An evaluation of a television-delivered behavioural weight loss program: are the ratings acceptable?


Record Status
This is a critical abstract of an economic evaluation that meets the criteria for inclusion on NHS EED. Each abstract contains a brief summary of the methods, the results and conclusions followed by a detailed critical assessment on the reliability of the study and the conclusions drawn.

Health technology
Television delivery of a behavioural weight reduction programme.

Type of intervention
Treatment.

Economic study type
Cost-effectiveness analysis.

Study population
Of the 71 participants who attended the first session, 90.9% were female and 91.5% were Caucasian. Ages of participants ranged from 20 to 58, with a mean of 39.1 years. The patient population had the following characteristics: (a) between 18 and 60 years old, (b) at least 20% overweight based on the Metropolitan Height and Weight Tables (Metropolitan Life Insurance Company, 1983), (c) free of medical problems that might contraindicate participation in a behavioural weight reduction program containing an exercise component, (d) not currently on medication that might affect weight loss, and (e) not enrolled in another weight reduction programme.

Setting
Weight reduction clinic and television centre in the USA.

Source of effectiveness data
The evidence for final outcomes was derived from a single study.

Link between effectiveness and cost data
The costing was undertaken on the same patient sample as that used in the effectiveness study.

Study sample
Of the 150 eligible respondents, 77 agreed to participate after the initial orientation session and were randomly assigned to condition. Seventy-one attended the first treatment session, with 56 participating in one of the three treatment groups (videotaped = 13, television delivered = 14 and live contact = 18) and 15 serving as waiting-list control participants. It was not stated whether power calculations determined sample size. Thirty-four participants completed both 3-month and 15-month follow-up assessments. Three participants were excluded from follow-up assessment because of pregnancy. Three others were excluded because of medical problems that were unrelated to weight reduction.

Study design
The study was a randomised controlled trial using 3 and 15 month follow-up. Four participants from the videotaped group, six from the television-delivered group, and six from the live-contact group did not complete the follow-up assessments.

**Analysis of effectiveness**

Analysis of the clinical study was based on treatment completers only. Outcomes assessed in the study included body weight and percentage overweight for age, sex and height according to the Metropolitan Height and Weight Tables (Metropolitan Life Insurance Company, 1983).

Mediational measures included:

1. Means-end problem solving (depicting five problematic weight loss situations hypothesised to contribute to relapse (experiencing fatigue, family pressures, stress, holidays, and weight loss plateaux) for which participants were required to formulate problem solutions) scored according to Shure and Spivack's (1972) criteria for means-end problem-solving ability;

2. Dieting and exercise information;

3. Self-concept (The Tennessee-Self-Concept Scale (Roid & Fitts, 1988) was used to measure total self-esteem at pre-treatment and post-treatment);

4. Calorie consumption;

5. Caloric expenditure.

**Effectiveness results**

ANOVA results showed that there were significant assessment by group interactions for the univariate analyses on both body weight, $F(3, 53) = 3.52$, $p < .05$, and percentage overweight $F(3, 53) = 4.19$, $p < .01$. Tukey post hoc analyses revealed that all three treatment groups lost significantly more weight and decreased their percentage of overweight significantly more than the waiting-list control group. There were no significant differences among the treatment groups, with an average weight loss across all groups of 9.5 lbs, or 4.31 kg (SD = 7.2 lbs, or 3.27 kg) and an average decrease in percent overweight of 7.1% (SD = 5.2%).

In order to assess differential group changes in report of calories consumed and calories expended, repeated measures MANOVA was conducted. These measures changed significantly from pre-treatment to post-treatment, $F(2, 30) = 13.47$, $p < .01$. For all treatment groups, there was a significant pre-treatment to post-treatment decrease in reported calories consumed and a trend for increasing calorie expenditures.

Univariate analyses indicated that the before and after treatment change was statistically significant for both problem-solving ability, $F(2, 44) = 21.31$, $p < .01$, and diet and exercise knowledge, $F(2, 44) = 55.86$, $p < .01$. Follow-up tests revealed that all groups significantly increased their problem-solving ability and their diet and exercise knowledge from pre-treatment to post-treatment.

Results suggested that participants in each of the groups reported an improvement in self-concept from pre-treatment to post-treatment.

For the group weight changes through the 3 month and 15 month follow up periods, the assessment by group interaction was significant, multivariate $F(6, 58) = 1.87$, $p < .05$. There were significant assessment by group interactions for body weight, $F(3, 93) = 16.49$, $p < .001$, and percentage of overweight, $F(3, 93) = 16.35$, $p < .001$. Post hoc analyses replicated the significant weight losses from pre-treatment to post-treatment. All three groups maintained those weight losses through the 3-month follow-up period, with pre-treatment weights significantly higher than 3-month follow-up weights. However, from the 3-month follow-up to the 15-month follow-up, the videotaped group showed a significant weight gain with pre-treatment weights no longer significantly greater than the 15-month follow-up weights. The television-delivered and live-contact groups continued to show maintenance of weight loss from the 3-month to the 15-month.
follow-up period with no significant changes occurring and pre-treatment weights remaining significantly higher than 15-month follow-up weights.

**Clinical conclusions**
There were no significant weight loss differences among the 3 treatment groups during the programme. Weight changes were maintained at 3-month follow-up. At 15-month follow-up, the television-delivered group and the live contact group maintained their weight losses, whereas the videotaped group did not.

**Measure of benefits used in the economic analysis**
The measure of benefit was additional weight loss.

**Direct costs**
Neither quantities of resource use nor costs (total and unit) were reported. The analysis, according to the authors, included operations costs incurred during the treatment period. The costs associated with actual production and broadcast of meetings were omitted since these services were provided free as a public service to the local community. The price year was not stated.

**Sensitivity analysis**
No sensitivity analysis was performed.

**Estimated benefits used in the economic analysis**
The mean body weights were:

- videotaped group: 82.06kg before and 77.93kg after treatment,
- television delivered group: 88.77kg before and 84.55kg after,
- live contact group: 86.55kg before and 82.06kg after,
- waiting list control group: 91.72kg before and 90.86kg after.

**Cost results**
Not reported.

**Synthesis of costs and benefits**
Although the cost per pound of weight loss was the measure used to combine costs and benefits, the corresponding figures were not stated. One-way ANOVA analyses produced a significant effect, $F(2, 42) = 5.61, p<.01$. Follow-up analyses indicated that the television-delivered group was significantly more cost effective than the videotaped group or the live-contact group. There were no significant differences between the videotaped group and the live-contact group.

**Authors’ conclusions**
In this study, a behavioural weight reduction programme delivered by television was as effective as live-contact programmes. There were significant weight losses for the three treatment groups but not for the waiting-list control group. The results presented here have positive implications for the utility of television-delivered weight loss programmes. Comparisons of other potential media, with or without active participants, varying therapist accessibility, should provide further information on the viability of such programmes. Additionally, areas of future investigation might include weight reduction programmes that are designed to solicit viewers and develop social support systems for
participants or that are directed toward preventive work with children and families as well as programmes focussing on other health-related issues.

**CRD COMMENTARY - Selection of comparators**
The rationale for the choice of comparators was clear.

**Validity of estimate of measure of benefit**
The estimate of the measure of benefit may not be internally valid due to low-number problems. Moreover, the authors based their analysis on the treatment completers principle.

**Validity of estimate of costs**
No cost data were provided in this study, nor was any additional methodological information provided.

**Other issues**
The conclusions were justified in terms of the ANOVA results. The issue of generalisability was not adequately addressed.

**Implications of the study**
Given the lack of cost data, it is difficult to assess whether the intervention is cost-effective and subsequently to compare the intervention presented within this study with other health technologies. Furthermore, the small size of the study cannot allow one to rule out chance as a plausible explanation of the study results. Therefore, additional, large, prospective studies are needed in order to obtain valid evidence with regard to the cost-effectiveness of behavioural weight reduction programmes.

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