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Short Report

Weight status perception and weight loss intention among urban youth

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ABSTRACT

Aim: We explored associations of weight perception with measured weight status and weight loss intention among urban youth.
Methods: This community surveillance project included 317 youth (10–19 years, 64% black) who answered YRBSS questions and underwent measurements of height and weight.
Results: Weight misperception was observed among 47% of participants; 41% underestimated and 6% overestimated their weight status. Among youth with overweight and obesity, however, 72% misperceived their weight status; those with accurate perception were more likely to report trying to lose weight.
Conclusion: Addressing weight status misperceptions may be essential when advocating lifestyle behavior change to promote healthful body weight among youth.
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Introduction

Overweight and obesity among youth confer health risks such as heart disease, type 2 diabetes, respiratory problems, cancer, and fatty liver disease [1]. In 2013–14, 37.4% of youth aged 12–19 years in the United States were classified as overweight or obese [2]. Notably, the proportion of obese adolescents in this age group more than tripled from 6.1% in 1971–74 to 20.6% in 2013–14 [3].

Weight perception refers to an individual's evaluation of his/her weight status (e.g., underweight, normal weight, overweight). Many adolescents who are overweight or obese misperceive their weight status [4]. Furthermore, teenagers (16–19 years) who perceived themselves correctly as overweight were 2.76 times more likely to report trying to lose weight than overweight/obese teens who did not perceive themselves as overweight [5].

Misperception of weight status may hinder behavior changes that promote healthy weight. We observed previously that the prevalence and severity of obesity among school-aged youth in this city are higher than national averages [6]. The aims of this study were to compare weight perception and measured weight status among urban youth, and to determine the relationship between weight perception and weight-loss intention.

Subjects and methods

Design and population

An observational, cross-sectional surveillance project was conducted in St. Louis, MO (June 2015 to February 2016) by university investigators as part of the City of St. Louis Department of Health's Obesity Plan. The parent surveillance project was designed to estimate the prevalence of obesity in St. Louis and included residents of all ages. The focus of the current study was adolescent weight perception and therefore included youth ages 10–19 years. Participants were enrolled in this study at various community centers, public schools, YMCA facilities, and the Department of Health building. Inclusion criteria were willingness to participate and ability to answer survey questions and stand independently on a scale. Written consent was obtained from each participant or parent/guardian. The study was approved by The Washington University in St. Louis Institutional Review Board.

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Table 1
Categories of weight status, weight perception, and weight strategy among urban youth.

	All	Sex (N = 317)		Race[a] (N = 284)	
		Female	Male	Black	White
Sample size (N)	317	151	166	204	80
Proportion of sample (%)	100%	47.6%	52.4%	64.6%	25.3%
Weight status (% of sample)		Sex: P* = 0.0458		Race: P = 0.4746	
Underweight	1.6%	0.7%	2.4%	0.5%	1.3%
Normal weight	62.1%	55.6%	68.1%	61.3%	65.0%
Overweight	18.9%	22.5%	15.7%	19.6%	21.3%
Obese	17.4%	21.2%	13.9%	18.6%	12.5%
Weight perception (% of sample)		Sex: P = 0.0690		Race: P = 0.2450	
Very underweight	3.1%	2.0%	4.2%	3.4%	1.3%
Slightly underweight	14.5%	9.9%	18.7%	13.7%	15.0%
About the right weight	56.2%	57.0%	55.4%	56.9%	56.3%
Slightly overweight	22.4%	25.8%	19.3%	21.6%	27.5%
Very overweight	3.8%	5.3%	2.4%	4.4%	0%
Weight strategy (% of sample)		Sex: P < 0.001		Race: P = 0.0248	
Lose weight	42.6%	55.0%	31.3%	44.6%	38.8%
Gain weight	16.7%	8.6%	24.1%	18.6%	11.3%
Stay the same weight	19.2%	15.9%	22.3%	20.1%	17.5%
I am not trying to do anything	21.5%	20.5%	22.3%	16.7%	32.5%

[a] Races other than black and white comprised a small proportion of the sample (5.7% Asian, 3.8% American Indian, 0.6% Native Hawaiian/Pacific Islander) and therefore were not included in the race comparison.
* P Values for sex and race reflect comparisons across all categories of weight status, weight perception, or weight strategy.

Study variables

Weight perception and weight strategy were derived from a survey that participants completed containing Youth Risk Behavior Surveillance System (YRBSS) questions [7]. Weight perception reflects the individual's view of his/her body weight, which was ascertained from the YRBSS question "*How do you describe your weight?*" Response options included "very underweight, slightly underweight, about the right weight, slightly overweight, very overweight." Weight strategy reflects the individual's reported intention regarding his/her body weight, which was determined from the YRBSS question "*Which of the following are you trying to do about your weight?*" Response options were "lose weight, gain weight, stay the same weight, I am not trying to do anything about my weight." Race and sex were self-reported.

Weight status was based on measured height (using a stadiometer) and weight (using a digital scale). Body mass index (BMI) and sex-specific BMI-for-age percentiles were calculated to categorise weight status as underweight (<5th percentile), normal weight (5th to <85th percentile), overweight (85th to <95th percentile), or obese (≥95th percentile) [1].

Weight status misperception was defined as weight perception that did not correspond to measured weight status. The corresponding categories for accurate weight perception and measured weight status were: "very underweight" or "slightly underweight" = underweight; "about the right weight" = normal weight; "slightly overweight" = overweight; "very overweight" = obese.

Statistical analysis

SAS version 9.4 was used for all analyses. Proportions of individuals in each category of weight perception, weight strategy, and weight status were calculated for the entire sample and by sex and race. Frequencies were compared using χ^2 tests for independence or Fisher's exact test in the case of small cell counts. Means were compared using t-tests. Odds ratios were computed by logistic regression analysis to determine the likelihood of weight loss intention by weight perception. Sex, age, race, and weight status were controlled in the analyses, unless the model was stratified or restricted by that variable. For logistic regression analyses, underweight and normal weight were combined for the weight status variable due to small counts in the underweight category.

Results

The sample included 317 youth (52% male) with a mean age of 14.9 years (SD 2.0) and a racial distribution of 64.6% black, 25.3% white, and 10.1% other. The mean BMI-for-age percentile was 67.5 (SD 27.2) overall and was higher among girls (73.1, SD 24.6) than boys (62.5, SD 28.5, P < 0.001), but did not differ by race (black 70.1, SD 25.1, white 65.7, SD 27.6, P = 0.2046). Table 1 displays results for weight status, weight perception, and weight strategy by sex and race. Overall, 36.3% of youth were categorised as overweight or obese based on measured weight status; the proportion was higher among girls (43.7%) than boys (29.6%, P = 0.009). Weight perception did not differ significantly by sex or race. For weight strategy, more girls (55.0%) than boys (31.3%) reported trying to lose weight, while more boys (24.1%) than girls (8.6%) reported trying to gain weight.

Fig. 1 displays weight perception within each weight status category for the overall sample and by sex. Overall, 53.0% of youth perceived their weight status accurately, while 40.7% underestimated and 6.3% overestimated. Among youth categorised as overweight, 58.8% of girls and 61.5% of boys underestimated their weight status; among youth with obesity, 81.3% of girls and 87.0% of boys underestimated. Collectively, 72.2% of youth with overweight or obesity misperceived their weight status, predominantly by underestimation.

Odds ratios (Table 2) revealed that among all youth, those who perceived themselves as overweight (i.e., slightly overweight or very overweight) were 5.55 (95% CI: 2.57–11.97) times more likely to report trying to lose weight than those who did not perceive themselves as overweight (regardless of measured weight status). When the sample was restricted to youth whose weight status was overweight or obese, those with accurate perception were 3.65 (95% CI: 1.44–9.28) times more likely to report trying to lose weight.

Discussion

Our primary finding was that 72.2% of youth in our urban sample who were categorised as overweight or obese based on measured

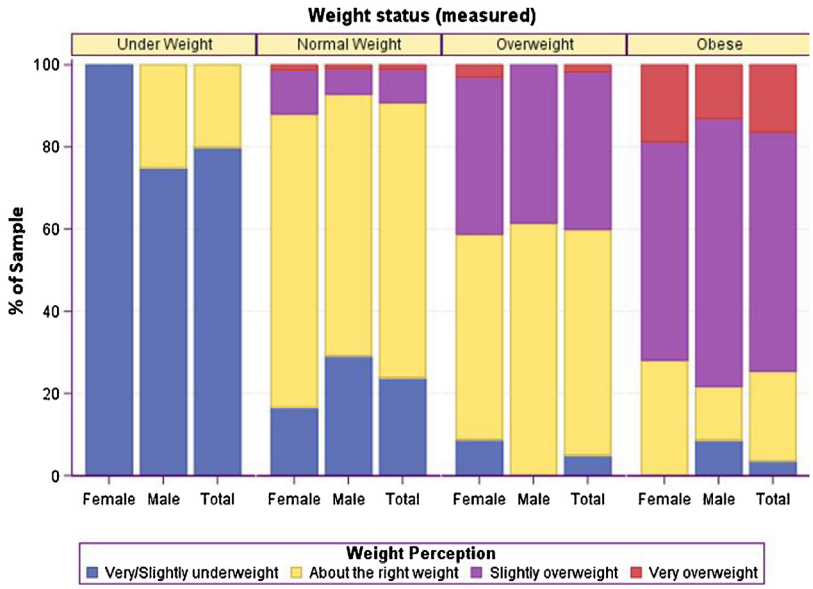

Fig. 1. Weight perception by weight status.
Each bar represents the proportion of youth (as a % of the overall sample) who reported the following four categories of weight perception: very underweight/slightly underweight (combined), about the right weight, slightly overweight, very overweight. Within each measured weight status (i.e., underweight, n = 5; normal weight, n = 197; overweight, n = 60; obese, n = 55), weight perception is shown for females, males, and the overall sample.

height and weight misperceived their weight status, predominantly by underestimation. Furthermore, perceiving oneself as overweight increased the likelihood of reporting an intention to lose weight.

The National Health and Nutrition Examination Survey (NHANES) is a large, nationally representative dataset that includes measured weight status as well as self-reported weight perception. In comparison with our sample, in which 61.7% of youth with overweight and 83.6% of youth with obesity misperceived their weight status, 76.7% of overweight youth and 43.0% of obese youth in the NHANES 2005–12 sample of 5729 youth aged 8–15 years misperceived their weight status [8]. Similarly, 76.4% of 7800 adolescents with obesity in the Early Childhood Longitudinal Study in 2006–07 displayed weight misperception [9]. The relevance of these findings is that weight misperception may hinder dietary and physical activity behavior changes that would promote a healthy weight status. In support of this view, we observed that accurate weight perception was strongly associated with weight-loss intention, a finding that is consistent with previous results [5]. Interestingly, a comparison of NHANES data spanning 20 years revealed that a smaller proportion of adolescents with overweight and obesity reported trying to lose weight in 2009–14 compared to the 1988–94 assessment period [10]. This finding may be explained by an increase in weight misperception over time [11].

Accurate weight perception, however, may not promote healthful behaviors and may even have unintended consequences [12]. In a sample of 50,241 YRBSS participants in grades 9–12, perception as overweight was associated with intention to lose weight but not with favourable dietary and exercise behaviors [13]. Youth in grades 7–12 who accurately perceived their weight status as overweight or obese had significantly higher depressive symptoms than those who inaccurately considered themselves average or underweight [14]. Weight misperception has been proposed to serve as a protective factor against disordered weight control behaviors, as observed in a YRBSS sample of more than 31,000 high school students [15].

Strengths of our study include the focus on urban youth residing in low resource neighborhoods, relatively high representation of minority individuals, and determination of weight status using measured heights and weights. Our obesity prevalence (17.9%) was similar to the United States average (20.6%) for youth aged 12–19 years based on an NHANES sample (in which height and weight were measured) [16], but higher than in a YRBSS sample (13.9%) based on self-reported height and weight [17]. Limitations of our study are the small sample and inclusion of youth from only one city. Although our sample included youth from diverse geographic and socioeconomic areas and is intended to be representative, there may be selection bias.

Table 2
Odds ratios for reporting "Trying to lose weight" among urban youth who perceive themselves as "slightly overweight" or "very overweight" versus youth who do not perceive themselves as overweight.

Model[a]	Odds Ratio (95% CI)	P-Value
Overall	5.55 (2.57, 11.97)	<0.0001
Stratified by sex		
Female	3.49 (1.28, 9.48)	0.0144
Male	8.67 (2.69, 27.95)	0.0003
Stratified by race		
Black	3.31 (1.27, 8.62)	0.0141
White	7.49 (1.66, 33.72)	0.0087
Stratified by weight status (measured)		
Overweight or obese	3.65 (1.44, 9.28)	0.0065

[a] All models control for sex, age, race, and weight status, unless stratification or restriction is by that variable.

Our results reveal a high rate of weight status misperception among youth categorised as overweight or obese, which has implications for engagement in health promotion and weight management activities at the individual and community levels. Best practices in clinical care and research must consider strategies to enhance awareness while minimising the potential psychosocial harms associated with identifying youth as overweight. Interventions should be designed to acknowledge the importance of healthy weight at all ages and to promote adoption of healthy lifestyle patterns.

Ethical statement

I have read and have abided by the statement of ethical standards for manuscripts submitted to the Obesity Research & Clinical Practice.

Declarations of interest

None.

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