

# Promoting More Modest Weight Losses: A Pilot Study

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## Abstract

**Objective:** This pilot study assessed the short- and long-term effects of a modified cognitive behavioral treatment designed to facilitate obese patients' acceptance of a 5% to 10% reduction in initial weight.

**Research Methods and Procedures:** Participants were 17 women with a mean age of  $46.5 \pm 9.7$  years and BMI of  $34.7 \pm 2.9$  kg/m<sup>2</sup>. They participated in a 40-week program that included four phases. The first discussed the benefits of modest weight losses and the potential adverse effects of unrealistic expectations. Phase II provided instruction in traditional cognitive behavioral methods of weight control Phase III focused on methods to improve body image and self-esteem. Phase IV addressed skills for weight maintenance. Changes in weight, self-esteem, body image, and quality of life were assessed at the end of treatment and 1 year later (week 92).

**Results:** At week 40, participants lost an average of  $5.7 \pm 5.3\%$  of initial weight, which was associated with significant improvements in body image, self-esteem, and quality of life. Improvements in psychosocial status were maintained at week 92, although mean weight loss at this time had declined to  $2.9 \pm 5.6\%$  of initial weight. Increased satisfaction with body weight at week 40 was associated with significantly better maintenance of weight loss at follow-up ( $r = -0.70$ ;  $p = 0.02$ ).

**Discussion:** Having participants seek only modest initial weight losses does not appear to facilitate weight maintenance. However, increasing patients' satisfaction with their body weight at the end of treatment may help improve weight maintenance. More research is needed on the relation between satisfaction with initial weight loss and long-term success.

**Key words:** expectations, body image, self-esteem, alternative treatment, treatment goals

## Introduction

There is considerable professional consensus that modest weight losses of 5% to 10% are successful (1–3). Obese patients seeking treatment, however, view things quite differently. Studies suggest that the desired weight losses of obese patients represent a 22% to 34% reduction in body weight (4–7). Such weight losses greatly exceed the 10% losses that are typical of the best behavioral and/or pharmacological treatments (8). More troubling is that obese patients view weight losses of 25% and 17% as only “acceptable” and “disappointing,” respectively (5).

Greater discrepancies between actual and desired outcomes are associated with less posttreatment satisfaction. For example, the difference between goal weight and achieved weight was highly correlated ( $r = -0.67$ ) with posttreatment satisfaction with weight (5); the higher the discrepancy, the greater the dissatisfaction. It is possible that such dissatisfaction with the amount of weight lost may impede efforts at weight maintenance. There are at least two ways to decrease the discrepancy between actual and expected outcomes. One is to produce larger weight losses, and the other is to alter expectations to fit smaller weight losses. Unfortunately, efforts to increase the magnitude of weight loss, including very low-calorie diets (9), structured exercise and food provisions (10,11), and longer treatment (12,13), have produced long-term results that are no different from those of standard behavioral treatments.

Another way to decrease the discrepancy between expected vs. actual weight loss is to alter what patients expect

from treatment. These efforts, however, are hampered by a lack of data on the factors that influence expectations. BMI is the strongest correlate of goal weights, as well as various defined weights such as “dream,” “happy,” “acceptable,” and “disappointing” (6). Those with higher BMIs desire to lose more weight (even after adjusting for initial weight). In a previous study, we found that (after controlling for BMI) body image and self-esteem were significantly correlated with goal and defined weights (5). Those with diminished self-esteem and body image desired to lose more weight.

In an effort to help patients accept more modest weight losses associated with nonsurgical treatments, we developed an approach that included education about the biological and psychological determinants of body weight, weight loss, and weight regain; cognitive behavioral treatment (CBT)<sup>1</sup> methods to enhance self-esteem and body image (independent of weight); and instruction in behavioral methods of weight control. We hypothesized that the modest weight losses induced by behavioral methods would be better accepted (i.e., result in higher satisfaction) as a result of improved body image and self-esteem. In addition, we predicted that weight losses would be better maintained than those in traditional weight loss programs. Thus, we report changes in weight, body image, and self-esteem associated with a novel treatment after 40 weeks of treatment and at a 1-year follow-up (i.e., week 92). We also compare these results with those obtained in published trials of standard behavioral treatment.

## Research Methods and Procedures

### Participants

Participants were 17 obese women with a mean age of  $46.5 \pm 9.7$  years, a mean weight of  $92.8 \pm 9.1$  kg, and a mean BMI of  $34.7 \pm 2.9$  kg/m<sup>2</sup>. Thirteen were white (76.5%), and four were African American (23.5%). Participation was limited to women who had a BMI of 25 to 40 kg/m<sup>2</sup> and who were free of physical contraindications, including types 1 or 2 diabetes, the use of medications known to affect body weight (e.g., steroids), pregnancy or lactation, a weight loss of 5 kg or more or the use of anorectic agents in the previous 6 months. Psychosocial contraindications included bulimia nervosa, major depression, or other psychiatric illness that disrupt daily functioning.

Respondents were screened by telephone, and those who met the inclusion criteria were scheduled for a 1-hour meeting with a therapist who described the nature and requirements of the study, obtained patients' informed consent, and reviewed patients' responses to a screening questionnaire. Participants deposited \$200, which was returned for com-

pleting study assessments at 40 and 92 weeks. The study was approved by the University of Pennsylvania's Committee on Subjects Involving Human Beings.

### Treatment

The modified CBT (M-CBT) program was based on the assumption that reducing the discrepancy between actual and expected weight loss outcomes could promote long-term weight loss maintenance. Rather than inducing large weight losses (to fit patients' expectations), the program was designed to alter patients' expectations and to promote the acceptance of realistic weight loss outcomes (i.e., approximately a 10% weight loss). Patients were treated in groups of 7 to 10 persons and attended 20 weekly sessions, 5 monthly sessions (over 20 weeks), and a 1-year follow-up visit.

The 40-week intervention consisted of four phases. During Phase I (weeks 1 to 4), participants were instructed to refrain from making any changes in their eating or activity habits to focus exclusively on examining their weight loss goals and expectations. Lessons focused on the factors that influence unrealistic expectations and outcome evaluations, including expectations about weight loss and other “non-weight” changes (e.g., improvements in body image, self-esteem, mood, relationships). The personal and cultural meanings attached to weight status (thin, obese) and motivations for weight loss were also discussed. Personal weight and dieting histories were used to underscore the point that large weight losses are often short-lived and that psychological reactions to unmet expectations may lead to relapse. Also during this time, subjects were provided information about the causes of obesity, with a particular emphasis on biological determinants that may limit weight loss (e.g., genetics, resting energy expenditure, fat cell number).

Phase II of the program (weeks 5 to 12) focused on the development of weight control skills. During this phase, patients were instructed to consume a self-selected diet of 1200 to 1500 kcal/d and were trained in the standard cognitive behavioral methods of weight control (8). Participants were given a copy of the LEARN Program for Weight Control (14), which covers various aspects of weight management. Representative topics discussed in group sessions included self-monitoring of eating and exercise behavior, identifying times, places, and situations associated with overeating, learning to eat highly desired foods in a controlled fashion, and starting and sustaining a regular pattern of physical activity. The eventual activity goal was four 50-minute sessions per week.

Phase III of the program (weeks 13 to 20) focused on methods to improve body image and self-esteem. Patients were instructed to continue to consume the Phase II diet to facilitate weight loss. In addition, they were taught techniques to counter negative body image (15,16). In-session and at-home activities were used to help participants modify

<sup>1</sup> Nonstandard abbreviations: CBT, cognitive behavioral treatment; M-CBT, modified cognitive behavioral treatment; IWQOL, Impact of Weight on Quality of Life Scale.

irrational cognitions about body image, develop tolerance for imperfect body areas, and change behaviors associated with negative body image (e.g., avoiding social situations, mirror avoidance, pursuit of additional weight loss). Participants also received instruction in activities that enhance self-esteem by decreasing the importance of weight and shape in self-evaluation and helping patients to live their lives in less than perfect bodies. Participants were provided with a copy of the book *Self-Esteem Comes in All Sizes* (17), which discusses these and related issues.

Phase IV of the program (weeks 24 to 40) focused on developing weight maintenance skills. During this time, participants attended five monthly group sessions (weeks 24, 28, 32, 36, and 40) that taught them about the long-term skills needed to accept less than ideal weight outcomes and to maintain positive changes in weight and health. These included maintaining an exercise program that is enjoyable, identifying high-risk situations that are associated with overeating, reversing small weight gains as they occur, accepting a weight outcome that is less than desired, and living life now rather than waiting to lose more weight.

### **Measures**

*Weight.* Weight was measured at each treatment visit. Patients were weighed in light clothing without shoes.

*Weight Loss Expectations, Goals, and Satisfaction.* Before treatment, participants were asked to numerically define four different weight loss outcomes. These weights and their criteria included the following: 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, since 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 program”). Patients assigned a numerical equivalent (in pounds) to each of these weights. Before treatment and at week 20, patients also indicated how much weight they expected to lose by the end of the 40-week weight loss program and to select an ultimate goal weight (absolute weight rather than weight loss). Patients also rated their satisfaction with their weight at each assessment point (1, very dissatisfied; 5, neither dissatisfied nor satisfied; 10, very satisfied). Questions used in this study to assess weight loss expectations, goals, and satisfaction have been used in other studies and found to have adequate test-retest reliabilities (5,6).

*Body Image and Self-Esteem.* Before treatment and at weeks 20, 40, and 92, self-esteem was assessed by the Rosenberg Self-Esteem Scale (18) and body image by the Body Dysmorphic Disorder Examination (19).

*Quality of Life and Mood.* Before treatment and at weeks 20, 40, and 92, patients also completed evaluations of mood and weight-related quality of life. Mood was assessed by the Beck Depression Inventory (20) and quality of life by the Impact of Weight on Quality of Life (IWQOL) Scale (21). Subscales of the IWQOL include health, social/interpersonal status, work, mobility, self-esteem, sexual life, activities of daily living, and eating.

### **Comparison Groups from Published Studies**

Given the extensive literature available on the behavioral treatment of obesity, we compared the results of our modified treatment with previously published studies. A literature search for the years 1992 to 2002 was conducted, using the databases of PsychLIT and Medline. Keywords and phrases included “obesity treatment,” “body image,” “self-esteem,” and names of specific scales (e.g., IWQOL). Reference lists of selected articles were reviewed as well. We sought to locate treatment studies in which relevant comparison groups were assessed (e.g., obese patients, patients undergoing standard CBT for obesity) with instruments the same as, or similar to, those discussed above.

### **Attrition and Statistical Analyses**

*Attrition.* A total of 14 of 17 (82%) participants completed the treatment phase of the study, and 11 (65%) were available for the 1-year follow-up. Three participants withdrew before week 40 because of scheduling conflicts and extensive travel; one could not be contacted. The three participants who discontinued between 40 weeks and the 1-year follow-up (i.e., week 92) did so because of medical problems, scheduling conflicts, and pregnancy. Independent Student’s *t* tests that compared participants who withdrew with those who completed the study revealed no significant differences in age, BMI, initial body weight, or weight loss at the time of attrition.  $\chi^2$  analyses similarly revealed no significant differences in race as a function of drop-out.

*Statistical Analyses.* Time-related changes were analyzed using a multivariate ANOVA for repeated measurements. In cases where a significant effect was observed, post hoc paired Student’s *t* tests were used to evaluate changes between time-points. A last observation carried forward analysis was also used for weight analyses, in which patients’ body weight at the time of attrition was included at weeks 20, 40, and 92. Pearson’s product moment correlations were used to evaluate relationships among continuous variables.

## **Results**

### **Expectations**

*M-CBT.* Before treatment, patients selected dream, happy, acceptable, and disappointed weights that corresponded to weight losses of  $33.3 \pm 7.0\%$ ,  $25.8 \pm 6.9\%$ ,

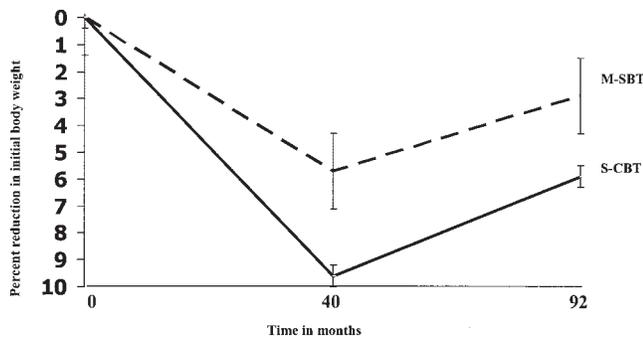


Figure 1: Weight loss in M-CBT vs. standard CBT (S-CBT) approaches; IWQOL, Impact of Weight on Quality of Life.

20.2 ± 6.2%, and 9.8 ± 5.1% of initial body weight, respectively. Thus, for the average obese patient, a 9.8% weight loss would be considered disappointing and “not successful in any way.” M-CBT patients also expected to lose large amounts of weight over the 40 weeks of treatment. Patients initially reported that they expected to reduce their initial body weight by an average of 17.2 ± 5.2% over the course of the 40-week program. These expectations were reduced significantly ( $p < 0.05$ ) during treatment to an expected 9.8% weight loss reported at week 20. Although the program focused on decreasing patients’ expectations for weight loss, patients’ ultimate goal was to lose 27.3 ± 2.0% of their initial body weight, and this goal did not change significantly during treatment.

**Published Comparisons.** Patients’ defined weights were similar to those found in other published studies representing diverse treatment approaches (5,6). Limited research has examined patients’ expectations for weight loss at the end of

a specific treatment program; however, the expected weight losses reported in the beginning of the current study were similar to those reported by participants entering a pharmacotherapy study (22). Moreover, the ultimate weight loss goal reported among participants in the current study (27.3%) was also within the range observed in other studies (22% to 34%) (4,7,22) (Table 3).

### Weight Loss

**M-CBT.** Participants achieved their maximum weight loss at week 40, when they had lost 5.7 ± 5.3% of their initial body weight. Student’s  $t$  tests revealed that this represented a significant reduction from baseline ( $p < 0.05$ ). The week 40 weight loss corresponded to approximately one-third (36.4 ± 44.5%) of their expected weight loss. One year later (week 92), patients had maintained a loss of 2.9 ± 5.6% of their initial body weight ( $p =$  not significant). In other words, they had gained back about one-half of what they had lost, on average. This was one-fifth (20.0 ± 37.5%) of their expected end-of-treatment weight loss. Similar findings were observed in a last observation carried forward analysis in which weight losses were 4.7 ± 5.3% of initial body weight at week 40 and 3.3 ± 5.6% of initial body weight at week 92.

**Published Comparisons.** Weight losses of M-CBT patients were compared with the average weight loss seen in standard behavioral treatment programs. Based on a review of studies conducted by Wing et al. (23), mean weight losses in standard behavioral programs averaged ~9.5% at 6 months and 6.2% at 1 year. By comparison, M-CBT achieved weight losses that were 4 percentage points less than those obtained by standard behavioral treatment at the same time-points, as illustrated in Figure 1.

Table 1. M-CBT versus nondieting and CBT approaches: psychosocial findings

Patients	N	Gender	Age (years)	Initial weight (kg)	Percent improvement from baseline (week 24/week 52)					
					Body image		Self-esteem		Mood	
Modified CBT	17	Women	46.5	92.8	45%	49%	18%	12%	49%	16%
Standard CBT										
Foster et al. (25)	59	Women	40.0	99.1	55%	41%				
Wadden et al. (13)	21	Women	42.8	105.4					50%	50%
Ramirez and Rosen (26)	27	Men and women	44.0	91.0	45%	28%	15.2	9.3%		

Weeks 24 and 52 assessment points varied. Findings for modified CBT are based on weeks 20 and 92; findings from Foster et al. (25) are based on weeks 26 and 48 assessments; findings from Wadden et al. (10) are based on weeks 26 and 48 assessments; findings from Ramirez and Rosen (26) are based on week 28 and week 52 assessments. Ramirez and Rosen (26) assessed body image using the Body Dysmorphic Disorder Examination, Foster et al. (25) used the Appearance Evaluation Subscale of the Multidimensional Body-Self Relations Questionnaire (27).

**Psychosocial Outcomes**

*M-CBT.* Despite achieving a less-than-desired weight loss at week 40, M-CBT patients reported significant improvements in body image and self-esteem ( $p < 0.05$ ). At week 92, despite regaining weight, patients' body image remained improved. Self-esteem, however, approached baseline levels. Changes in body image and self-esteem during treatment were not significantly related to subsequent weight regain, even after controlling for initial weight loss.

M-CBT produced positive changes in impact of weight on quality of life. Pre-/posttreatment differences were significant for all IWQOL scales and the total score except for work. At the 1-year follow-up, participants continued to report positive changes in IWQOL dimensions of health, social/interpersonal status, mobility, self-esteem, and activities of daily living; there were no significant changes in eating, sex, and work. No significant changes in Beck Depression Inventory ratings of mood were observed during treatment or the 1-year follow-up.

*Published Comparisons.* Although weight losses were less, M-CBT patients' improvements in body image and self-esteem were similar to those obtained by standard CBT (40% to 55%). However, M-CBT participants experienced smaller improvements in mood compared with other standard behavioral treatment programs (16% vs. 50% to 70%, respectively) after 1 year (Table 1).

The IWQOL findings were compared with the only long-term (i.e., >40 week) study that reported changes in quality of life as assessed by IWQOL. The study was comprised of pharmacotherapy-treated patients. Compared with this sample, M-CBT patients had greater increases in quality of life, despite smaller weight losses (Table 2).

**Satisfaction with Body Weight**

*M-CBT.* Despite achieving a less-than-desired weight loss, patients reported significant improvements in satisfaction with their body weight at week 40 [from  $1.5 \pm 0.5$  to  $3.4 \pm 1.5$  (1, very dissatisfied; 5, neither dissatisfied nor satisfied; 10, very satisfied);  $F = 9.4$ ;  $p = 0.0001$ ]. The improvement was sustained at week 92 ( $3.3 \pm 1.4$ ), despite significant weight regain. Greater improvement in satisfaction with body weight during treatment (weeks 0 to 40) was significantly related to less weight regain after treatment ( $r = -0.70$ ;  $p = 0.02$ ), even after controlling for initial weight loss ( $r = -0.74$ ;  $p = 0.02$ ). Using a median-split analysis of satisfaction ratings, patients who were in the more dissatisfied group ( $2.0 \pm 1.0$  rating on a 10-point scale) regained 3 times as much weight as patients who were in the "neither dissatisfied nor satisfied" group ( $4.6 \pm 0.4$  rating) at the end of treatment (2.5- vs. 0.7-kg regain, respectively). Similarly, the correlation between absolute posttreatment level of satisfaction and magnitude of subsequent weight regain (weeks 40 to 92) approached signifi-

**Table 2.** M-CBT vs. pharmacotherapy-treated patients: IWQOL subscales

Treatment program	N	Gender	Age (years)	Initial weight (kg)	1-Year weight loss	Selected IWQOL subscales (% increase from baseline to 1 year)				
						Mobility	Self-esteem	Sexual life	Social status	Work
M-CBT	17	Women	46.5	92.8	2.9%	29	36	31	23	22
Pharmacotherapy plus lifestyle modification [Kolotkin et al., 1997 (29)]	161	Men and women	44.9	BMI = 41.1	17.6%	28	26	21	23	12

**Table 3.** M-CBT versus other treatments: baseline weight loss goals

Patients	N	Gender	Age (years)	Initial weight (kg)	Weight loss goal for program	Ultimate weight loss goal (%)
M-CBT	17	Women	46.5	92.8	17.2% (8 months)	26.8
Standard CBT						
Foster et al. (5)	60	Women	40.0	99.1		33.8
Jeffery et al. (4)	130	Men and women	38.0	90.0		22.0
Pharmacotherapy						
Wadden (22)	55	Women	47.2	101.3	16.3% (6 months)	34.4

cance ( $r = -0.54$ ,  $p = 0.09$ ). After controlling for initial weight loss, the correlation reached significance ( $r = -0.65$ ,  $p = 0.04$ ). Thus, independently of weight loss, greater posttreatment satisfaction with body weight or decrease in dissatisfaction with treatment may help promote better weight maintenance.

*Published Comparisons.* The only study that has reported body weight satisfaction levels for CBT-treated patients found a higher level of posttreatment body weight satisfaction compared with M-CBT patients (4.7 vs. 3.4, respectively) (5). The relationship between satisfaction and weight regain, however, was not evaluated. To our knowledge, no published study has evaluated the relationship between changes in satisfaction and subsequent weight regain.

### Discussion

The modified CBT consisted of a weight-stable period during which education was provided about the biological basis of body weight, sociocultural pressures to be thin, and accepting modest weight loss. This was followed by instruction in standard CBT methods, techniques to counter negative body image and weight-based self-esteem, and strategies to both prevent relapse and accept less-than-desired weight loss outcomes.

In terms of weight loss, the intervention was modestly successful at 40 weeks, resulting in a 5.7% weight loss. However, participants were not able to maintain their weight loss for 1 year. Other controlled studies have found that participants typically lose 8% to 10% of initial body weight after 6 months but also typically regain weight after treatment ends (23). The M-CBT program's early discussion of the biological limits to weight loss and accepting less-than-desired weight losses might have reduced optimism and motivation to initiate behavior change during treatment. This may have decreased both initial and long-term weight loss (because the two are significantly correlated in most studies).

The obese patients in this study had unrealistic weight loss expectations. Before treatment, participants expected to lose the equivalent of 17.2% of their initial body weight by

the end of treatment. Their expectations became more realistic during treatment, decreasing to 9.8%. However, their ultimate weight loss goals remained high (22% to 27%) despite having been informed consistently during treatment that they should expect to lose ~10% of initial body weight. Surprisingly, the percentage of expected weight loss achieved was not significantly related to psychosocial outcomes or subsequent weight regain. These findings contrast with a study of medication and standard behavioral treatment that found that percentage of expected weight loss achieved was significantly related to satisfaction in changes in weight, health, energy, and appearance (22).

Patients reported significant improvements in satisfaction with body weight, body image, and quality of life during treatment, which persisted at the 1-year follow-up despite significant weight regain. Similar improvements in psychosocial outcomes have been reported in studies of nontraditional weight loss programs (24). However, the weight losses of M-CBT were superior compared with nontraditional dieting approaches. The only variable that appeared to protect M-CBT participants from weight regain was higher body weight satisfaction both during and at the end of treatment. Both greater improvements in satisfaction with body weight during treatment and higher absolute levels of satisfaction after treatment were protective against weight regain.

The strengths of this study include its evaluation of a new obesity intervention and diverse outcome measures. Its major weaknesses were a small sample size and quasi-experimental design, which precluded the collection of control data. Within these limitations, however, our analysis did not support the idea that promoting modest weight loss expectations during the initial phase of treatment will improve long-term weight losses. Our findings suggest that increasing patients' satisfaction with their body weight at the end of treatment may help improve weight maintenance. Additional studies of larger and more heterogeneous samples are needed to confirm these findings.

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