



Published in final edited form as:

Prev Med. 2010 December ; 51(6): 457–459. doi:10.1016/j.ypmed.2010.09.010.

Maintenance-Tailored Therapy vs. Standard Behavior Therapy for 30-month maintenance of weight loss

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Abstract

Objective—To assess differences in weight regain one year after an 18 month obesity treatment with standard behavior therapy (SBT) or maintenance-tailored therapy for obesity (MTT).

Method—213 obese adult volunteers were treated for 18 months using SBT with fixed behavioral prescriptions or MTT that employed varied behavioral prescriptions with treatment breaks. Follow-up analysis focused on weight maintenance after a year of no contact. The trial was conducted at the University of Minnesota between 2005 and 2009.

Results—Mean (SD) weight change between 18 and 30 months for participants in the SBT group was +4.1 kg (4.4) compared to +2.8 kg (4.5) in the MTT group. This is a 31% reduction in weight regain in MTT relative to SBT ($p=0.078$). This trend toward better maintenance in MTT versus SBT was due primarily to superior differential maintenance in MTT participants in the highest tertile of total weight loss at 18 months, i.e. MTT participants in this tertile regained 4kg less than SBT participants between 18 and 30 months.

Conclusions—The MTT approach with varied content and timing produced more desirable patterns of weight loss maintenance than the traditional SBT approach, especially among individuals who had achieved greater initial weight loss.

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Trial registration: NCT00670462

Conflict of Interest

The authors declare there is no conflict of interest.

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Keywords

Obesity; treatment; variety; maintenance; weight loss

Introduction

Maintenance of long term weight loss is often considered the weak link in behavior therapy treatments (Jeffery, et al., 2000). In a prior publication (Jeffery, et al., 2009), we reported 18 month results from a study focused on addressing this problem. A novel maintenance-tailored treatment was developed based on the premise that the primary reason for weight loss failure is habituation, or boredom, with repeatedly engaging in the same weight loss behaviors over time (Levy and Feld, 1999, Epstein, et al., 2009, Jeffery, et al., 2004). Our proposed solution to the habituation problem was to vary weight control strategies intermittently over time, rather than use a single strategy. Variety was introduced on several dimensions simultaneously; e.g., timing of treatment sessions, behavioral goals, and homework assignments.

Study participants (N=213) were randomized to one of two groups. One was a comprehensive Standard Behavioral Treatment (SBT) with recommendations for behavior (self-monitoring, calorie counting and goal setting) that remain constant over time. It was very similar to protocols used in recent large clinical trials (DPP, 2002; Hypertension Prevention Trial, 1989, Look AHEAD Research Group, 2006). The new treatment group, Maintenance-Tailored Treatment (MTT), promoted a sequence of different behavioral prescriptions in distinct eight week units. Results showed that the SBT group lost weight steadily through 12 months and regained significant weight between 12 and 18 months. The MTT group also lost weight steadily through 12 months, although at a somewhat slower rate than SBT. However, MTT outperformed SBT between 12 and 18 months with no weight regain *at all* during this period. The present paper presents weight maintenance results of participants in this study after an additional year of no contact follow-up.

Methods

The study was a collaboration between investigators at the University of Minnesota and the University of Washington. Its procedures were approved by the Institutional Review Boards of both universities. We certify that all applicable institutional and governmental regulations concerning the ethical use of human volunteers were followed during this research.

Participants, Randomization

Participants were 100 men and 113 women recruited by mass media advertising in two cohorts spaced approximately 14 months apart. Treatment began in January 2005 and follow-up ended in September 2009. Eligibility criteria were ≥ 18 years of age, body mass index (BMI) between 30 and 39 kg/m², freedom from serious medical conditions, and consent to be randomized to either of the two treatment groups.

Analysis

Primary outcome analyses were done with independent t-tests. Mean weight losses comparing SBT to MTT on baseline to 18 month weight change were not statistically significant. Nevertheless, as the interpretation of weight “regain” for those who have lost little or no weight is less clear than for those who have lost more weight, we examined weight change from 18 to 30 months for the full sample and by tertile of weight loss from baseline to 18 months. Demographic characteristics, baseline energy intake and expenditure,

and psychological characteristics were considered as covariates, but as none were significantly correlated with weight regain, these results are not presented.

Results

Participant characteristics at baseline by treatment group are shown in Table 1. There were no statistically significant differences between the two groups. The proportions of subjects enrolled in the study that completed the 18-month and 30-month follow-ups were 74% and 71%.

Weight change results between 18 months and 30 months are shown in Table 2. Participants in both treatment groups regained significant weight in the follow up year. Mean weight change was +4.1 kg (4.4) in SBT and +2.8 kg (4.5) for MTT ($p=0.078$). This represents 31% less regain in the MTT group. The stratified results indicate that the trend toward significance in the overall sample was due to less weight regain in MTT compared to SBT among those in the highest tertile of 18 month weight loss, i.e. those losing >11.43 kg between 0 and 18 months. Despite modestly better weight maintenance in MTT versus SBT between 18 and 30 months, however, total overall weight losses at 30 months were essentially the same in both groups, 5.8. This similarity of loss between the groups was primarily due to better weight losses in the SBT than the MTT group **through the first 12 months** in the study.

Discussion

Although we did not demonstrate that our new MTT treatment is superior to SBT for long term weight loss, we believe that the findings presented here on **weight loss maintenance during the no contact year**, in combination with previously presented results showing better weight loss maintenance between 12 and 18 months, lend support to the idea that the approach to improving weight loss examined in this study merits additional research. The habituation reduction approach to weight maintenance is a conceptual departure from most weight loss maintenance research, and we believe the results are intriguing and merit additional follow up, as well as raise a number of questions: Are the differences in maintenance replicable, are they related to treatment content, treatment timing or some combination? Why did large initial weight losers benefit more from MTT than less successful weight losers?

Conclusion

This study had many strengths, including a large sample size, good representation of both genders, a well-defined treatment protocol, and a lengthy follow up. Further research would be necessary to clarify the extent to which the MTT approach can be replicated and extended over time, what components of it are key to its success, why it is more effective for individuals who lose the most weight, and if it could be more effective for all participants. Further inquiry into maintenance-based intervention could help establish this technique as a preferred long-term clinical weight-loss treatment.

Acknowledgments

This research was supported by grant DK064596 from the National Institute of Diabetes and Digestive and Kidney Diseases, grant CA116849 from the National Cancer Institute, and the University of Minnesota Obesity Prevention Center.

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Table 1

Participant Characteristics at Baseline, by Treatment Group

| | Frequency (column %) or mean (SD) values | | <i>P</i> |
|-----------------------------------|--|------------------------------|----------|
| | Standard Behavior Therapy | Maintenance-Tailored Therapy | |
| N | 106 | 107 | |
| Mean age (y) | 49.1 (10.6) | 48.5 (10.5) | 0.67 |
| Gender: | | | 0.73 |
| Female | 55 (51.9) | 58 (54.2) | |
| Education: | | | 0.70 |
| ≥ College degree | 77 (72.6) | 75 (70.1) | |
| Race | | | 0.69 |
| White | 74 (69.8) | 69 (64.5) | |
| African American | 21 (19.8) | 29 (27.1) | |
| Other | 11 (10.4) | 9 (8.4) | |
| Mean energy intake (kcal/day) | 1980.4 (924.7) | 1976.4 (922.7) | 0.98 |
| Mean energy expenditure (kcal/wk) | 884.2 (958.7) | 954.2 (1267.2) | 0.65 |
| Mean BMI (kg/m ²) | 35.2 (2.8) | 34.6 (2.8) | 0.10 |

Note: Reported *p*-values correspond to chi-square test statistics for categorical variables and T-test statistics for continuous variables.

Baseline information was collected at the University of Minnesota between 2004 and 2006.

Table 2

Treatment condition as Predictor of 18–30 month Weight Change, Total Participants and Sub Samples by Tertiles of Weight Loss between baseline and 18 months.

| | Standard Behavioral Therapy (<i>n</i>) | Maintenance Tailored Therapy (<i>n</i>) | Estimated linear slope (SE) | <i>p</i> |
|-----------------------------------|--|---|-----------------------------|----------|
| Full sample | 76 | 76 | −1.35 (0.73) | 0.067 |
| Tertiles of initial weight loss* | | | | |
| Lowest tertile (≥ 11.43 kg) | 30 | 20 | −4.00 (1.64) | 0.019 |
| Middle tertile (4.11–11.42 kg) | 18 | 33 | −0.02 (1.24) | 0.99 |
| Highest tertile (≤ 4.10 kg) | 28 | 23 | 0.53 (1.09) | 0.63 |

* 18 month weight loss tertile

Note. Regression equations predicting 18–30 month weight change included the following covariates: gender, age, race, education, baseline depression, and weight at 18 months.

Assessments were conducted at the University of Minnesota during the following time frames.

Baseline: 2004–2006

18 month follow-up: 2006–2007

30 month follow-up: 2007–2008