Factors Related to Weight Loss Behavior in a Multiracial/Ethnic Workforce

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Objectives: We examined whether factors associated with attempting to lose weight in a hospital-based employee workforce varied by race/ethnicity.

Methods: We conducted a cross-sectional survey in 6 hospitals in a health system in central Massachusetts. The stratified random sample included 813 employees; men and and non-White employees were oversampled. The primary outcome measure was current evidence-based weight loss attempts.

Results: Factors positively associated with attempting to lose weight among non-Hispanic Blacks included self-perceived overweight, female sex, higher education, physician recommendation to lose weight, and having a chronic medical condition. Among Hispanics, body mass index and self-perceived overweight were associated with attempts to lose weight, while working full time and second or third shift were associated with lower likelihood of weight loss attempts. Among non-Hispanic Whites, self-perceived overweight, female sex, higher education, and physician recommendation to lose weight were positively associated with attempting to lose weight, while working full time and working third shift were negatively associated.

Conclusions: Rates of overweight and obesity were high among hospital employees. Findings suggest that factors associated with attempting to lose weight vary across racial and ethnic groups. Workplace-based interventions for weight control should include strategies tailored to these differences. (*Ethn Dis*. 2009;19: 154–160)

Key Words: Weight Loss, Multiethnic Employees, Hospital Workforce

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Introduction

Numerous reports have highlighted the growing proportion of US adults who are overweight or obese.[1,2] The prevalence of overweight and obesity is highest among non-Hispanic Blacks and Hispanics, compared with other racial/ethnic populations.[1] The relationship between obesity and chronic medical conditions including heart problems, diabetes, and cancer is well established.[3–5] Obesity is a major factor in rising medical insurance premiums for employers and employees and results in additional employer costs from decreases in productivity and increases in absenteeism rates.[6] Evidence exists in support of employee health promotion and wellness programs to reduce employee healthcare costs and days lost from work.[7,8]

Given the rise of overweight and obesity, there is increased interest in understanding factors related to weight loss attempts. Research suggests that selected demographic characteristics (ie, sex, race, education) and perceptual factors (ie, perceived overweight, chronic disease, physician's advice[9,10]) are associated with weight loss attempts.[11] However, there is little understanding of how factors related to work, where most US adults spend most days[12] affect weight loss efforts and how predictors of weight loss attempts vary according to race/ethnicity.

Across the country, hospitals are the second largest source of jobs in the private sector, employing >5 million people nationally.[13] Hospitals are attractive employers, as evidenced by a low rate of employee turnover and a pay rate above the national average.[14] While considerable attention has been focused on the poor representation of minorities in professional jobs in the healthcare setting,[15] minorities are more represented in non–patient care jobs, such as food service workers, administrative staff, and custodial jobs.[15,16]

This study examined the profile of weight distribution and weight perception and participation in evidence-based weight loss practices by race/ethnicity in the hospital workforce.

Given the importance of hospitals in many US communities, the diversity in the healthcare workforce, and the potential for hospital workers to be role models for promoting healthy weight, hospitals are an important worksite for the implementation of health promotion programs. Understanding factors that affect weight loss attempts and how these factors differ across diverse racial/ethnic employee groups will guide the development of targeted programs. This study examined the profile of weight distribution and weight perception and participation in evidence-based weight loss practices by race/ethnicity in the hospital workforce.

Methods

Study Design and Context

Cross-sectional data from a trial of an ecologic intervention promoting healthy eating and physical activity were used for this analysis. The ecologic

framework emphasizes that behavior is influenced by complex interrelationships of individual characteristics and the social, physical, and policy environments of daily living. At the worksite, potential levels of influence include the larger organization as well as the work unit or interpersonal environment. Therefore, constructs were informed by multiple theories, including diffusion of innovation theory,[17] social cognitive theory,[18] and theory of reasoned action.[19] Details of the intervention are published elsewhere.[20] Briefly, intervention strategies included activities at all levels, including social marketing campaigns, workshops, and environmental changes such as cafeteria offerings and walking trails. Data sources included human resources administrative files, anthropometric measurements, and surveys. Trained study staff collected anthropomorphic measures by using a standardized protocol. Surveys were self-administered during in-person sessions and took 30–40 minutes to complete. Participants were given the option to complete the survey at their convenience and return it to the study office.

Setting and Participants

The study was conducted at 6 hospitals of the largest healthcare system in central Massachusetts. Approximately 6910 employees were listed on human resources records in January 2005. A cohort of employees was identified from human resources records by using a stratified simple random sampling frame. Employees of each hospital were stratified according to sex and minority status and a sample was selected from among the strata. Men and minority employees were oversampled. All eligible employees had a known nonzero sampling probability. Employees were eligible if they were aged 18–65 years, spoke English or Spanish, planned to be employed at the hospital for the next 2 years, worked ≥20 hours per week, did not work in >1 participating hospital, and could be weighed and measured.

The recruitment period was March through December 2005. Employees were invited by a letter addressed to them at work and signed by the principal investigator and the president of the hospital. Invited employees contacted study staff and scheduled an appointment, attended a scheduled drop-in session, or were contacted by study staff to schedule an appointment. There were 899 enrollees (56% response rate), and 849 (94.4%) of these completed baseline survey and anthropometric data. Of participants, 595 were identified as White, 101 as African American/Black, and 117 as Hispanic, and they were included in this analysis for a total sample of 813.

Measures

Demographic measures included sex, age group (18–40, 41–50, >50 years), race/ethnicity (non-Hispanic White, non-Hispanic Black, and Hispanic), and educational level (high school graduate or less, some post-high school/college, college graduate or more). Participants reported whether a physician or nurse had ever told them that they had hypertension, high cholesterol, diabetes, or arthritis. We created a summary measure of the number of conditions (0–4). Body mass index (BMI) was calculated from measured height and weight. BMI is presented as a prevalence estimate of healthy weight (BMI <25.0 kg/m^2), overweight (BMI 25.0–29.9 kg/m^2), and obese (BMI ≥30.0 kg/m^2). For multivariable modeling, BMI was used as a continuous measure. Job characteristics included job classification (patient care vs non–patient care), shift, years on the job, and hours per week worked.

We inquired whether a physician had ever recommended that the participant lose weight. With respect to weight perception, participants reported what they considered their current weight category to be on a 7-point scale; responses ranged from very underweight to very overweight. Because of small cell sizes, a 3-category variable was created: underweight or ''just right,'' slightly overweight or moderately overweight, or very overweight. We asked participants to report (yes/no) whether they were currently trying to lose weight. A yes response led to a list of 17 diets and weight loss strategies. Respondents checked off as many as they had used and could write in additional strategies. An attempt was considered evidence-based if both physical activity and dietary approaches for calorie reduction were used. Classifications were made by a trained registered dietitian according to the 2005 dietary guidelines.[11,21]

Statistical Analysis

Data were analyzed by using Stata SE version 9.1 (Stata Corp, College Station, Texas). Analyses were weighted by the inverse of the stratum-specific sampling probability to account for the stratified sampling by site, sex, and race. Frequency distributions described the study sample. Contingency tables with ϕ coefficient as measures of the degree of association, and χ^2 statistic P values compared each independent variable according to race/ethnicity. Contingency tables were then created to assess the associations of self-perceived weight status and categorical BMI within race/ethnicity strata.

Race/ethnicity-specific multivariate logistic regression models were developed among people who were overweight and obese (BMI ≥25.0 kg/m^2) to assess the odds of current weight loss attempts associated with demographic and personal characteristics. It was not possible to assess multivariate race/ethnicity-specific models among the healthy weight group (BMI <25.0 kg/m^2) because of insufficient cell sizes. Each independent variable was first included in an unadjusted model. Variables significantly associated with weight loss attempts ($P \leq .10$) were entered into a multivariable model. Variables that remained significant were

Table 1. Demographic and job-related characteristics by race/ethnicity among 813 employees of 6 hospitals in central Massachusetts, 2005

	Total	White, % ($n = 595$)	Black, % ($n = 101$)	Hispanic, % ($n = 117$)	ϕ Coefficient	*P* Value
Sex					.11	.009
Male	21.0	19.7	39.1	24.3		
Female	79.0	80.4	60.9	75.7		
Age group, years					.14	<.001
18–40	36.2	34.1	56.3	49.9		
41–50	33.0	33.3	30.4	30.9		
>50	30.8	32.6	13.4	19.2		
Education					.19	.009
High school degree or less	13.2	11.0	26.7	35.3		
1–3 years of college/post-high school	47.2	47.7	43.7	42.6		
College graduate	26.9	27.6	23.9	18.4		
Master's or doctoral degree	12.8	13.7	5.7	3.8		
Years at hospital					.23	<.001
≤3	27.4	24.6	49.3	50.4		
3.1–15.9	41.9	41.8	40.4	44.6		
≥16	30.8	33.6	10.3	5.1		
Hours work/week					.11	<.001
20–35	34.3	33.1	18.0	22.1		
≥36	65.7	63.9	82.0	77.9		
Shift					.14	<.001
First/split	71.3	72.8	51.8	66.8		
Second	12.5	11.0	26.9	21.4		
Third/mixed	16.2	16.2	21.3	11.3		
Job classification					.29	<.001
Administrative	21.0	20.0	16.6	41.5		
Faculty	3.6	3.7	3.5	1.0		
Laborer	7.8	6.1	24.8	17.4		
Manager	7.7	8.2	2.4	5.2		
Nurse/physician assistant	30.5	32.7	18.5	6.9		
Other clinical	19.3	18.9	26.4	18.4		
Technician	10.2	10.4	7.9	9.7		
Job involves patient care	63.5	65.7	56.2	36.0		<.001

retained in the final model. Because of collinearity between age and years of employment at the hospital and between education and holding a job involving direct patient care, only age and education were entered into the models.

RESULTS

While response rates did not differ by race/ethnicity, we found significant differences on almost all measures between the groups (Table 1). A larger proportion of non-Hispanic Blacks were men and had jobs that did not involve patient care, compared with non-Hispanic Whites and Hispanics. A larger proportion of non-Hispanic Blacks and Hispanics were younger, of lower educational level, had fewer years of employment, worked full time, and worked second, third, or split shifts, compared with non-Hispanic Whites.

We found no differences in reported hypertension by race/ethnicity (Table 2). Rates of hypercholesterolemia and arthritis, however, were higher among non-Hispanic Whites, and rates of diabetes were higher among Blacks and Hispanics.

Overall, a large proportion (approximately two-thirds) of all employees were overweight or obese, but proportions were significantly higher for Blacks and Hispanics. With respect to self-perception of weight status, we also found significant differences by race/ethnicity (Figure 1). Most respondents reported that they were currently trying to lose weight (62.7%), and this proportion was highest among Whites (63%).

In logistic regression, only for Hispanic employees was actual BMI significantly related to attempts to lose weigh (Table 3). Perception of being overweight was strongly and independently associated with weight loss attempts in all groups. Among non-Hispanic

Table 2. Participant health and weight characteristics by race/ethnicity among 813 employees of 6 hospitals in central Massachusetts, 2005*

	Total	White, % (*n* = 595)	Black, % (*n* = 101)	Hispanic, % (*n* = 117)	ϕ Coefficient	*P* Value
Hypertension	18.6	18.4	22.1	18.9	.02	.16
High Cholesterol	22.6	23.1	16.1	21.2	.04	.003
Diabetes	3.7	3.0	8.9	8.3	.09	<.001
Arthritis	15.4	16.4	7.4	7.8	.08	<.001
Number of conditions					.04	.02
0	58.0	57.6	60.3	62.7		
1	27.4	27.9	27.2	21.2		
≥2	14.6	14.6	12.5	16.3		
Body mass index					.10	<.001
Healthy (<25 kg/m^2)	32.8	34.3	19.6	21.7		
Overweight (25.0–29.9 kg/m^2)	32.0	31.6	31.3	38.9		
Obese (≥30.0 kg/m^2)	35.2	34.1	49.1	39.4		
Perceived weight status					.07	<.001
Underweight/just right	27.8	26.7	36.2	36.2		
Moderately overweight	37.0	37.9	29.9	30.6		
Very overweight	35.2	35.4	33.9	33.3		
Clinician recommended weight loss	38.5	38.1	45.1	38.5	.03	.02
Currently trying to lose weight	62.7	63.2	58.0	59.2	.02	.03

* Analyses were weighted by the inverse of the stratum-specific sampling probability to account for sampling design.

Whites and Blacks, being female and having more education were associated with more weight loss attempts, as was having a physician's recommendation to lose weight. For non-Hispanic Blacks, having a co-morbid condition was also associated with attempting to lose weight. Full-time work status (compared with part-time) was associated with fewer weight loss attempts for Whites and Hispanics. Shift was related to weight loss efforts for Whites and Hispanics but in inconsistent patterns. Significantly fewer third-shift Hispanics reported weight loss efforts than did White third-shift workers.

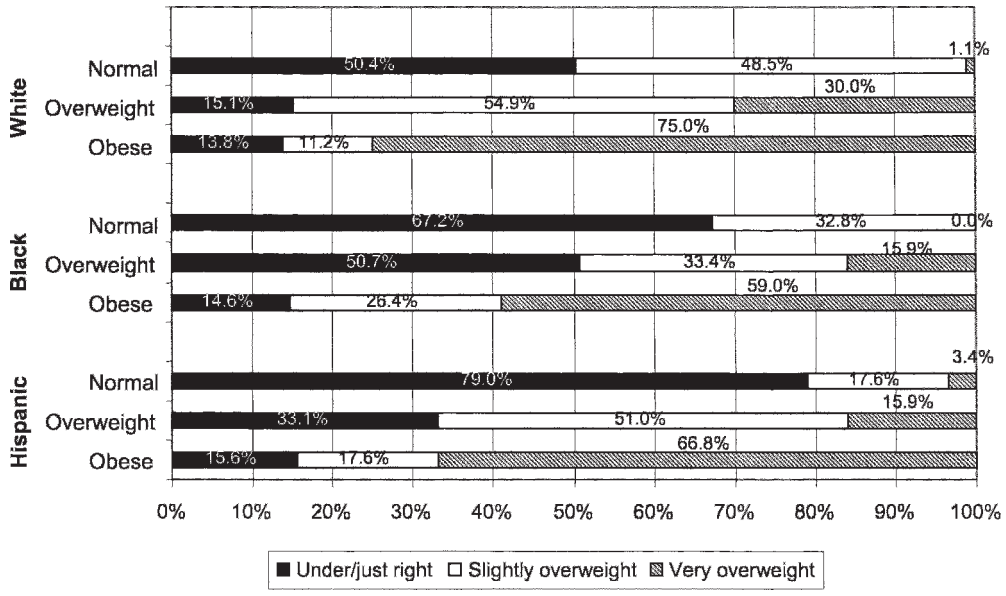

Fig 1. Perceived weight status according to measured body mass index and race/ethnicity among 813 employees of 6 hospitals in central Massachusetts, 2005

Table 3. Odds of attempting to lose weight among 546 overweight or obese employees (body mass index ≥25 kg/m^2) of 6 hospitals in central Massachusetts, 2005*

Variable	White		Black		Hispanic†	
	OR (95% CI)	*P* Value	OR (95% CI)	*P* Value	OR (95% CI)	*P* Value
BMI, per 1 kg/m^2					1.14 (1.09–1.20)	<.001
Perceived weight status						
Just right	1 [Reference]		1 [Reference]			
Overweight	2.62 (2.01–3.43)	<.001	7.87 (3.49–17.74)	<.001		
Sex						
Male	1 [Reference]		1 [Reference]			
Female	2.07 (1.77–2.43)	<.001	1.76 (.95–3.24)	.07		
Age, years						
≤40	1 [Reference]					
40–50	1.42 (1.20–1.67)	<.001				
>50	2.32 (1.96–2.74)	<.001				
Education						
High school or less	1 [Reference]		1 [Reference]			
1–3 years post-high school	.84 (.68–1.04)	.12	8.14 (3.80–17.45)	<.001		
College graduate	1.41 (1.13–1.76)	.002	5.42 (2.57–11.45)	<.001		
Physician recommendation						
No	1 [Reference]		1 [Reference]			
Yes	1.18 (1.03–1.35)	.01	2.72 (1.53–4.84)	<.001		
Any co-morbid condition						
No			1 [Reference]			
Yes			2.58 (.90–7.37)	.10		
Full- or part-time employment						
Part time	1 [Reference]				1 [Reference]	
Full time	.56 (.49–.65)	<.001			.43 (.25–.74)	.003
Shift						
First	1 [Reference]				1 [Reference]	
Second	.88 (.72–1.08)	.24			.42 (.24–.75)	.003
Third	1.92 (1.59–2.32)	<.001			.56 (.28–1.11)	.09

* Analyses were weighted by the inverse of the stratum-specific sampling probability to account for sampling design

† Perceived weight status was not retained in Hispanic model because the estimate was unstable because of small cell sizes. The unadjusted OR was 17.6 (95% CI 7.9–39.0)

DISCUSSION

This study reinforces that overweight/obesity is a major public health problem among the working population, and non-Hispanic Blacks and Hispanics are disproportionately affected, even among employees in a healthcare facility. However, most reported they were trying to lose weight, which may indicate that this population may be receptive to tailored messages and resources that motivate and support weight loss.

While perceived weight status was significantly related to weight loss attempts in each group studied, only for Hispanics was actual BMI an independent predictor. Blacks and Hispanics were significantly less likely to perceive themselves as overweight than were Whites. Previous studies have examined demographic differences in weight perceptions. A study with older adults (aged ≥65 years) highlighted the intersection of sex, race, and social class and reported that after adjusting for race, sex, and socioeconomic status (SES) disparities in BMI, Black adults, men, and people of low SES were less likely than were White adults, women, and people of high SES to describe themselves as overweight.[22] For both Black men and women, lower income and education were predictors of underassessment of weight status.[23] Another study used recent National Health and Nutrition Examination Survey data to verify the importance of SES in all racial groups in accurate weight perception.[24] Yet another study found that dissatisfaction with body size was significantly related to weight loss attempts in Black women with diabetes.[25] Results of this study provide further support for racial differences in weight perceptions and suggest that weight loss intervention strategies must begin by addressing accuracy of weight perceptions if weight loss is to be a personally relevant goal.

Racial/ethnic differences in the relationship of weight characteristics and other personal measures with weight loss attempts provide additional insight

Blacks and Hispanics were significantly less likely to perceive themselves as overweight than were Whites.

for tailored messages and interventions. Attempts were less frequent among men and those with lower education among Blacks and Whites. There was a crude association between female sex and weight loss attempts among Hispanics, but this association was confounded by the positive association between BMI and sex in this group. Thus, while women overall may be more likely to attempt to lose weight than men, these results support that reasons for losing weight may vary across women from different racial/ethnic groups. Intervention efforts should not assume that all women have the same motivations to attempt weight loss. Only among Blacks was co-morbidity associated with weight loss efforts. Given variable cultural norms with respect to the acceptance of overweight,[26] promotion of healthy weight as a protection against chronic illness risk, rather than appearance, may be a strategy for interventions with Blacks[27–29] and younger White women.[30]

Studies of other health behaviors have reported that advice from health providers may be a motivator for behavior change, and the same may be true for physical activity and healthy eating.[31] However, previous studies have also noted that among overweight and obese persons, most report no advice to lose weight from a health professional.[32] Indeed, in this study, approximately two-fifths of respondents reported that a clinician had advised them to lose weight. For Blacks and Whites, this was an independent predictor of weight loss efforts. In a study of obese men, attempts to lose weight were more common as physical health decreased.[29] Among Blacks, the association of chronic conditions and weight loss attempts may indicate a teachable moment for weight counseling by providers. Intervention messages might encourage participants to discuss their weight and chronic conditions with their personal physician. Employee health clinicians could be champions of the health benefits of lower weight among employees.

Among Hispanics, actual BMI and work-related conditions were related to weight loss attempts. Work-related conditions also were related to weight loss attempts among Whites. Full-time work status was associated with lower likelihood of trying to lose weight. This supports intervention strategies that promote practical ways to incorporate small behavior changes within the constraints of tightly scheduled lives.

We acknowledge several limitations in the study. It is cross-sectional, so causality cannot be inferred, and changes in weight and weight management behaviors over time cannot be assessed. Reports of weight loss attempts may be overestimated because of social desirability bias. The setting for the study, hospitals affiliated with an academic medical center, may not be generalizable to other worksite settings. The Hispanic sample was likely primarily composed of Caribbean Hispanics, the largest Hispanic subgroup residing in the northeast United States, and findings may not generalize to other US Hispanics.

These findings, however, have several practical implications. More racial/ethnic minorities are involved in jobs that do not involve patient care. Many workers in these categories are more likely to work shifts other than the day shift. Interventions that specifically target these groups are few, and research is needed to identify what format, content and messages, and frequency and time of delivery will be perceived as useful and produce results. Culturally tailored messages will be needed, with support of networks and groups in the workplace, including management and unions. Employee health staff could initiate and support such messages. Population-based strategies that improve the physical and social environmental context for physical activity and healthy eating are essential to support individually focused treatment and counseling programs.[33]

Work environment and policy interventions that promote a context conducive to healthy lifestyles could be specifically tailored to support the rather high proportion of employees who report making weight loss efforts. Evidence from workplace studies supports signage promoting stair use, fitness facilities including showers, fitness breaks, and fitness walking trails, as well as cafeteria modifications such as reasonably priced healthy foods and point-of-selection calorie information and healthy catering policies.[20,34,35] Given the documented differences in leisure-time physical activity and dietary quality and caloric intake among racial/ethnic groups,[36,37] the workplace must foster a supportive environment aimed at improving healthy behavior among all employees.

A Healthy People 2010 objective is to reduce to 15% the proportion of adults who are obese. A related goal is to increase to at least 75% the number of employers that offer a comprehensive health promotion program for employees.[38] In a 2004 national survey, only 7% of worksites offered a comprehensive program.[34] Hospitals, as a major employer in US communities, could be a model for other employers to emphasize the importance of organized programs for all races and ethnicities.

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Design concept of study: Zapka, Lemon, Rosal
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Manuscript draft: Zapka, Lemon, Estabrook, Rosal
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Acquisition of funding: Zapka, Lemon
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