Peer Reviewed Article

Comparisons of Measured Body Composition and Self-Perception of Body Type In Racially and Ethnically Diverse Male and Female College Students

Mark W Baldis, Ph.D.
Department of Kinesiology
California State University, Fresno

Tim Anderson, Ed.D.
Department of Kinesiology
California State University, Fresno

Michael Coles, Ph.D.
Department of Kinesiology
California State University, Fresno

ABSTRACT

Individual perception of body size varies by gender and ethnicity and some these groups have been found more accepting of overweight body types than others. Groups who positively value body types deemed clinically overweight or obese may be unreceptive to weight management techniques aimed to decrease risk for obesity-related chronic diseases. The present study examined the relationship between perceived body image and measured body composition, across race and gender, in a group of 240 college-aged students. Participants underwent skinfold body composition assessment and completed a questionnaire designed to elicit perceptions of body image and body weight status. One in four females who were in the acceptable range for body fat percentage identified themselves as overweight. Over half of White males (57%), White females (80%), and Black females (50%), who were overweight, perceived themselves to be "about the right weight". Over half of all Asian (56%), Black (50%), and Hispanic (67%) males, in the acceptable range for body fat percentage identified themselves as overweight. These findings indicate a majority of individuals, regardless of gender, race, or ethnicity misperceive their body type and consequently may be unaware of the potentially negative affect on their overall health status.

Keywords: overweight, obese, race, gender, body fat percentage, body image.

Introduction

Obesity is a chronic and costly disorder that burdens individuals and society. Two-thirds of Americans are classified overweight and obese (Flegal, Carroll, Ogden & Curtin, 2010), but less than one in four view their body weight as a serious personal health concern (Oliver & Lee, 2001). While Americans seem to recognize this trend of increasing obesity in their fellow citizens, they have been less inclined to recognize this condition in themselves. In a national telephone survey conducted by the Pew Research Center (2006), nine out of 10 American adults surveyed said that their fellow Americans were overweight, however, when asked about themselves, only 40% of respondents identified themselves as overweight. However, disparities exist in the prevalence of obesity among gender, race, and ethnic groups within the U.S. (Ogden, Carroll, McDowell, & Flegal, 2007; USDHHS, 2001; Yancey, et al., 2004). The precise mechanism responsible for these observed racial, cultural, and gender differences are unclear.

Discordance between one's body image and actual body composition, based upon established biomedical standards, may create a barrier to behavior change. If differences exist between racial or ethnic groups regarding perceptions and beliefs

related to body image, body size, and weight status, this may explain, in part, the higher prevalence of overweight and obesity among certain groups.

If particular groups positively value a body type, or erroneously classify body weight that is deemed clinically overweight or obese, it might be difficult to promote effective approaches towards weight management that would decrease the risk for development of obesity-related chronic diseases.

The purpose of the present study was to compare perceived body type, as assessed by a written questionnaire and body composition, as determined by skinfold measurement, in a group of racially and ethnically diverse male and female college students.

Methods

This cross-sectional design study included 240 male and female California State University students aged 18 – 25 years, recruited according to demographic characteristics, with an equal number of participants (n=30) in each gender and ethnic category (White, Black, Hispanic, Asian).

After obtaining informed written consent, each participant completed a self-administered written figure-rating questionnaire designed to elicit relevant demographic data (i.e., age, gender, race/ethnicity) and to determine perceptions of their own body type. All participants were asked to answer either "underweight," "about the right weight," "overweight," or "obese," or when responding to the questions, "When you look at yourself, do you think that you look _____?" and "Do you think that you are _____?" Individuals who identified their perceived body type differently from their classified body weight, based on skinfold measurements, were considered to have weight misperception. This methodology is consistent with that used by Dorsey, Eberhardt, and Ogden (2009).

Upon completion of the questionnaire, body composition measurement was performed and calculated using a seven-site skinfold measurement technique in accordance with American College of Sports Medicine (ACSM) guidelines (Thompson, Gordon, & Pescatello, 2010). Each participant was categorized as being lean, acceptable, overweight, or obese based on criterion scores for percent body fat (Earle & Baechle, 2004).

Data summary of this cross-sectional study design includes comparative descriptive statistics, frequencies, and relative frequencies. A Pearson's Chi-square test was conducted to determine if there were a significant differences between perceived body types across body composition categories.

Results

Nearly 22% of males and 38% of female participants were categorized as overweight or obese, with 14 females and one male categorized as obese. A far greater percentage of males (48%) compared to females (28%) fell into the lean category. Overweight and obese female participants (59%) were more likely than overweight and obese men (27%) to underestimate their weight status. Overall, only 36% of overweight and obese women correctly identified their weight category, whereas nearly 7 of 10 overweight and obese male participants accurately identified themselves as overweight or obese.

Compared to White and Black females in this study, Asian and Hispanic females categorized as overweight or obese (n = 45) were more likely to perceive themselves as so. Among overweight and obese females, 79% of Asian and 83% of Hispanic females accurately identified their own body composition category compared to 58% of Black females and 44% of White females. The remaining 57% of White, 42% of Black, 21% of Asian, and 17% of Hispanic overweight or obese females misperceived themselves as about the right weight. No females who were overweight or obese perceived their body type to be lean. Of the 14 obese females, only one identified themselves as obese, ten identified themselves as overweight, and three (two Black, one Asian) perceived themselves as about the right weight. At the other end of the continuum, slightly more than one in four females in the lean or acceptable range, regardless of ethnicity, incorrectly perceived themselves as overweight or obese, with the rate of misperception being slightly higher, nearly 33%, with Asian females. Only two females thought that they were underweight and both fell into the lean category.

Males categorized as overweight or obese were much more accurate in their perceptions of their own body type. All Asian and Black males categorized as overweight or obese saw themselves as such. Six of the seven overweight Hispanic males accurately perceived their overweight status. One overweight Hispanic male incorrectly identified himself as being about the right weight. Overweight or obese White males were the least accurate in their body type self-perceptions, with only 43% accurately identifying their weight category. The remaining 57% perceived themselves as about the right weight. There was only one male participant (White) categorized as obese, yet he perceived himself as overweight. In males categorized as lean or acceptable, rates of misperception of body type as overweight or obese was Asian (24%), Hispanic (26%), Black (16%), and White (18%). Within the group of males categorized as acceptable, over half of Asians (56%), Blacks (50%), and Hispanics (67%) identified themselves as overweight, which is in stark contrast to females. Ten males identified themselves as underweight, with 90% of them categorized as lean and one as acceptable.

Table 1 summarizes the data for the percentages of "overweight/obese" participants who incorrectly identified their body status as "about the right weight".

Data analysis indicated that lean and obese women and lean men were significantly more likely to misperceive their body type than all other groups. Further analysis indicated that two-thirds of males and females perceived their body type to be acceptable/about right. Analysis of the data using Chi-square testing revealed statistical significance of $p = .003$ for females and $p = .000$ for males.

Discussion and Conclusion

The prevalent research paradigm related to the misperception of body type has focused on individuals of acceptable weight who perceive themselves to be overweight. (Dorsey, Eberhardt & Ogden, 2009; Kuchler & Variyam, 2003) This erroneous perception of overweight can lead to negative behaviors such as unnecessary excessive exercise, unnecessary dieting, and/or disordered eating. This study attempted to examine a contrasting body type perception from the typical body dysmorphia research paradigm. The authors of this study sought to identify individuals who perceived their body type as acceptable in weight, when in fact, these individuals were overweight or obese. This type of misperception may have the consequence of failing to provide the stimulus that will provoke and individual to take action leading to a healthy weight status. Perhaps the most revealing finding from the present study was that a substantial number of individuals misperceive their body type and appear to be unaware of their own body status and the potential negative health consequences associated with this misperception.

Some of the individuals in the current study supported a traditional view of body type misperception, in that, roughly one in five males and one in four females misperceived themselves to be more overweight/obese when they were acceptable weight. However, in this study, roughly one in five males and one in two females misperceived themselves to be leaner than they were. This misperception was most prevalent in White males and females and Black females (Tables 2 and 3).

Table 2: Frequencies of perceived body type within categories of measured body composition in females

Previous studies which included White, Black, and Hispanic-American racial and ethnic groups have reported that perceptions of body composition may be greatly influenced by ethnic or gender-based cultural attitudes, values, and beliefs (Chang & Christakis, 2001; Dorsey, et al., 2009; Kuchler & Variyam, 2003; Patel & Gray, 2001). A unique aspect of the present study was that Asian-Americans were also included. The reported misperceptions of body composition, if due to culturally influenced attitudes and beliefs, may negatively impact individual health and the delivery of efficacious preventative healthcare. Therefore, it would be valuable for all those involved with the management of weight-related issues to be aware of these possible ethnic and/or gender based misperceptions. Pending the results of further study into this area, it is recommended that individuals be independently assessed for self-perception of body type.

References

Chang, V.W., & Christakis, N.A. (2001). Extent and determinants of discrepancy between self-evaluations of weight status and clinical standards. *Journal of General & Internal Medicine,* 16, 538-543.

Dorsey, R.R., Eberhardt, M.S., & Ogden, C.L. (2009). Racial/ethnic differences in weight perceptions. *Obesity,* 17(4), 790-795.

Earle, R.W. & Baechle, T.R. (Eds.). (2004). *NSCA's Essentials of Personal Training* (pp. 246-247). Champaign, IL: Human Kinetics.

Flegal, K.M., Carroll, M.D., Ogden, C.L., Curtin, L.R. (2010). Prevalence and trends in obesity among United States adults, 1999–2008. *Journal of the American Medical Association,* 303:235-41. 2010.

Kuchler, F., & Variyam, J.N. (2003). Mistakes were made: Misperception as a barrier to reducing weight. *International Journal of Obesity,* 27, 856-861.

Ogden, C.L., Carroll, M.D., McDowell, M.A., & Flegal, K.M. (2007). *Obesity among adults in the United States-no change since 2003–2004*. NCHS data brief no 1. Hyattsville, MD: National Center for Health Statistics.

Oliver, J.E., & Lee, T. (2001). *Public opinion and the politics of America's obesity epidemic.* Retrieved on July 1, 2011 from http://www.princeton.edu/csdp/events/Oliver022702/OliverLee.pdf

Patel, K.A., & Gray, J.J. (2001). Judgement accuracy in body preferences among African-Americans. *Sex Roles,* 44, 227-235.

Pew Research Center. (2006, April 11). *Americans see weight problems everywhere but in the mirror*. Retrieved on July 1, 2011 from http://pewresearch.org/assets/social/pdf/Obesity.pdf

Thompson, W.R., Gordon, N.F., & Pescatello, L.S. (Eds.). (2010). *ACSM's guidelines for exercise testing and prescription*. (8th ed.). Baltimore: Lippincott Williams & Wilkins.

United States Department of Health and Human Services [USDHHS]. Centers for Disease Control [CDC]. (2001). *The surgeon general's call to action to prevent and decrease overweight and obesity*. Retrieved July 1, 2011 from http://www.surgeongeneral.gov/topics/obesity/

Yancey, A.K., Kumanyika, S.K., Ponce, N.A., McCarthy, W.J., Fielding, J.E., Leslie, J.P., et al. (2004). Population-based interventions engaging communities of color in healthy eating and active living: A review. *Prevention of Chronic Disease: Public Health Research, Practice, and Policy,* 1(1), 1-18. Retrieved July 1, 2011 from http://www.cdc.gov/pcd/issues/2004/jan/03_0012.htm

Table 1: Percentage of "overweight/obese" participants who incorrectly identified their body status as "about the right weight"

	White	Black	Hispanic	Asian
Male	57	0	14	0
Female	56	42	17	21

Table 2: Frequencies of perceived body type within categories of measured body composition in females

	Measured Body Composition Category				
	Lean	Acceptable	Overweight	Obese	Total
Perceived Body Type					
Underweight	2	0	0	0	2
About right/Acceptable	25	27	13	3	68
Overweight	5	13	15	10	43
Obese	0	1	2	1	4

Table 3: Frequencies of perceived body type within categories of measured body composition in males

	Measured Body Composition Category				
	Lean	Acceptable	Overweight	Obese	Total
Perceived Body Type					
Underweight	9	1	0	0	10
About right/Acceptable	43	18	6	0	67
Overweight	3	15	18	1	37
Obese	0	0	1	0	1