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ORIGINAL ARTICLE

Initial weight loss goals: have they changed and do they matter?

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Summary

Objective

Nearly 20 years ago, participants in behavioural weight loss programmes reported goals that greatly exceeded the amount of weight typically produced by these programmes. Whether having unrealistic weight loss goals impacts weight loss or attrition is unclear. The intent of the current study was to revisit current weight loss goals and examine whether goals impact outcomes.

Methods

Adults ($N = 308$, BMI = 33.7 ± 4.2 kg/m^2) participated in a 12-month behavioural weight management programme and completed questionnaires about their goals.

Results

Participants' weight loss goal was 19.8 ± 7.9% of their body weight, and 90.4% selected a goal ≥10%. Weight goals were not associated with weight loss at 3 ($p = 0.75$) or 12 months ($p = 0.47$), or from 3 to 12 months ($p = 0.55$). Weight loss goals were not related to attrition at 3 ($p = 0.91$) or 12 months ($p = 0.86$). Participants believed that weight reduction would positively impact their health and psychosocial functioning.

Conclusion

Weight loss goals have decreased, but still greatly exceed what can be expected by most. Unrealistic goals, however, had no impact on weight loss or attrition. These results question the utility of counseling people with obesity to set more realistic weight loss goals, which is typically practiced in behavioural weight management.

Keywords: Attrition, goals, weight loss.

Introduction

In 1997, individuals enrolling in behavioural weight loss treatments reported an average goal of losing about 1/3 of their body weight (1). Because the typical programme at that time produced 5–10% weight loss, there was a significant disparity between desired and actual weight loss. Since that report, there have been numerous studies verifying that individuals seeking weight loss treatment have unrealistic weight loss goals (2–9).

Pursuing goals that are unlikely to be achieved can negatively influence motivation and behaviour (10), which may result in reductions in weight-loss effort or early termination of the weight-loss attempt. However, the literature on this relationship is inconclusive. De Vet and colleagues (7), using self-reported weight loss, found that larger weight loss goals were associated with greater weight losses after two months, and Linde *et al.* (6) found that women with larger weight loss goals lost more weight at 24 months than those with smaller goals. By contrast, other studies (3,4,11,12) found no relationship between weight loss goals and weight loss in behavioural treatment. Given these conflicting findings, it remains unclear as to whether unrealistic weight loss goals hinder, help or do not influence weight loss. Study results are also

This study was conducted while MRL, SVV, CT, ACW and GDF were full-time employees of Temple University, Center for Obesity Research and Education.

mixed in regards to the relationship between weight loss goals and attrition, with some suggesting larger weight goals were associated with higher attrition (9,13,14) while others found no effect (1,5,6).

Given that the first publication (1) on weight loss goals was published almost 20 years ago, it is possible that social norms regarding weight goals have changed, given the increased prevalence of obesity over that time (15) and/or recommendations that clinicians counsel patients to adopt more modest goals (16,17). The conflicting findings on whether weight loss goals influence treatment outcomes leave clinicians uncertain about whether to recommend more reasonable weight loss goals. The present study evaluated the relationship of weight loss goals with actual weight loss and attrition in a large and racially diverse cohort of adults participating in a 12-month behavioural weight management programme. In this study, weight loss goals were expressed as a percentage weight loss (calculated using participants' reported goal weights, in pounds, and participants' initial body weight). The primary aims were to: (i) assess any changes in relative weight goals and expectations regarding weight loss on functioning over the past 20 years; (ii) evaluate the relationship of weight loss goals at baseline with weight loss and attrition outcomes at 3 months, 3–12 months and 12 months; and (iii) explore differences in weight loss goals by age, race and sex.

Method

Participants and study design

Participants in this study were already enrolled in a 12-month equivalence, randomized trial that compared two behavioural weight loss treatments that included either: (i) water (at least 24 fluid ounces per day) or (ii) NNS (non-nutritive sweeteners; at least 24 ounces per day, premixed beverages containing <5 kcal per 8 ounce-serving and containing non-nutritive sweeteners described in detail elsewhere) (18,19). In brief, participants were recruited from two large university medical centres (Temple University and University of Colorado) via flyers, databases and advertisements. Study staff conducted initial screenings via telephone or a secure Web-based portal, followed by in-person interviews conducted by clinical staff. Both groups received a behavioural weight management programme (The Colorado Weigh® (20)) comprised of a 12-week weight loss phase of weekly 1-h group sessions followed by nine months of monthly group sessions (1 h) for weight loss maintenance. Participants were eligible for total compensation of $340.

Eligibility included a BMI of 27.0–40.0 kg/m^2, weight stability within 10 pounds during the past six months, no more than 300 min of physical activity weekly, drinking NNS beverages at least three times weekly and willingness to discontinue NNS beverages if randomized to the water group. Women who were lactating or pregnant during the previous six months or who were planning on becoming pregnant were excluded. Individuals with diabetes, cardiovascular disease and uncontrolled hypertension, or who used medications affecting weight and metabolism, were excluded. Eligible participants required physician approval stating that the nutrition and exercise requirements were not contraindicated and that they were in good general health.

Five hundred and six participants were screened in-person, and 308 enrolled between October 2012 and April 2013 at University of Colorado ($n = 151$) and Temple University ($n = 157$). Of the 308 participants enrolled and randomized, 303 participants began treatment (154 NNS group, 149 water group). At 3 months, 279 participants (91%) completed assessments (145 NNS, 134 water). At 12 months, 222 participants (72%) completed assessments (114 NNS, 108 water).

This study was approved by the Western IRB at the University of Colorado and the Institutional Review Board of Temple University. All participants provided written informed consent.

Measurements

Anthropometrics

Body weight without shoes was measured to the nearest 0.1 kg on a digital scale at all study visits. Both weight loss goals and actual weight loss were expressed as a percentage of initial weight. Weight loss maintenance was calculated as the change in weight (kg) from 3 to 12 months. Height without shoes was measured to the nearest 0.1 cm using a wall-mounted stadiometer at baseline to calculate body mass index (BMI, kg/m^2).

Demographics and weight loss goals

The Weight and Lifestyle Inventory (WALI). (21) was administered at screening. The WALI is a self-report assessment of an individual's weight history, weight loss attempts, eating and exercise patterns, and living arrangements. The WALI included demographic questions (i.e. age, race/ethnicity, education, marital status) and a section on weight loss goals (i.e. 'How much weight would you like to lose at this time?'), which were utilized in this study.

The Goals and Relative Weights Questionnaire (GRWQ). (1) was administered before treatment. The

GRWQ is divided into two parts. The first section assesses patients' perceptions regarding a variety of specifically defined weight loss goals. It included questions about dream weight ('A weight you would choose if you could weigh whatever you wanted'), happy weight ('This weight is not as ideal as the first one. It is a weight, however, that you would be happy to achieve'), acceptable weight ('A weight that you would not be particularly happy with, but one that you could accept, because it is less than your current weight') and disappointed weight ('A weight that is less than your current weight, but one that you could not view as successful in any way. You would be disappointed if this were your final weight after the programme'). Participants assigned a numerical equivalent (in pounds) to each of these weights. Participants also reported the most important changes they hoped to see following weight loss via one open-ended question. The second section asks participants to rate their expectations of how weight loss would impact aspects of their psychosocial and health-related functioning (21 items) from 1 (extremely negative) to 10 (extremely positive).

Statistical analysis

Weight loss goals were analysed continuously (percentage of initial weight) and categorically (above or below 10% and by quartiles) to examine their effects on weight loss and attrition. Regression models (intention-to-treat, baseline observation carried forward for weight) and chi-square evaluated the relationship of weight-loss goal with the primary outcomes (% weight loss and attrition at 3 months [short-term] and 12 months [long-term] and 3–12 months [maintenance]), after accounting for treatment condition, age, sex and baseline weight. Attrition was defined as not attending an assessment visit. Kruskal–Wallis and Mann–Whitney *U* tests examined demographic factors and weight loss goal. Independent samples *t*-tests and Mann–Whitney *U* tests examined categorical weight goals and continuous weight loss. Bivariate or partial correlations controlling for baseline BMI and sex analysed relative weights (dream, happy, etc.) with percent weight loss or attrition. *T*-tests evaluated relative weights in relation to demographic variables. There were no differences in weight loss goals by treatment condition (water *versus* NNS beverages) or by study site. There were significant differences in weight loss by treatment condition at both 3 and 12 months but no differences in attrition by condition (18,19). We, therefore, analysed the sample as one cohort but accounted for treatment condition in weight loss-related analyses by including treatment condition as a variable in our stepwise regression. Finally, we evaluated the relationship between sample characteristics at baseline and attrition using binary logistic regression.

Results

Sample

Participants ($N = 308$) had a mean BMI of 33.7 ± 4.2 kg/m^2, were 48.1 ± 10.6 years old, 83% female and 67% White. Sample baseline characteristics are described in Table 1.

Goal weight and relative weights

At baseline, participants' weight loss goal represented a $19.8 \pm 7.9\%$ reduction in body weight, and 90.4% of participants set a weight loss goal $\geq$10% of their body weight. Participants' 'dream' weight loss was a $27.5 \pm 8.4\%$ reduction of their body weight, a 'happy' weight loss was $20.9 \pm 7.7\%$, an 'acceptable' weight loss was $15.4 \pm 6.7\%$ and a 'disappointing' weight loss was $9.1 \pm 5.7\%$ (Table 2).

Demographics, goal and relative weights

Goal and relative weights by sex are in Table 2. Females reported significantly larger weight loss goals than males

Table 1 Sample characteristics at baseline ($N = 308$)

Characteristic	Mean	SD	%
Weight (kg)	93.7	13.1	
Body Mass Index (BMI) kg/m^2	33.7	4.2	
Age (y)	48.1	10.6	
Gender			
Male			17.2
Female			82.8
Race			
Black or African American			27.6
White			67.5
Native American or Alaskan Native			0.3
Asian or Pacific Islander			1.6
Other or Mixed			2.9
Ethnicity			
Hispanic/Latino			11.4
Marital status			
Single			26.6
Married			61.0
Divorced			8.5
Separated			2.0
Widowed			1.6
Not reported			0.3
Education (highest completed)			
<12th grade			0.9
High school			11.0
Some college/2-year college			22.1
College			31.5
Graduate school			32.1
Not reported			2.3

Table 2 Comparative programme goal and relative goal weights at baseline

	Weight loss goal current study (*N* = 308)			**Weight loss goal Foster *et al*., 1997 (1) (*N* = 60)**	
Variable	**M ± SD (kg)**	**% of initial weight**	***p***	**M ± SD (kg)**	**% of initial weight**
Initial weight	*93.7 ± 13.1*	—		*99.1 ± 12.3*	—
Goal weight	*75.1 ± 12.1*	*19.8%*		*66.5 ± 7.8*	*32.9%*
Females		20.7%	$p < 0.001$		
Males		15.2%			
Dream weight*	*67.5 ± 10.0*	*27.5%*		*61.4 ± 6.8*	*38.0%*
Females		28.6%	$p < 0.001$		
Males		21.9%			
Happy Weight*	*73.9 ± 10.4*	*20.9%*		*68.0 ± 7.7*	*31.4%*
Females		21.8%	$p < 0.001$		
Males		16.2%			
Acceptable weight*	*79.4 ± 11.3*	*15.4%*		*74.2 ± 8.6*	*25.1%*
Females		16.1%	$p < 0.001$		
Males		11.6%			
Disappointed weight*	*85.3 ± 11.8*	*9.1%*		*81.9 ± 10.1*	*17.4%*
Females		9.5%	$p = 0.16$		
Males		7.2%			

**N* = 36 patients did not provide dream, happy, acceptable or disappointed weights for the current study. Additionally, five participants dropped out after randomization but before treatment initiation and were not included.

and higher relative weight losses than males (Table 2). An analysis including only females also found no relationship between weight loss goals and weight loss at 3 or 12 months.

There were no differences in goal weight by race (Black19.6% *versus* White 19.9%; $p = 0.46$), and no differences in dream ($p = 0.82$), happy ($p = 0.78$), acceptable ($p = 0.27$) or disappointed ($p = 0.85$) relative weights by race. There was no relationship between goal weight and age ($p = 0.86$).

Goal weight and actual weight loss

Intent-to-treat analyses indicated that participants lost 5.3 ± 3.8% of initial body weight at 3 and 4.6 ± 7.1% at 12 months. Weight loss goals were not associated with actual weight loss at 3 ($B = -0.029$, $p = 0.75$) or 12 months ($B = -0.04$, $p = 0.47$). Participants with goal weights in the highest quartile (goal ≥24.7%) had weight losses that were not significantly different than participants in the lowest quartile (goal ≤13.9%) at 3 (5.6% weight loss *versus* 5.6%, $p = 0.98$) or 12 months (5.6% weight loss *versus* 4.3%, $p = 0.27$). A goal >10% *versus* ≤10% was not associated with actual weight loss at 3 ($p = 0.71$) or 12 months ($p = 0.17$). Mean percentage weight change from 3 to 12 months was 0.6 ± 5.5%. Weight loss goal was not significantly associated with change in weight from 3 to 12 months ($B = -0.024$, $p = 0.55$).

Relative weight loss and actual weight loss

There was no relationship between happy ($p = 0.13$), acceptable ($p = 0.30$) or disappointing ($p = 0.27$) weights and weight loss at 3 months. Dream weight ($r = -0.12$, $p = 0.06$) approached significance, indicating a trend for higher dream weight to relate to lower weight loss at 3 months. There was no relationship between dream ($p = 0.13$), happy ($p = 0.20$), acceptable ($p = 0.64$) or disappointing ($p = 0.94$) weights and weight loss at 12 months.

Goal weights and attrition

Participants attended a mean of approximately 84% of the group sessions, and there was no difference by treatment condition in attendance ($p = 0.83$). At 3 and 12 months, 91% and 72% of participants completed treatment, respectively. At 3 months, there was no relationship between baseline BMI ($p = 0.33$), race ($p = 0.96$), age ($p = 0.21$) or sex ($p = 0.19$) and attrition. At 12 months, age (Exp[*B*] = 1.05, CI 1.02–1.07, $p < 0.001$) was mildly but significantly associated with attrition.

Weight loss goals were not related to attrition at 3 ($p = 0.91$) or 12 months ($p = 0.86$). A weight loss goal of ≥10% was not associated with attrition at 3 ($p = 0.83$) or 12 months ($p = 0.49$). Participants with goal weights in the highest quartile (goal ≥24.7%) were no more likely to drop out of treatment than participants in the lowest

quartile (goal ≤13.9%) at 3 ($p = 0.94$) or 12 months ($p = 0.80$). An analysis including only females also found no relationship between weight loss goals and attrition at 3 or 12 months.

Relative weight loss and attrition

There was no relationship between dream ($p = 0.59$), happy ($p = 0.57$), acceptable ($p = 0.54$) or disappointing ($p = 0.53$) weights and attrition at 3 months. Similarly, there was no relationship between dream ($p = 0.90$), happy ($p = 0.81$), acceptable ($p = 0.57$) or disappointing ($p = 0.59$) weights and attrition at 12 months.

Expectations of weight loss

On a scale of 1 (extremely negative) to 10 (extremely positive), participants rated the anticipated impact of weight reduction on 21 aspects of health and psychosocial functioning. Participants' mean rating of the factors was 7.5 ± 1.0. Participants rated all items >5 ('neutral'), indicating that they saw positive consequences of weight reduction on all factors, and 12 items were rated >7 out of 10 (Table 3). Participants believed that weight reduction would have the most positive impact on their health (9.7 ± 0.8), fitness (9.3 ± 0.9) and body image (9.0 ± 1.4).

Table 3 Expectations of the effects of weight reduction on functioning as measured by the GRWQ (1)*

Factors	M	SD
Health	9.66	0.81
Fitness	9.33	0.92
Body image	8.95	1.35
Self-confidence	8.25	1.75
Physical strength	8.23	1.61
Physical presence	8.48	1.56
Stress	7.60	1.96
Attractiveness	7.57	1.89
Sex life	7.46	1.97
Work performance	7.26	1.72
Comfort in social situations with strangers	7.14	1.80
Social life	7.09	1.89
Attention from others	6.95	1.80
Ability to physically defend yourself	6.89	1.94
Other's perception of your competence	6.86	1.81
Sexual attention	6.74	1.91
Anxiety	6.73	2.01
Comfort at family gatherings	6.67	1.95
Assertiveness	6.36	1.68
Depression	6.36	1.99
Likeability	5.91	1.60

*Ratings were from 1 (extremely negative) to 10 (extremely positive). A rating of '5' was considered neutral.

Participants reported the most important change they hoped to see following weight loss via one open-ended question. The most popular themes were improved health/fitness (29.2%), increased energy/ability to be active (24.4%), improved body image/appearance/confidence (22.4%), better diet and eating habits (9.1%), better fit in clothes (4.5%) and increases in quality of life/social functioning (3.9%).

Discussion

The mean weight loss goal was 19% in the present study compared to 32% in the first study to examine this issue more than 20 years ago (1). The goal of losing 19% greatly exceeds results typically seen in behavioural treatment (22) and is nearly four times the approximately 5% actually lost during this study. Similarly, participants' 'dream' (38.0% *versus* 27.5%), 'happy' (31.4% *versus* 20.9%), 'acceptable' (25.1% *versus* 15.4%) and 'disappointing' (17.4% *versus* 9.1%) weights were all much lower in the present study than they were approximately 20 years ago (1). The perception that a 9% weight loss is 'disappointing' or that a 15% weight loss would only be 'acceptable' is in stark contrast to consensus guidelines that establish a 5–10% weight loss as a clinically significant achievement (17), and 'happy' and 'dream' goals are four to five times as high as these guidelines advise (17). We did not obtain any information that would allow us to know why goal and relative weights have decreased over time. This could be because of widespread efforts by health professionals to emphasize the health benefits of weight losses as low as 5%, or to communicate realistic information about the effectiveness of behavioural weight management programmes. It is also possible social norms around desired weights have changed given the increased prevalence of obesity (15).

In our study, females set significantly higher weight-loss goals than males, which is consistent with a previous investigation (23). However, unlike other studies (24,25), there were no differences in goals between Black and White participants. Using data from the Behavioural Risk Factor Surveillance System (BRFSS), Williamson and colleagues (24) reported that Black women's goal weights were on average 4.5 kg greater that White women. Their cohort, however, is now over 20 years old, which may account for the difference in our results in regards to race. A more recent study (25) of weight loss goals in Black women (with diabetes) participating in behavioural weight loss treatment found that their weight loss goal was 14% of their initial body weight, which was a lower goal than the Black women (without diabetes) in our study (19.6%).

In our study, weight-loss goals did not impact weight loss in the short-term, maintenance or long-term phases.

Our results are consistent with Fabricatore, *et al.*, (4) who also found no association between ultimate weight-loss goals and achieved weight loss in a 12-month lifestyle modification programme, as well as several other studies that also found no relationship between goals and weight loss (3,11,12). Our results differ from other studies that found larger goals were associated with greater weight loss (6,7), but these studies used self-reported weight or interventions delivered by telephone or mail. Our study involved in-person, group-based behavioural programmes with measured weight throughout the study duration. These methodological differences could account for differences in our findings given that self-reported weight tends to be inaccurate in overweight populations (26) and the intensity of some of the interventions (i.e. mail *versus* in-person) may have differed.

Weight loss goals in our study also did not influence attrition. Our result is consistent with previous studies (1,5,6) that also did not find goals to relate to attrition, but differ from three studies (9,13,14), that indicated that larger goals positively related to attrition. Dalle Grave (13) previously noted that the setting of the weight loss effort (free/compensated clinical trials *versus* commercial programmes paid for by participants) may mediate the relationship between goals and attrition. Specifically, participants in commercial programmes may be less likely to continue paying for their weight loss effort when they experience a discrepancy between expected and actual outcomes. We also found that at 12 months, older age was mildly associated with greater attrition.

Participants in our study reported very positive expectations regarding the effects of weight loss on a variety of physical and psychosocial factors. Of the 21 possible items queried on a 10 point scale, 12 items were ranked greater than 7 (5 = 'neutral'), with health and fitness as the highest positively ranked items (>9). Compared to the first publication assessing these items (1), ratings appear quite similar. In summary, beliefs about how weight reduction may impact functioning remain strongly positive. Although patients are not likely to achieve their weight loss goal, they are likely to experience the psychosocial and health-related benefits that they expect (i.e. improvements in health, fitness, body image) with even modest weight loss (1,27–30).

This study has several strengths. We included a substantial proportion of minority participants (approximately 30%) and had a large sample size ($n > 300$). We also controlled for baseline weight and other variables in analyses that may moderate the relationship between goals and outcomes. A study limitation is the relatively small number of male participants (17%). Future studies could examine the relationship between goals and longer-term weight loss maintenance (>1 year), include more male participants and individuals considering other treatment modalities (i.e. pharmacotherapy, surgery, fee-for-service programmes in the community) and evaluate treatment satisfaction in relation to the discrepancy between desired and actual outcomes. Additionally, participants in our study were compensated for attending follow-up visits and received coupons to purchase beverages. Therefore our results may not be generalizable beyond participants who do not pay for treatment (13). Further, our results may not apply to individuals living with higher classes of obesity (BMI $> 40\ kg/m^2$) or to those presenting for pharmacologic or surgical treatment for obesity.

While goal weights are still unrealistic, we found no indication that having an unrealistic goal impacted weight loss either positively or negatively. While counseling patients to have more reasonable weight goals does not seem to help with weight loss, there is no evidence that it hurts, and providing more accurate information about expected outcomes seems to be a reasonable thing to do. Perhaps clinicians could consider first discussing typical behavioural weight loss outcomes (5–10% weight loss) to promote informed decision-making in regards to obesity treatment. Counseling participants to set short-term (i.e. weekly or monthly) goals that are both reasonable and achievable, rather than setting overall weight-loss goals, may be an appropriate approach. Such an approach has the potential to produce opportunities for short-term reinforcement, consistent with B.F. Skinner's concept of successive approximation (31). Setting goals related to changing dietary and lifestyle behaviours that may lead to weight loss, rather than focusing on weight loss goals, could also be considered. Alternatively, simply stating that weight loss results vary in behavioural treatment, with some losing more than others, may be enough to inform participants that their goal may not be attainable without dampening their enthusiasm. Focusing on the health and psychosocial benefits likely to be achieved, with even small weight reductions, may also help keep participants engaged in treatment. In our study, the timing of discussions about goals occurred prior to treatment. Clinicians can also consider discussing goals throughout treatment, when patients reach a weight-loss plateau, or once patients have experienced weight loss and the degree of behaviour change it requires. Future studies could also examine if goals change throughout treatment. Continued discussions regarding weight-loss expectations associated with behavioural treatment may help participants and clinicians to individualize treatment planning. Encouraging patients to make behavioural changes while reinforcing that weight does not equal self-worth, is not infinitely malleable, and factors others than behaviour (i.e. genetics) can influence body weight, may help

patients to remain engaged in the skills that promote sustainable changes (32,33).

In summary, participants in this study set lower weight loss goals than participants did 20 years ago (1), but the goals were still unrealistic. Weight loss goals, however, were not related to weight loss or attrition.

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Disclosures

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Contributions

GDF, JCP, SH, HRW and JOH developed the study concept and design. SVV and ACW oversaw training and implementation. CT and MRL conducted study treatment. MRL analysed the data and wrote the initial draft of the paper. All authors were involved in the revising the manuscript and provided final approval.

This trial was registered at www.clinicaltrials.gov, NCT01766700

Conflict of interest statement

No conflict of interest was declared.

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