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## **Obesity Prevalence, Weight-Related Beliefs and Behaviors among Low-Income Ethnically Diverse National Job Corps Students**

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### **ABSTRACT**

The obesity rates of Job Corps students, a predominantly ethnic minority and low income group of youth, are unknown. The purpose of this project was to examine obesity rates among these youth as well as their weight-related perceptions and behavior. First, medical charts (N=641) of all Job Corps students (ages 16-25) who were enrolled in the program in the past year were examined for height and weight. In the second phase of the study, 344 Job Corp students were recruited and information on weight perceptions, knowledge of obesity consequences, and weight loss behavior were examined. Almost half of the participants were overweight or obese. Overweight males were less likely to perceive themselves as being overweight than females. The majority of participants were aware of obesity-related health consequences but of those with past weight loss attempts, only 13% reported using both exercise and diet. High levels of overweight and obesity among Job Corps students are likely to impact employment and career goals. Evidence-based obesity interventions for Job Corps students are needed.

**Key words:** obesity, youth, low-income, ethnic minorities

### **INTRODUCTION**

In the United States, it is now estimated that 66.3% of adults are overweight or obese and 17.1% of children and adolescents are overweight (Ogden et al., 2006). Certain demographic factors have been associated with overweight including socioeconomic status (SES) and ethnicity (Delva, O'Malley, & Johnston, 2006; Miech et al., 2006; Wang & Zhang, 2006). Obesity in adults is linked to the development of chronic diseases, and mortality (Adams et al., 2006; Mokdad et al., 2003). Being

overweight in childhood or adolescence increases the risk for obesity as an adult (Thompson et al., 2007) and elevates risk for associated medical conditions (Delva et al., 2006; Hotu, Carter, Watson, Cutfield, & Cundy, 2004; O'Dea & Wilson, 2006; Y. Wang et al., 2006). There is growing interest in weight gain patterns of late adolescence and early adulthood as this may be a critical period for weight gain prevention (Lloyd-Richardson, Bailey, Fava, & Wing, 2009).

Adolescence is a transitional period where individuals gain more independence and greater freedom in decision making, especially in regards to health behaviors. Adolescents must begin to deal with the many influences that impact their lifestyle choices including intrapersonal influences, social environmental (e.g., family and peers), physical environmental, and societal (e.g., social and cultural norms, mass media, marketing and advertising) (Story, Neumark-Sztainer, & French, 2002). Adolescence is a difficult time for most individuals and those from low-SES and ethnic minority backgrounds are presented with unique challenges not faced by other groups. Individuals from low SES backgrounds experience higher levels of environmental challenges than those from higher SES groups, and have fewer psychosocial resources available to cope with them (Baum, Garofalo, & Yali, 1999; Marmot & Wilkinson, 2001).

In response to these challenges, federally-funded national Job Corps programs, which were developed in the 1970s, offer low-income youth support and guidance to help develop the skills they need to become employable and independent. Through this program, students receive career training in a variety of occupational areas and are also able to earn a high school diploma or GED. This residential program provides no-cost education and vocational training to disadvantaged youth to facilitate long-term employability. Duration of each student's time in the program ranges from a few months up to 2 years. In this nation-wide program, approximately 62,000 students enter job-training each year. While enrolled in the program, students receive housing, meals, basic medical care, and living expenses. Despite the significant opportunity this presents, programs have yet to be developed to address diet and exercise among this population.

Obese individuals face biases related to their weight that may impact obtaining and maintaining employment (Puhl & Brownell, 2001; Roehling, 1999) a problem that is particularly relevant to Job Corps students. Therefore, the purpose of the first phase of this study was to examine the prevalence of overweight and obesity among a sample of Job Corps students who were enrolled in the program in the past year at one site located in Massachusetts. In the second phase, we examined weight-related knowledge and beliefs, and past weight loss efforts, among a sample of students in the Job Corps program.

## **METHODS**

### **Participants**

In the first phase of this study, charts of students, who had enrolled in a Massachusetts national Job Corps site in the past year were reviewed to obtain selected data collected as part of the initial medical evaluation at the time of their enrollment. These data included demographics, height, and weight. In the second phase of our study, students enrolling in the program were recruited to obtain the anthropometric data described above as well as further information about weight perceptions including which BMI category (underweight, normal, overweight or unsure) they believed they fit in. In addition, information was gathered on their weight change history, past weight loss strategies, parental history of diabetes, and knowledge of risks associated with overweight and obesity.

## Design and Procedure

This study was approved by the Institutional Review Board at the University of Massachusetts Medical School. A research assistant reviewed the students' charts to abstract demographic and weight related data. Body Mass Index was calculated as weight (kg)/height squared (in meters). Because our sample included older adolescents (age 16-19) as well as young adults, we examined BMI categories for the adolescents according to adult standards as well as those developed for adolescents (age-specific BMI). For the second phase of the study, entering students were consecutively recruited for participation in this study. Following written informed consent procedures, these students completed a health survey which was developed by study personnel for this population. Validity and reliability statistics are not available on this measure. This survey included questions on weight-related knowledge (e.g. effects of weight loss on health), perceptions of own weight status, and behaviors (e.g. weight loss attempts and strategies used in for weight loss).

## RESULTS

For the first phase, the sample included 641 youth with ages ranging from 16-25 years. Approximately 52% of this sample was male, 32% were Caucasian, 28% were Hispanic, 25% were African American, and 15% identified as other. The average age of students in this sample was 18.2 (SD=2.0) and average number of years of education was 10.1 (SD=1.4). In the second phase, 344 participants completed the survey, 56% were male and the majority was ethnic minority (66%; See Table 1 for sample descriptive). We examined differences between the two samples of participants. T-test analysis revealed that the phase II sample was significantly younger (M=18.1 yrs, SD=1.9;  $p<.05$ ) than the phase I sample (M= 18.5 yrs, SD= 2.1). No other significant differences on demographic variables were found between these two samples of Job Corps students.

**Table 1. Participant Characteristics for Total Sample (N= 641)**

<b>Gender (%)</b>		
Male		52
Female		48
<b>Race/Ethnicity (%)</b>		
Caucasian		31.8
African American		31.0
Latino		27.5
Asian		1.7
Native American		0.9
Multi-Racial		0.9
Other		6.2
<b>Age (years)</b>		
Mean (SD)		18.2 (2.0)
Range		16-25
<b>BMI categories by adult standards(%)</b>		
Underweight (< 18.5 kg/m <sup>2</sup> )		5
Normal (18.5-24.9 kg/m <sup>2</sup> )		50
Overweight (25-29.9 kg/m <sup>2</sup> )		20
Obese (> 30 kg/m <sup>2</sup> )		26

## Phase I Results

Given that our sample consisted of adolescents and young adults ( $n=641$ ), we examined obesity prevalence in two ways (according to the established criteria for each group). First we examined obesity prevalence by adult standards for the adults ( $> 20$  years) in the sample ( $n=141$ ). According to adult BMI category standards, for youth ages 20-25 years, 2.8% ( $n= 4$ ) were underweight (BMI  $<18.5$ ), 48.2% ( $n=68$ ) were normal weight (BMI= 18.5-24.9), 19.6% ( $n= 27$ ) were overweight (BMI=25-29.9), and 29.8% ( $n= 42$ ) were obese (BMI  $>30$ ). Second, we looked at obesity prevalence among adolescents only ( $n= 500$ ) according to the CDC's BMI-for age growth standards for participants who were between the ages of 16-19. We found that for this sample, 1.6% ( $n= 8$ ) were underweight ( $< 5$ th percentile), 54.2% ( $n= 271$ ) were healthy (5th to 85th percentile), 18.2% ( $n= 91$ ) were at-risk (85th to 95th percentile), and 26.0% ( $n= 130$ ) were overweight ( $>95$ th percentile). Overall, when looking at gender differences in BMI for all participants (adults and adolescents), t-test analyses revealed that females (body mass index  $M= 27.80$ ) had significantly higher BMIs than males (body mass index  $M= 25.8$ ;  $t(639) = -3.48, <.01$ ).

**Table 2. Characteristics of Participants with Survey Data by Gender (N= 344)**

	Male (N=194)	Female (N=150)	All (N=344)
<b>Age</b>			
Mean (SD)	18.24 (2.1)	17.89 (1.7)	18.09 (1.9)
<b>Race/Ethnicity (%)</b>			
Caucasian	36	32	34
African American	21	24	27
Latino	29	25	22
Other	14	19	17
<b>Years of Education</b>			
Mean (SD)	10.15 (1.4)	9.96 (1.4)	10.07 (1.4)
Range	6-13	6-13	6-13
<b>Insurance (%)</b>			
Public	46	51	48
Private	29	23	26
None	25	25	25

## Phase II Results

Participants ( $n=344$ ) in the second phase of our study were asked a single question to determine which BMI category they believed their weight and height put them in including normal, underweight, overweight, or unsure. Forty-eight percent of all participants believed that their weight was normal. Nine percent stated that they were underweight, 29% believed that they were overweight, and 14% were unsure. There was a significant gender difference in weight perception, females (41%) were significantly more likely to consider themselves overweight than males (21%;  $X^2= 17.68, p <.01$ ). Among the overweight and obese participants, there were significant differences in perception of being overweight between males (45%) and females (74%), with females being more likely to have an accurate perception of their weight ( $X^2= 14.04, p<.01$ ).

For all participants, in the six months prior to evaluation, females (47%) were significantly more likely to have made an effort to lose weight compared to males (30%) ( $X^2= 10.51, p<.01$ ) whereas

males (34%) were significantly more likely than females (16%) to have made an effort to gain weight ( $X^2= 13.27, p<.01$ ). Participants who reported attempting to lose weight were asked the methods they used. The most frequently reported method of weight loss was increasing physical activity (27.9%) followed by reducing caloric intake (22.1%), decreasing fat intake (8.1%), and going on a special diet to lose weight (5.2%). Only 13% of participants reported using both increased physical activity and reduced caloric intake to lose weight. Among the overweight and obese participants, there were significant differences in efforts to lose/gain weight over the past six months. For instance, significantly more overweight males (6.8%) reported making an effort to gain weight than overweight females (0%;  $X^2= 8.20, p<.01$ ). However, there were no significant gender differences among the overweight and obese in efforts to lose weight in the last six months ( $p= ns$ ). Among the overweight/obese participants, 62% of females and 57% percent of males reported making an effort to lose weight over the past six months.

The majority of participants were aware that being overweight has negative effects on health. Most of the participants were aware of the association between overweight and hypertension (86%), heart disease (87%), and diabetes (72%). Among overweight and obese participants, the majority of participants recognized that overweight has an effect on health (95%) and is associated with hypertension (94%), heart disease (95%), and diabetes (78%) and no significant gender differences were found ( $p= ns$ ).

**Table 3. Body Mass Index (BMI) by Gender and Race/Ethnicity (Means and SDs)**

	Males (N= 331)	Females (N=310)	All (641)
Caucasian	26.87 (7.02)	28.05 (9.30)	27.40 (8.14)
African American	24.41 (5.87)	26.99 (7.13)	25.74 (6.98)
Latino	26.52 (6.07)	28.67 (7.84)	27.61 (7.09)
Asian	20.98 (2.49)	21.68 (6.47)	21.3 (4.47)
Native American	29.8 (8.08)	30.85 (9.26)	30.15 (7.52)
Multi-Racial	24.15 (4.6)	27.61 (9.02)	26.14 (7.59)
Other	23.60 (1.83)	28.70 (9.77)	26.66 (7.51)

## DISCUSSION

To our knowledge, this is the first study to report obesity rates and weight related perceptions and knowledge for Job Corps students. The major finding in this study was that in this group of job training program students, the prevalence of overweight and obesity was greater than the national rates reported for similar age groups (Ogden et al., 2006). Almost half of our sample of low-income adolescents and young adults who were enrolled in one national job-training center in Massachusetts were overweight or obese by either adult or adolescent standards.

Almost half of the adults (48.9%) in our sample were overweight or obese. About 78% of our sample were nineteen years of age or younger, therefore we examined BMI by the guidelines developed by the CDC for children and adolescents which are based on age and gender-specific percentiles. Twenty-six percent of adolescents in this sample were overweight, which is greater than the national data that reports 16.3% of U.S. children and adolescents are overweight (Ogden, Carroll, & Flegal, 2008) and the data from Massachusetts (MA) which estimates 11% of high school

students are overweight (Health, 2008). Furthermore, 44.2% of our sample were at or above the 85th percentile for BMI for age growth charts or at risk for overweight which is greater than the national data which is 31.9% and 26% for MA youth. These results are consistent with research examining health disparities in overweight and at-risk for overweight among adolescents, which have found higher rates of overweight and risk for overweight among adolescents from low SES backgrounds (Delva et al., 2006; McMurray, Johnson, Davis, & McDougall, 2002; Miech et al., 2006; O'Dea & Wilson, 2006).

The low SES youth in our sample were enrolled in the Job Corps program with the ultimate goal of obtaining comprehensive vocational training in order to increase the likelihood of long-term employability. The students' goal and the goal of the Job Corps are likely to be impacted by the high prevalence of overweight in this sample. Obesity is related to decreased productivity while on the job as a result of reduced workforce participation and increased work limitations (Tunceli, Li, & Williams, 2006), decreased employability (Peskin, 2003), increased numbers of years being unemployed, and a decrease in the likelihood of regaining employment after a period of unemployment (Paraponaris, Saliba, & Ventelou, 2005).

We also examined how the job-training students perceived their own weight status. Among the overweight/obese students, females had the most accurate perception of their weight compared to males. This is consistent with past research that demonstrates that females have more accurate self-perceptions of weight status, specifically females who are overweight (Kuchler & Variyam, 2003; Paeratakul, White, Williamson, Ryan, & Bray, 2002). As perceptions of weight impact weight-related behaviors including weight loss efforts (Zullig, Ubbes, Pyle, & Valois, 2006), the overweight males in this study, who were less aware of their weight status, were less likely than overweight females to have made an effort to lose weight in the last 6 months. This misperception of weight status is concerning because if males are unaware that they are overweight they are less likely to make efforts to control weight and thus are at an increased risk for obesity and obesity related diseases (Brenner, Eaton, Lowry, & McManus, 2004; Kuchler & Variyam, 2003).

The majority of our sample appeared to be aware of the health related consequences of obesity. Despite this knowledge, there was a high prevalence of overweight in this group. Many overweight individuals (62% females and 57% males) have made past efforts to lose weight with only 13% of individuals attempting weight loss using both diet and exercise. In fact, among overweight students, 6.8% of males have made efforts to gain weight. This may be related to the high levels of misperceptions of weight status among males. It may be important to gain a better understanding of weight perceptions among males before intervening. In terms of motivating individuals to lose weight or make health behavior changes, the health consequences of obesity may not be powerful enough to influence change, especially as the effects of obesity on health are not immediate (Brown et al., 2000; Mokdad et al., 2003). Weight loss programs developed for Job Corps students could use messages related to the effects of health behaviors on job performance, which are congruent with the students' long-term goals. Messages congruent with their career goals may be powerful motivators for them to make health behavior changes.

## **Limitations**

There are several limitations to the current study that should be noted. For instance, this study was conducted at a single job-training site; therefore we cannot generalize to all job-training sites or to all job-training students. We did not assess social desirability, which may have been a factor when asking questions about weight loss or knowledge of obesity. Further, we did not utilize standardized measures to assess weight loss history and weight related knowledge, therefore we lack information on the measure's psychometric properties. When we compared rates of overweight and obesity

from our sample of adolescents and adults to the data from NHANES, it is likely that our adolescent rates may appear inflated and adult rates appear lower as a result of our sample only representing a small proportion of the age spectrum examined in NHANES. For example, adolescents from our sample represent the higher range of those reported in NHANES (16 to 19 years compared to 12-19 years) and adults from our sample are in the younger range compared to the adults in NHANES (20-25 years compared to 20-39 years) (Ogden et al., 2006; Ogden et al., 2008). Given that BMI tends to increase with age, this may make these comparisons difficult to interpret. In addition, we did not obtain health survey data on all participants for which we had weight data. Using BMI as an indicator of "fatness" in our sample has its limitations. For instance, by relying solely on BMI as an indicator of obesity and not examining muscle mass, we may have misclassified a small number of students (such as males) in the overweight or obese category. Measuring body composition or waist-hip ratio may be a more accurate indicator of disease risk and should be considered in future research with this population.

## CONCLUSION AND FUTURE DIRECTIONS

Our data are the first to document the serious problem of overweight and obesity in this group of Job Corps students and add to the past studies documenting the high prevalence of overweight and obesity among low income, ethnically diverse adolescents and young adults (Delva et al., 2006; Miech et al., 2006; O'Dea & Wilson, 2006; T. J. Wang et al., 2006). Our study is unique in that our entire sample was from low SES backgrounds and enrolled in a Job Corps program. There are currently no evidence-based interventions to promote or facilitate weight loss or obesity prevention with this unique population. The Job Corps program provides a unique opportunity for intervention because students are: all from low SES backgrounds, living on campus, and for most, living independently for the first time in their lives. This presents a "teachable moment" where we can target health behaviors in these youth before life-long habits develop. Most importantly, these students have entered this program of their own volition with the goal of developing life and career skills and it is likely that their motivation for change is activated.

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