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Successful Weight Loss Among Obese U.S. Adults

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Abstract

Background—Little is known about weight control strategies associated with successful weight loss among obese U.S. adults in the general population.

Purpose—To identify strategies associated with losing at least 5% and 10% of body weight.

Methods—Multivariable analysis of data from obese adult (BMI ≥30) participants in the 2001–2006 NHANES to identify strategies associated with losing ≥5% and ≥10% of body weight (conducted in 2009–2011).

Results—Of 4034 obese adults, 2523 (63%) reported trying to lose weight in the previous year. Among those attempting weight loss, 1026 (40%) lost ≥5% and 510 (20%) lost ≥10% weight. After adjustment for potential confounders, strategies associated with losing ≥5% weight included eating less fat (OR 1.41, 95% CI=1.14, 1.75), exercising more (OR 1.29 [95% CI=1.05, 1.60]), and using prescription weight loss medications (OR 1.77 [95% CI=1.00, 3.13]). Eating less fat (OR 1.37 [95% CI=1.04, 1.80]), exercising more (OR 1.36 [95% CI=1.12, 1.65]), and using prescription weight loss medications (OR 2.05 [95% CI=1.09, 3.90]) were also associated with losing ≥10% weight, as was joining commercial weight loss programs (OR 1.72 [95% CI=1.00, 2.96]). Adults eating diet products were less likely to achieve 10% weight loss (OR 0.48 [95% CI=0.31, 0.73]). Liquid diets, nonprescription diet pills, and popular diets had no association with successful weight loss.

Conclusions—A substantial proportion of obese U.S. adults who attempted to lose weight reported weight loss, at least in the short term. Obese adults were more likely to report achieving meaningful weight loss if they ate less fat, exercised more, used prescription weight loss medications, or participated in commercial weight loss programs.

Introduction

One third of Americans are now obese (BMI ≥30),[1] and 50%–70% are trying to lose weight.[2–4] National guidelines recommend loss of 10% of body weight for obese adults to improve overall health.[5] However, studies demonstrate that even modest weight loss of 5% leads to health benefits.[6,7]

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Many RCTs have demonstrated the efficacy of using specific strategies, such as calorie reduction and exercise,[8] commercial weight loss programs,[9,10] popular diets,[11] and prescription weight loss medications.[12] However, these studies often lack generalizability given their strict eligibility criteria and reliance on frequent personal contact. The National Weight Control Registry provides some information about strategies that helped participants lose at least 30 pounds and maintain their weight loss for at least 1 year, but findings from this selected volunteer sample may not generalize to the U.S. population.[13] Data from nationally representative samples,[4,14–18] have described strategies used in the general population, but the limited data identifying strategies associated with weight loss are from selected populations and convenience samples.[19–21] In the current study, data from a nationally representative sample of U.S. adults were examined to identify weight control strategies used by obese Americans who reported losing at least 5% and at least 10% of body weight in the preceding year.

Methods

The current study presents a secondary analysis (performed 2009–2011) of data from the 2001–2006 National Health and Nutrition Examination Survey (NHANES), an ongoing stratified multistage probability sample, representative of non-institutionalized civilians in the U.S., which collects demographic, health, and health behavior information.[22] The sample for this analysis included nonpregnant adults aged ≥20 years who were obese (BMI ≥30) 12 months prior to the interview and who completed in-home interviews and self-administered questionnaires. BMI was calculated from self-reported height and weight, and correlated with measured BMIs. The study was exempted from continuing review by the IRBs at Beth Israel Deaconess Medical Center and Harvard Medical School.

All respondents who tried to lose weight, regardless of whether they were successful, were shown a list of weight loss strategies and asked which ones they used to attempt weight loss (see Table 3). Participants were also asked about smoking, diabetes, and overall health. Separate multivariable logistic regression models were developed using backward elimination to identify weight control strategies associated with losing ≥5% and ≥10% body weight. The ≥5% category included those losing ≥10% body weight. Models were adjusted for gender, age, education, race/ethnicity, education level, income survey year, health status, smoking, BMI 1 year prior, and diabetes. Analyses were weighted to reflect population estimates and used SAS-callable SUDAAN 9.01 and SAS version 9.1 to account for the complex sampling design.

Results

Of 4021 obese nonpregnant adult respondents, 2523 (63%) tried to lose weight in the past year; and of these, 1026 (40%) lost ≥5%, and 510 (20%) lost ≥10% body weight. Table 1 presents the demographic factors in the sample and the factors associated with weight loss prior to adjustment. Table 2 presents respondents' self-reported body weight and BMI at the time of interview and 1 year prior, and the calculated median weight change during this 1-year period. Among the 94% of participants with both self-reported BMIs and measured BMIs, the Pearson correlation coefficient was 0.93 (p<0.0001).

The most-popular strategies employed by obese participants who reported trying to lose weight were eating less, exercising more, eating less fat, and switching to lower-calorie foods. In contrast, only a small proportion used commercial weight loss programs, liquid diets, and prescription weight loss medicines (see Table 3). Table 3 shows strategies associated with ≥5% and ≥10% weight loss after adjustment. Liquid diets, nonprescription diet pills, and popular diets showed no association with successful weight loss, and those

who reported losing ≥10% body weight were less likely to report eating diet foods/products, as compared to those who did not lose ≥10%.

Discussion

In this nationally representative study, a substantial proportion of obese U.S. adults who reported trying to lose weight in the past year were successful, with 40% reporting ≥5% weight loss and 20% reporting ≥10% weight loss. Obese adults were likely to report these weight losses if they reported eating less fat, exercising more, and using prescription weight loss medications. Those who lost ≥10% body weight were also more likely to report joining a weight loss program. However, prescription weight loss medications and weight loss programs were used by a small percentage of Americans, even though these strategies were most strongly associated with weight loss. Self-reported use of popular diets, liquid diets, nonprescription weight loss pills, and diet foods/products were not associated with successful weight loss.

The percentage of obese Americans trying to lose weight in this study (63%) is similar to that found in previous national studies, as are the strategies employed by participants trying to lose weight.[2–4] Recently, Sciamanna and colleagues identified 14 strategies reported to be successful for 10% weight loss among a national mail panel survey, reporting the strongest associations for weight loss programs, eating fruits and vegetables, eating healthy snacks, limiting carbohydrates, controlling portions, doing different kinds of exercises, and focusing on progress they had made.[19] Among members of the National Weight Control Registry, the most common strategies associated with success included restricting types of foods, limiting quantity of food, and counting calories.[13]

In a 2004 consumer mail panel survey, Kruger and colleagues found that “successful losers” in any BMI category (defined as losing any amount of weight and maintaining it for an unspecified amount of time) were more likely to exercise at least 30 minutes per day, add physical activity to current routines, plan meals, track calories, track fat, measure food on their plate, and weigh themselves daily; those who said they consumed over-the-counter diet products were more likely to have tried but failed to lose weight or to have lost but failed to maintain weight.[20] They did not find that “successful losers” were more likely to eat fewer fatty foods or join formal weight loss programs. In the current study, participating in weight loss programs, also noted to be effective in the study by Sciamanna et al., and in several intervention studies,[9,10,23] was associated with reporting a ≥10% weight loss, suggesting that such programs may be effective in practice.

Interestingly, although participants engaging in formal weight loss programs may be required to consume certain diet foods/products, in the current study, diet foods/products in and of themselves were actually associated with being less likely to achieve ≥10% weight loss. This finding suggests that the structure of being in a program may be a more important independent contributor to success, consistent with the finding from a recent RCT.[24] It is possible that some dieters may be overeating diet products because they believe that these products are healthy and/or low in calories.[25]

In the current study, prescription weight loss medications were associated with successful weight loss but were used by a small number of participants. In contrast, U.S. adults use many weight loss strategies that have not been associated with significant weight loss, including nonprescription weight loss medications. Public health efforts directing Americans to adopt more proven methods may therefore be warranted.

This study has several limitations. Since this is a cross-sectional observational study based mostly on self-reported information, results suggest associations and do not signify

causality. Although there is likely reporting bias for body weight, this study demonstrates a high correlation between self-reported current body weight and measured body weight. Other studies have demonstrated correlations ranging from 0.84 to 0.98, even for remote weights.[26,27] Although bariatric surgery was not included as a separate strategy in this study, only about 1% of medically eligible patients undergo the procedure, so any residual confounding is likely to be minimal.[28]

Given that weight loss must be maintained to be truly successful, this study is limited by the lack of information about maintenance of weight loss. Despite the popular perception that obese people are unable to lose weight, a substantial proportion of obese participants in this survey did report successful weight loss, suggesting that some obese U.S. adults can and do lose weight. Providers should encourage those strategies that actually lead to successful weight loss, and further research should identify barriers to maintaining weight loss.

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Table 1

Characteristics of respondents trying to lose weight and achieving ≥5% and ≥10% weight loss (*n*=2523)*

Characteristics	All obese respondents trying to lose weight, %	Lost ≥5% of body weight (*n*=1026), %	Lost ≥10% of body weight (*n*=510), %
Gender			
Female	56	55	57
Male	44	45	43
Race:			
White	70	70	68
Black	15	14	14
Hispanic	11	11	14
Other race	4	5	4
Age, years			
20–29	13	17*	19*
30–39	19	18*	18*
40–49	25	23*	27*
50–59	22	22*	20*
60–69	13	14*	10*
≥70	7	7*	6*
Education			
< High school	17	18	21
High school grad	26	26	25
> High school	57	56	54
Income, $			
<20,000	19	20	23*
20,000–44,999	31	31	31*
45,000–74,999	24	22	23*
≥75,000	25	25	22*
Health Status			
Excellent/very good	39	45*	50
Good	38	33*	29
Fair/poor	23	23*	21
Smoking status			
Nonsmoker	53	51*	50*
Current smoker	21	26*	29*
Former smoker	26	24*	21*

Characteristics	All obese respondents trying to lose weight, %	Lost ≥5% of body weight (*n*=1026), %	Lost ≥10% of body weight (*n*=510), %
Diabetes	16	18	20 *

* Asterisks denote significant differences for that particular sample characteristic between those who manifest that weight change pattern and those who did not.

Table 2

Self-reported BMI, body weight, and calculated median weight change during previous year among respondents (N=4034)

Sample	All obese (N=4034)	Attempted weight loss (*n*=2531)	≥5% weight loss (*n*=1026)	≥10% weight loss (*n*=510)
BMI, M (SD)				
At interview	34.6 (0.1)	34.7 (0.1)	32.5 (0.2)	31.3 (0.3)
1 year prior	35.5 (0.1)	36.0 (0.1)	37.0 (0.2)	37.7 (0.4)
Median body weight, lbs (25th percentile, 75th percentile)				
At interview	215 (189, 242)	215 (189, 243)	200 (177, 229)	194 (170, 219)
1 year prior	220 (195, 246)	222 (195, 250)	230 (200, 259)	234 (200, 260)
Median weight change, lbs (25th percentile, 75th percentile)	+0.2 (+1, −15)	−4.5 (+1, −19)	−21.8 (−15, −32)	−31.8 (−25, −44)

Table 3

Prevalence of weight control strategies and strategies associated with losing ≥5% and ≥10% body weight

Strategy	Prevalence among all obese participants, %	≥5% weight loss OR (95% CI)*	≥10% weight loss OR (95% CI)*
Ate less food	65.0	**	**
Exercised			
No (ref)		1.00	1.00
Yes	55.1	1.29 (1.05, 1.60)	1.36 (1.12, 1.65)
Ate less fat			
No (ref)		1.00	1.00
Yes	43.7	1.41 (1.14, 1.75)	1.37 (1.04, 1.79)
Drank lots of water			
No (ref)		1.00	
Yes	40.5	1.24 (0.99, 1.56)	**
Switched to foods with lower calories	40.5	**	**
Skipped meals			
No (ref)			1.00
Yes	18.5	**	1.27 (0.96, 1.69)
Followed a special diet	15.4	**	**
Ate diet foods or products			
No (ref)		1.00	1.00
Yes	13.8	0.69 (0.48, 1.01)	0.48 (0.31, 0.72)
Took other pills, medicines, herbs, or supplements not needing a prescription	10.2	**	**
Joined a weight loss program			
No (ref)		1.00	1.00
Yes	9.9	1.24 (0.99, 1.56)	1.72 (1.00, 2.96)
Used a liquid diet formula	7.2	**	**
Took diet pills prescribed by a doctor			
No (ref)		1.00	1.00
Yes	3.5	1.77 (1.00, 3.13)	2.05 (1.09, 3.86)
Other method ***	18.7	**	**

* The model was adjusted for gender, age, education, race/ethnicity, education level, income, self-reported health status, smoking status, diabetes status, BMI, and survey year. Strategies were retained in the model if they met significance at the $p<0.10$ level.

** Did not meet criteria for retention in the model

*** Other method category includes those choosing "other method," or other specified methods with cell sizes <50, or those choosing "ate fewer carbohydrates," which was available only in the 2005–2006 survey year.