of healthy and unhealthy weight-related behaviors has several implications. First, lower likelihood of overweight misperceivers to practice healthy weight loss behavior than overweight accurate perceivers seems to have negative impact on obesity prevention program. Second, higher likelihood of normal weight misperceivers to practice four of the six unhealthy weight loss behaviors is a matter of concern. More than one-thirds of normal weight misperceivers had at least one unhealthy weight-related behavior is a public health threat as these behaviors have medical and psychological consequences (20–26). This double-edged problem of weight misperception needs to be addressed by appropriate awareness programs from health care providers as well as from the media.

The strength of our study includes use of actual height and weight to calculate BMI-based weight status as several studies have observed that BMI based on self-reported height and weight are underestimated (28,29). This study has several limitations. We examined misperception of weight in 18–25 years old women, so we do not know whether similar findings would be observed in older reproductive-age women. In addition, we used BMI to categorize overweight and normal weight. As BMI does not distinguish between lean mass and fat mass, we may have misclassified some women who were more muscular.

In conclusion, we observed that misperception of weight and unhealthy weight –related behaviors are common in reproductive-age women. Clinicians should provide patient-specific counseling to reproductive-age women based on the presence of misperception of weight and unhealthy weight-related behaviors. Efforts to educate them about accurate weight status, and safe and effective weight loss strategies are essential. Obesity-related consequence of misperception and dangers of unhealthy weight-related practices should be highlighted specifically.

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Table 1

Discrepancies between self-perception of weight and actual weight status

Self-perception of Weight	Actual Weight Status		
	Normal weight (%)	Overweight (%)	Obese (%)
Underweight/normal weight	892 (84.0)	203 (36.8)	64 (10.5)
Overweight	170 (16.0)	348 (63.2)	547 (89.5)

Normal weight: BMI < 25 kg/m²; Overweight: BMI: 25–29.9 kg/m²; Obese: BMI ≥ 30 kg/m²

Table 2

Demographic characteristics of the participants by weight perception

Characteristic	Overweight			Normal Weight		
	Accurate perceivers (n=895)	Misperceivers (n=267)	P	Accurate perceivers (n=892)	Misperceivers (n=170)	P
Age, mean (±SD), years	21.7 (2.1)	21.4 (2.1)	.150	21.2 (2.1)	21.5 (2.0)	.035
Body mass index, (±SD), kg/m ²	33.1 (6.5)	28.6 (3.7)	<.001	21.2 (2.2)	23.2 (1.5)	<.001
Race/ethnicity, (%)			<.001			<.001
White	241 (27.2)	42 (15.7)		267 (30.1)	51 (30.7)	
Black	206 (23.3)	81 (30.3)		224 (25.3)	18 (10.8)	
Hispanics	439 (49.6)	144 (53.9)		396 (44.6)	97 (58.4)	
Marital status, (%)			.849			.238
Never married	460 (51.4)	139 (52.1)		521 (58.4)	91 (53.5)	
Living together/ever married	435 (48.6)	128 (47.9)		371 (41.6)	79 (46.5)	
Education, (%)			<.001			.422
Did not complete HS	183 (20.7)	76 (29.5)		167 (19.0)	30 (18.0)	
Currently enrolled or HS graduate	382 (43.2)	131 (50.8)		440 (50.2)	77 (46.1)	
At least some college education	319 (36.1)	51 (19.8)		270 (30.8)	60 (35.9)	
Household income, (%)			.269			.207
<30,000	716 (85.6)	207 (88.5)		680 (84.8)	134 (88.7)	
30,000 or more	120 (14.4)	27 (11.5)		122 (15.2)	17 (11.3)	
Work (hours/week), (%)			.011			.212
Do not work	442 (49.6)	159 (60.0)		455 (51.3)	77 (45.6)	
~20	83 (9.3)	18 (6.8)		97 (10.9)	16 (9.5)	
21 or more	366 (41.1)	88 (33.2)		335 (37.8)	76 (45.0)	
Internet, (%)			<.001			.882
Do not use	169 (19.1)	98 (36.7)		177 (20.1)	35(20.6)	
Use	715 (80.9)	169 (63.3)		704 (79.9)	135 (79.4)	

SD- Standard deviation; HS- High School

Table 3Correlates of normal weight and overweight misperceivers^a

Characteristics	Overweight Misperceivers		Normal Weight Misperceivers	
	Odds ratio (95% CI)	<i>P</i>	Odds ratio (95% CI)	<i>P</i>
Age, yrs	0.95 (0.88–1.03)	.230	1.05 (0.95–1.15)	.322
Body mass index, kg/m ²	0.81 (0.78–0.85)	<.001	1.76 (1.56–1.98)	<.001
Race/ethnicity				
White	Reference		Reference	
Black	2.84 (1.79–4.50)	<.001	0.40 (0.22–0.74)	.003
Hispanics	1.25 (0.81–1.92)	.313	1.13 (0.73–1.75)	.575
Education				
Did not complete HS	Reference		Reference	
Currently enrolled or HS graduate	0.97 (0.65–1.46)	.889	1.17 (0.69–2.00)	.562
At least some college education	0.53 (0.32–0.86)	.011	1.28 (0.71–2.30)	.416
Work (hours/week)				
Do not work	Reference		Reference	
~20	0.61 (0.33–1.10)	.100	0.98 (0.52–1.87)	.957
21 or more	0.83 (0.59–1.18)	.309	1.32 (0.88–1.98)	.178
Internet				
Do not use	Reference		Reference	
Use	0.47 (0.31–0.70)	<.001	1.36 (0.79–2.34)	.271

^aBased on multivariable logistic regression analysis

Table 4

Weight related behaviors in misperceivers and accurate perceivers

Characteristics	Overweight Women			Normal Weight Women		
	Accurate perceivers (n=895), %	Misperceivers (n=267), %	P	Accurate perceivers (n=892), %	Misperceivers (n=170), %	P
Healthy weight-related behavior						
Dieted (ate less or differently) in last 30 days	35.9	19.8	<.001	12.7	33.5	<.001
Exercise or play sports for at least 30 minutes straight for at least 3 days in the last week	17.4	20.3	.280	20.1	16.0	.211
Any healthy behavior	45.0	33.0	<.001	29.2	42.9	<.001
Unhealthy weight-related behavior						
Skipped meals in last 30 days	28.2	14.0	<.001	13.9	27.1	<.001
Stopped eating carbohydrates in last 30 days	4.0	2.3	.257	1.7	2.4	.528
Used diet pills, powders, or liquids	12.5	8.0	.043	2.1	9.4	<.001
Vomiting or laxative use	4.7	3.0	.302	2.1	1.2	.557
Use of diuretics	1.8	2.7	.450	0.5	2.4	.027
Smoked more cigarettes	8.7	3.4	.005	6.1	11.9	.007
Any unhealthy behavior	40.2	23.6	<.001	19.2	35.9	<.001

After adjusting for age, race/ethnicity and body mass index

Table 5

Weight related behaviors: odds ratios of misperceivers Versus accurate perceivers

Characteristics	Overweight Women		Normal Weight Women	
	Odds ratio (95% CI)	<i>P</i>	Odds ratio (95% CI)	<i>P</i>
<i>Healthy weight-related behavior</i>				
Dieted (ate less or differently) in last 30 days	0.45 (0.32–0.64)	<.001	2.32 (1.5–3.5)	<.001
Exercise or play sports for at least 30 minutes straight for at least 3 days in the last week	1.33 (0.92–1.92)	.131	0.76 (0.48–1.22)	.260
Any healthy behavior	0.61 (0.45–0.83)	<.001	1.50 (1.04–2.16)	.028
<i>Unhealthy weight-related behavior</i>				
Skipped meals in last 30 days	0.45 (0.30–0.67)	<.001	2.17 (1.41–3.35)	<.001
Stopped eating carbohydrates in last 30 days	0.70 (0.28–1.76)	.449	0.92 (0.28–2.99)	.894
Used diet pills, powders, or liquids	0.59 (0.36–0.99)	.046	3.68 (1.72–7.85)	.001
Vomiting or laxative use	0.55 (0.25–1.23)	.148	0.28 (0.04–2.19)	.224
Use of diuretics	2.05 (0.76–5.50)	.154	5.08 (1.09–23.66)	.039
Smoked more cigarettes	0.49 (0.23–1.02)	.056	2.36 (1.28–4.34)	.006
Any unhealthy behavior	0.51 (0.37–0.71)	<.001	2.22 (1.50–3.28)	<.001

After adjusting for age, race/ethnicity and body mass index