

# Self-help in the long-term treatment of obesity

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## Summary

Despite the short-term success of professional behavioural techniques for obesity, weight losses are typically regained following treatment. The long-term maintenance of treatment effects will probably require ongoing, continuing care. Continuing care may be economically feasible when administered through self-help treatment modalities. Self-help confers a number of psychological benefits, such as self-reliance and an increased sense of empowerment. The effectiveness and cost-effectiveness of various modalities of self-help are reviewed, including purely self-prompted help, self-administered manuals, computer-assisted therapy, professionally assisted correspondence courses, and non-profit and commercial self-help groups. Stepped-care models suggest using a combination of these approaches when appropriate. However, logistical difficulties present themselves in stepped-care approaches with obesity, such as the complicating effects of severity and comorbidity on stepped-care status. Self-help groups are a promising venue for the provision of continuing care and as an adjunct to more intensive, specialty therapies.

**Keywords:** continuing care, obesity, self-help.

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## Introduction

Obesity is the second largest cause of preventable death in the USA: approximately 280 000 adult deaths per year are attributable to obesity (1). However, initial weight losses produced by treatment are poorly maintained. Six studies with follow-up periods of  $\geq 4$  years showed mean weight losses of only 1.9 kg at follow-up (2–7).

Obesity has been compared with chronic conditions such as hypertension and diabetes, and continuing treatment may be necessary to produce permanent weight loss and to indefinitely forestall relapse (8). Extending the duration of treatment and providing maintenance programmes increases the time over which results are maintained (9). Similarly, both post-treatment weight loss and follow-up loss correspond to treatment duration (10). Unfortunately, patients drop out of professional care relatively early during treatment. Attendance rates have been reported to fall dramatically after the first six months of treatment. For example, one well-controlled study of lifestyle intervention for overweight patients whose parents had a history of

diabetes found that patients attended as little as 16% of sessions after six months of treatment (11).

Professional continuing care may also prove too costly to be feasible. One of the few examples of long-term maintenance, a 4-year continuing-treatment programme administered in Sweden, produced well-maintained results at 4 years and at a 10-year follow-up, with losses averaging 12.6 kg and 10.5 kg, respectively (12,13). The programme included an initial 6-week hospital day treatment combining behavioural therapy with a very low calorie diet (VLCD) and cooking and exercise training. The 4-year maintenance programme offered weekly sessions, weigh-ins and advice from dietitians. Patients were also given the opportunity to re-enroll in day treatment at the hospital ward for 2 weeks if relapse began at any time, and 99% of participants used this option at least once. The intensive level of care and repeated hospitalizations provided by this Swedish programme rule out this model as a general approach to obesity in the USA. Individuals who have lost weight and are attempting to maintain their loss have consistently identified the need for maintenance programmes

that include ongoing support offered at low or no cost (14). The most promising means of providing continuing care that is both feasible and effective is through interventions based on self-help.

### Anatomy of self-help programmes

Although the majority of the self-help programmes reviewed below have not provided continuing long-term care, self-help is the only financially feasible modality for offering frequent and ongoing support for the maintenance of weight loss. Current cutbacks in third-party payments for professional treatment, along with the growing need for services relative to the availability of professional caregivers, argue for an increased reliance and research focus on self-administered and lay-directed programmes (15). Group programmes can also provide locally based group contact and social support. Self-help has the additional advantage of helping individuals to obtain a sense of power and the inward resources that give them more control over themselves and their environment. Segal and colleagues argue that empowerment may be a primary principle underlying self-help goals (16). Empowerment, in turn, may increase self-efficacy, self-esteem and the sense that one's own efforts can effect positive change. The process of taking personal responsibility for resolving one's problem with the aid of one's peers can be empowering (17). Additionally empowering is belonging to a like-minded community of peers who have experienced a similar situation. A study of lay beliefs on the best methods for overcoming health problems indicated a strong willingness to take responsibility for overcoming obesity. Self-reliance was rated as the most effective strategy for addressing obesity (18).

Riessman suggested that turning 'helpees' into 'helpers' through self-help not only expands resources exponentially, but also confers many additional benefits to the individuals giving help (19). Helping is beneficial because it gives the helper an active role in which to feel less dependent, more giving, more socially useful and more open to learning, so that he or she can help more effectively. These feelings may be accompanied with a greater sense of control and increased status.

Katz provided a breakdown of common aspects of self-help groups that may work together to increase members' self-reliance and self-efficacy (20). Members learn adaptive skills from others who have had similar experiences and gain instrumental information and advice. Useful information is also frequently disseminated through newsletters published by self-help groups. Members provide each other with emotional support through several processes, including positive reinforcement, disclosing experiences, expressing empathy, offering feedback, bolstering confidence and instilling hope. Engaging in group leadership and activities

can counter feelings of helplessness and increase self-efficacy. Katz also proposed that social learning principles, such as role modelling, social comparison and the development of self-efficacy, might in part account for the success of self-help groups.

A lack of professional involvement may raise a general concern about the potential dissemination of inadequate or unhelpful information. However, an additional benefit to self-help groups in the treatment of obesity is the relative simplicity of the strategies of behavioural therapy (e.g. self-monitoring; exercise; techniques to delay and better control eating, such as leaving food over and eating slowly). Teaching these techniques does not require professional involvement; they are easily disseminated and are effective in producing weight loss. Moreover, self-help groups may be crucial in helping to sustain adherence to these principles over time.

### Effectiveness of self-help

Under the category of self-help falls a range of treatments varying in intensity, effectiveness and cost-effectiveness, including self-administered manuals, professionally assisted correspondence courses, computer-assisted courses, and non-profit and commercial self-help groups. Before discussing these treatment interventions, however, it is instructive to examine whether individuals are losing and maintaining weight without the assistance of any formal treatment manuals, courses, or groups.

#### Are individuals losing and keeping off weight on their own?

Examinations of populations of individuals who have successfully maintained significant weight losses have supported the idea that self-help may be most useful for individuals who are not seeking professional treatment (and possibly in those with less severe weight problems (21)). A study of the National Weight Control Registry, a group of over 1000 individuals who had successfully achieved and maintained average weight losses of 30 kg for a mean of 5.5 years, found that approximately 45% of this group had lost the weight on their own, without using any formal programme (22). In another descriptive analysis of successful weight maintainers, only 34% of women and 46% of men used a structured weight-loss programme or medical supervision, and the remainder lost weight through their own efforts (23). It is probably not a coincidence that in both of these studies, the majority of individuals lost and maintained their weight using techniques frequently prescribed by formal treatment programmes: better nutrition, exercise, weekly weighing and self-monitoring of food intake. Self-help methods might be more valuable to populations who are not seeking professional help than

to those expecting more intensive treatment (the type who probably more often participate in randomized experimental designs) (24).

A well-known study by Schachter found that 67% of men and 58% of women who were once obese and had attempted to lose weight were at normal weight at the time of the study (25). These men and women had maintained average losses, respectively, of 17.8 kg and 13.2 kg for a mean of 13.4 and 8.3 years since starting to diet. Of the 40 once-obese individuals interviewed, only 12 had sought help from psychotherapists, physicians, hypnotists and groups such as Weight Watchers. In addition, the cure rates for those who had never sought help were higher than for those who had (69.2% vs. 42.9%). Schachter hypothesized that the pessimistic conclusions reached by studies of therapeutic effectiveness for obesity and smoking are misleading because of the biased samples of intractable patients who seek professional help. There is some support for this hypothesis, as individuals who seek treatment for obesity have been found to have greater psychopathology and more binge eating than those who do not seek treatment (26). Schachter also reasoned that the inferences drawn from studies are based on single attempts to treat obesity, while most successful cases have made repeated failed attempts before their eventual success (25).

It is difficult, however, to imagine that many obese individuals are successfully maintaining weight losses unbeknownst to professionals, considering the recent alarming rise in the disorder's prevalence. Data from the *Third National Health and Nutrition Examination Survey* documented that the prevalence of overweight in adults rose by 8% during the 1980s and reached 35.3% among women and 31.4% among men (27). If large numbers of overweight individuals were simultaneously losing and maintaining weight on their own, this steeply increasing prevalence rate would reflect primarily the development of new cases of the disorder. However, data suggest that body weights are increasing largely as a result of already overweight individuals becoming more obese, and that the natural course of obesity entails steady weight gain (8).

Few studies have examined the rates of successful weight loss and maintenance among a representative, population-based sample. Among 911 overweight and obese individuals in Finland, only 55 (6%) lost 5% or more of their body weight and maintained this loss over a selected 9-year period (28). In individuals who maintained their lower body weight, weight losses were associated with perceived improvements in physical condition for men and with greater life satisfaction for women. Another population-based study examined the prevalence of maintained weight losses reported by women between the ages of 55 and 69 years (29). Among this group of overweight and non-overweight women, 1.6% lost at least 10% of their body

weight between age 18 and 30 years and maintained a loss of at least 5% until age 50 years. Another 1.8% lost 10% of their body weight and subsequently regained the full amount or more, a pattern that was associated with increased risk of disease. Approximately 30% of these groups were originally overweight at age 18 years. These findings extend to a general population the clinical observations that long-term weight loss is rare.

### Effectiveness of bibliotherapy

The first evaluation of a self-administered manual for weight reduction was reported by Hagen (30). Treatment manuals that were self-administered (with homework mailed to and corrected by therapists) or therapist-administered, as well as therapist-directed group therapy, were all found to be equally effective and superior to no treatment. Average weight losses ranged from 5.4 to 6.8 kg over the 10 weeks of treatment. Although this study investigated only mildly overweight college students and had a short follow-up period of 4 weeks, a subsequent replication corrected for these shortcomings (31). Two treatment-manual conditions (one with high and one with low therapist contact) and a group-therapy condition all resulted in greater weight losses than control groups. No differences were found among treatment conditions, and losses ranged from 4.5 to 8.2% of initial body weight. However, only the low-contact treatment-manual group continued to lose weight over the 1-year follow-up period and showed the greatest losses of the three groups at that time. Although between-group differences were not statistically significant, the greater losses of this group suggest that these individuals had better incorporated the behavioural changes that were required from the start with less regular reinforcement and support from a therapist. Marston and colleagues also found that weight loss continued in the six months following a 13-week correspondence course (32). The 65% of participants who had completed  $\geq 75\%$  of the lessons initially lost a mean of 13.0 lbs (5.9 kg) with a further loss of 1.9 lbs (0.9 kg) during the six-month follow-up. In a review of early studies of bibliotherapy for weight reduction, Glasgow & Rosen concluded that the use of manuals can produce at least short-term weight losses under minimal-contact or therapist-administered conditions, but that their effectiveness under entirely self-administered conditions was still uncertain (33).

Brownell and colleagues found that neither a minimal-contact group (who were given a treatment manual and sent home) nor a standard-behaviour therapy group maintained weight losses at six months (34). In addition, initial weight losses for the minimal-contact group were inferior to those of the standard-therapy group, although both were superior to a control group. Shortly thereafter, similar find-

ings emerged during an examination of various treatment manuals accompanied by no therapist contact during an 8-week treatment (35). The manuals produced no statistically significant weight losses. In addition, patients' motivation to lose weight diminished over the course of treatment. These findings suggest that there are potential hazards involved in unsuccessful, self-administered treatment. Meyers *et al.* and Brownell *et al.* both advocated that self-help manuals be carefully and empirically evaluated before they are recommended to consumers (34,35). Neither of these studies gave patients the opportunity to correspond with therapists or to return homework assignments by mail, unlike the studies described above that did show moderate success. It is possible that the regular support provided by this contact may improve patients' adherence and success in implementing the behavioural techniques presented in treatment manuals.

Meyers and colleagues speculated that their recruitment procedure may have selected participants who expected intensive treatment and were then disappointed by the bibliotherapy strategies (35). Their findings, as well as those of other studies using experimental designs that randomly assign individuals to self-help conditions or intensive treatment, may not be representative of individuals who purchase self-help manuals. A later study examined groups of men who chose either group therapy or a correspondence programme for weight reduction (21). (Random assignment was not permitted in this study, which was part of the Multiple Risk Factor Intervention Trial.) An examination of weight histories revealed that participants who had experienced greater weight gains in the previous 3 years selected group treatment, whereas those with greatest success at weight control prior to treatment chose the correspondence programme or chose not to participate in any treatment. This pattern of selection suggests that the typical individuals who respond to recruitment efforts for intensive treatment may be those with more recent weight gains and more recalcitrant weight problems. In both the group therapy and the correspondence programme, participants considered active (those attending  $\geq 50\%$  of sessions or returning  $\geq 50\%$  of homework assignments) lost significant amounts of weight. Active correspondence participants maintained this loss over the 12-month follow-up period, while active group participants continued to lose weight during the first six months of follow-up and then regained this further loss over the next 6 months. Jeffery & Gerber (21) suggested that offering a variety of treatments might maximize total participation and produce the best possible benefits for the population. Their results also suggest that the required intensity of treatment may vary with the individual's weight-control history and expectations.

Several recent investigations have found support for the use of bibliotherapy in self-administered correspondence

programmes. These studies have incorporated several elements of correspondence programmes that appear to enhance their effectiveness. Cameron and colleagues evaluated a correspondence course of 15 lessons accompanied with various combinations of three additional techniques: homework assignments to be returned by mail on a weekly basis; interim weigh-ins; and monetary deposits (36). Two of the most intensive conditions (involving all or most of the supplementary techniques) were more effective than the 15 lessons alone. All treatment combinations, excluding lessons only and lessons with weigh-ins, were superior to a control group. However, weight losses were modest, 3.1 kg post-treatment and 2.3 kg at 1-year of follow-up. In the two most intensive conditions, mean losses were 4.1 kg overall and 4.8 kg for more active participants. Another study using self-help materials and the opportunity for participants to mail in their food records over a six-month period found a mean loss of 8.1 kg, 80% of which was lost as fat (37). Modifications in eating behaviours, such as decreased fat consumption and increased carbohydrate, protein and fibre consumption, were found following treatment. Average days per week during which participants exercised also increased from 1.5 to 3.8.

Studies attempting to modify isolated eating and exercise behaviours associated with weight loss and a healthy lifestyle have found success with the use of self-help materials. In an intervention designed to decrease fat intake and increase fibre intake for patients in primary-care clinics, self-help materials were introduced briefly by a nurse and reinforced later by telephone. Small, but consistent, changes were found for fat and fibre consumption, with decreased fat intake reaching significance (38). Similarly, self-administered programmes that targeted sedentary individuals and utilized techniques such as record keeping and reinforcement (given by a significant other person) increased exercise frequency and physical fitness in a treatment group, relative to a control group (39).

A recent meta-analysis of bibliotherapy studies summarized the results of several studies examining this form of treatment for weight loss (40). The nine studies included yielded a small effect size, but contained significant heterogeneity among them. Removing two outliers yielded a moderate-to-large effect size ( $d$ ) of 0.85, which indicates the difference between bibliotherapy treatment groups for weight loss and control groups. Bibliotherapy groups were also compared with standard treatment groups, although no breakdown was reported for different problem types. The effect size for therapist-directed treatment was found to be no greater than that for bibliotherapy, suggesting no differences between their effectiveness. Although only two out of 10 treatment categories showed a significant, positive relationship between the amount of therapist contact and effect size, weight loss was one of them.

### Degree of therapist contact

Several researchers have specifically compared the use of varying degrees of therapist contact while controlling for other variables, such as the type of self-help manual used and the total time spent in treatment. Pezzot-Pearce and colleagues compared the use of a behavioural manual under therapist-administered and self-administered conditions (41). Significant weight losses resulted, with no increase in effectiveness in the two therapist-administered conditions despite a fourfold and 20-fold increase in cost and investment of therapist time. (Two therapist-administered conditions also compared group treatment with individual treatment. Individually treated subjects did not maintain their losses relative to other subjects, who maintained or increased losses over the 16-month post-treatment period. This finding was consistent with previous comparisons of individual and group treatment for obesity (42) and may testify to the advantages of public commitment and social proof inherent in self-help or treatment group formats.) In a standard 6-week behavioural treatment of obesity (no bibliotherapy was involved) frequent therapist contact did increase weight losses (three contacts per week vs. one contact per week), controlling for the total time spent in treatment (43). However, two different types of therapist contact had equivalent effects: in-person visits and telephone conversations. Each took less than 5 min, and phone calls were made by untrained assistants and thus added appreciably to treatment benefits at minimal cost. Adding such contacts to correspondence programmes that employ treatment manuals might increase their effectiveness, and further research should explore this possibility under controlled conditions.

### Computer-assisted interventions

A series of studies has examined the effectiveness of a computer programme in assisting individuals with weight loss. The programme featured computer-assisted self-monitoring of food intake and exercise, goal setting, response-contingent feedback and regular auditory prompts reminding participants to make self-reports. An encouraging pilot study found losses of 3.7 kg (1.5 kg for a control group) after the 8-week treatment period, with losses increasing eight months post-treatment to 8.0 kg (1.0 kg for controls) (44). A further investigation found no differences between computer-assisted therapy and a standard, therapist-conducted treatment. However, all weight losses were very modest, at 2.2 kg after the 12-week treatment (45). Using the computer programme as an adjunct to a guided 1200 calorie weight loss regimen, results were improved to 5.3 kg post-treatment, with losses of 3.8 kg maintained after six months (46). Computer-assisted treatment alone yielded losses of 3.1 kg after the 12-week treat-

ment period and 0.9 kg at follow-up. The provision of 1-h biweekly support groups increased losses significantly over computer therapy offered 4 days each week (1.6 vs. 0.5 kg over the 10-week treatment), but computer therapy offered 7 days each week also increased the losses (to 3.6 kg) (47). Although these results are inconsistent and based on short-term studies, this therapeutic modality may offer a cost-effective alternative for the provision of continuing-care or maintenance programmes. Examining computer-assisted therapy over the long-term may prove valuable.

Television is an even more widely influential mode of communication, and a brief treatment programme compared the weight losses of a videotaped live-contact treatment group with those of viewers who watched the televised sessions of this group and received no therapy (48). Losses were similar, with  $\approx 4.5$  kg lost in both groups after the 8-week televised programme. These losses were regained 3 to 15 months after the televised programme was discontinued, but it may be worth further evaluating this treatment modality using a longer-term television programme.

Glasgow & Rosen (33) criticized self-help studies for using short follow-up periods and showing small weight changes of questionable clinical relevance. Although more complex study designs and technology have been used in recent reports, problems such as brief treatment and follow-up periods have remained. It is now established that weight reductions of as little as 5% of the initial weight can improve obesity-related health complications, at least in the short term (49). Therefore, the small weight losses achieved with self-help manuals may still be clinically significant. However, it is unknown (and perhaps unlikely) whether these losses were maintained, given the typical failure of weight maintenance after even intensive therapy. It has been suggested that maintaining even small weight losses is more feasible when initial losses have been large, providing a cushion against full weight regain (6). Furthermore, individuals who lose more than 10% of their initial weight have shown better maintenance of health improvements, such as reduced cholesterol, than those who lose only 5–10% of their initial weight (50).

### Non-profit self-help groups

An early self-help group that received much research attention in the 1970s was Take Off Pounds Sensibly (TOPS). Group membership was free of charge and groups were led by non-professionals. The group used primarily social pressure techniques, such as announcing each member's weight loss or gain at weekly meetings, which were met with applause or booing. Individual members were singled out for praise or punishment for the largest or smallest weight losses (51). The average weight loss found in the 22 chapters studied was 15 lbs (6.8 kg), but with wide variability



among chapters. Attrition rates were 47% at 1 year and 70% at 2 years (52).

In a pioneering effort, Levitz & Stunkard attempted to introduce behaviour-modification techniques into the TOPS groups (53). This significantly improved weight loss and attrition rates. Attrition rates decreased from 67% to 40% at 12 months. Weight losses in behaviour-modification groups were 1.9 kg, compared with gains of 0.3 kg in traditional TOPS groups. Levitz & Stunkard also examined whether behaviour-modification groups could be led as effectively by lay and professional leaders. The leaders were equally effective for attrition, but the professional leaders' groups lost more weight initially and at follow-up. The lay leaders used were TOPS leaders, and, although they were trained in teaching behaviour-modification principles, these leaders had still been accustomed to administering the traditional (and ineffective) TOPS procedures. In contrast, a later study intensively trained non-professionals to deliver a six-month behaviour-modification treatment for weight reduction in a group format (54). These lay therapists were then closely supervised by professional psychologists. Patients lost an average of 5.2 kg and 65% of them completed therapy.

Another non-profit self-help group, Weight Control Workshops, based in Australia, used behavioural therapy techniques, promoted exercise and a nutritionally sound diet, and had group sessions led by trained lay people who had themselves overcome a weight problem (55). The average weight loss found as a result of this 10–12 week programme was 4.3 kg. Over half of the sample (52%) gained weight during the six-month follow-up period, resulting in an average net weight loss of 3.4 kg.

The Trevoise Behaviour Modification Programme (TBMP) now contains ≈1000 members, is led by non-professional volunteers and charges no membership fees (56). Like TOPS, social pressure techniques are used to promote weight loss. TBMP, however, uses traditional behaviour therapy, and the social pressure involves strict rules to promote and enforce adherence to therapeutic strategies for weight loss. Members must attend weekly meetings (or provide advance notice and a legitimate excuse for absences) and meet specific weight-loss goals each week. Individuals not adhering to these rules are permanently dismissed from the programme. Furthermore, individuals are permitted to join the programme only once in their lifetime, increasing the value of membership. Emphasis is placed on the lifelong behavioural changes that are necessary for permanent weight loss, and members are encouraged to remain in the group indefinitely and to volunteer as group leaders or office staff. An examination of the programme's effectiveness over a 5-year period revealed that weight loss for all members at either 5 years or at the time of treatment termination was  $13.7 \pm 0.5\%$  of their initial body weight, or  $12.8 \pm 0.5$  kg. The 47% of members

who were still in treatment at 2 years lost 19.3% of their initial weight; those 22% still in treatment at 5 years continued to keep off 17.3% of their initial weight (56). Individuals who left the programme maintained a loss of 4.7% at 4 years after they had dropped out. This surprisingly effective programme may be replicable in other settings. A recent examination of several smaller satellite groups based on the TBMP model of treatment found similar results, with large weight losses (18.4% of initial weight) maintained over a 5-year period (JD Latner *et al.*, unpublished).

### Commercial self-help programmes

Commercial programmes comprise the form of self-help for weight reduction that is probably most well-known to the general public. High attrition rates have been found across a number of programmes (Weight Watchers International, Silhouette Slimming Club, etc.), with 50% of group members dropping out of these programmes at 6 weeks and 70% at 12 weeks (57). (It should be noted, however, that the most recent report on this phenomenon is from 1981; see ref. 57.) However, such programmes may still be as effective or more effective than traditional programmes conducted at clinics or hospitals. An Australian study using a non-randomized design found that members of Weight Watchers International (WWI) lost an average of twice as much weight as patients attending a hospital obesity clinic (58). In addition, the percentage of patients reaching their goal weight was many times greater for WWI members.

WWI, which is the largest organization of its kind, uses behaviour-modification techniques (following a dietary exchange programme of the kind used by diabetics), and its leaders are former members who have undergone a training programme (59). In an average of 29.5 weeks, members remaining in the programme were found to lose 25.6 lbs (11.6 kg) on average, which compared favourably with other groups of this kind (60). However, in the face of attrition rates of the magnitude reported (57), weight losses by the small minority of survivors are difficult to interpret or generalize (61). Fifteen months after selected members had reached their goal weights, 25% were found to be below goal, 29% were within 5% of goal, 17.5% were between 6 and 10% of their goal, and 17.5% were ≥11% above their goal weight (62). Maintenance success was predicted by the age at which members were first overweight (older predicted better outcomes) and their degree of overweightness prior to embarking on weight loss (lighter predicted better outcomes). A more recent study found a weight loss of 1.87 kg by Weight Watchers members during the first 4 weeks of treatment (63). However, this time frame is far too short to permit any significant conclusions to be reached.

Considering the millions of individuals who have enrolled in commercial weight-loss programmes, the rela-

tively small amount of published data on these programmes is striking. This relative absence of evaluation, especially over the long-term, is probably a result, in part, of the financial interests of commercial programmes – reports of mediocre or poor results could only stand to reduce their profits (64).

### Stepped-care approaches

Jeffery & Gerber suggested maximizing participation and weight loss in a given population by offering various treatments of different intensity levels (21). A stepped-care system is one approach to addressing the variation in the needs of individuals. Brownell proposed a stepped-care approach to weight reduction modelled after current approaches to hypertension management (65). The approach would begin with an inexpensive motivational and psychoeducational approach, such as educational materials, self-help books, weight-loss competitions and media programmes. The second step could offer commercial and self-help groups; the third an intensive, professionally administered clinical programme; and the final step, individual counselling or surgery. For example, if patients do not achieve their goals through group behaviour modification, which can involve less interactive psychoeducation and instruction, a more intensive individual treatment programme of cognitive-behavioural therapy (see ref. 66), could be administered.

### Problems with stepped care

In the treatment of obesity, not all aspects of a potential stepped-care model are clear-cut. In treating disorders such as hypertension, one would typically begin with the simplest and cheapest treatment method, find out quickly who is not responding and move these patients to a higher step. However, the differential effectiveness of various types of treatment for obesity, and thus the rationale for moving to further steps when one step has failed, has not been well established. For example, certain self-help groups may be as effective as professionally administered clinical programmes, as discussed above. In addition, it is still unknown whether individual treatment is more effective than group therapy, and limited evidence has even suggested that it is less effective (41,42). Another problem related to the development of a stepped-care approach to weight loss is that while many variations of treatment have been found to produce early weight loss, there still exists no well-established treatment that produces permanent weight reduction. In view of this deficiency, it is difficult to ascertain which step would be the appropriate last resort. Surgery might fill this gap for morbidly obese patients but should not necessarily be postponed as a last step. The appropriateness of surgery for only a subgroup of patients

is an example of how severity and comorbidity, often a basis of treatment choice, may alter stepped-care status. Identifying responders and non-responders in stepped-care treatment models is also more complex than in hypertension management, where treatment response is usually promptly evident. Non-response would need to be operationally defined, for example, as weight loss failing to meet a specific goal. In addition, effectiveness in obesity treatments is typically determined by examining weight losses after at least six months, and usually more.

### Research on stepped-care programmes

Black and colleagues have examined the use of a minimal-intervention programme involving behavioural instructions given over the telephone, treatment materials sent by mail and no therapist contact except for weigh-ins, as the first stage of a stepped approach for weight control (67–69). This minimal intervention was as effective as a 6-week and a 10-week therapist-guided behavioural programme at the six-month follow-up (68). All programmes produced modest weight losses (5.5–11.1 lbs; 2.5–5.0 kg). The minimal intervention was subsequently included as the first stage of a 12-month stepped treatment, with patients switched over to a second step (a bibliotherapy problem-solving programme) after they reported 3 weeks with no progress using step 1 (69). Both steps included weekly lessons and homework to be mailed in, corrected and returned with feedback. Four patients (18%) did not need to switch to step 2 and lost an average of 23.1 lbs (10.5 kg) after treatment and 30 lbs (13.6 kg) after a three-month follow-up period. Average weight loss for those who did move on to step 2 was 21 lbs (9.5 kg) after treatment and 22.1 lbs (10.0 kg) after follow-up. A similar study, this time using a therapist-administered problem-solving treatment as step 2, found that patients lost only 2.9 lbs (1.3 kg) during the minimal-intervention programme and 14.8 additional lbs (6.7 kg) during step 2 (67). Analyses demonstrated that the rate of weight loss during problem solving was significantly greater than the rate of loss during minimal intervention. As the amount of weight lost early in treatment is an important predictor of success in weight-reduction therapy (70,71), it seems that starting a stepped-care intervention with treatments that produce small weight losses may sacrifice individual success on the part of some patients in favour of overall cost reduction.

### Self-help groups accompanying more intensive treatments

Treatment combining a VLCD with self-help support groups has been reported to be effective in pilot studies using small numbers of patients (72,73). As VLCDs require

careful professional supervision that cannot be eliminated, the self-help group format used here would probably increase effectiveness, but not cost-effectiveness (this data was not reported). The impressive weight losses reported after 90 weeks in these studies do contrast sharply with the usual pattern of rapid regain after VLCDs. Weight losses at 26 weeks into treatment ranged from 22.4 to 53.8 kg and, even after 90 weeks, most patients continued to lose weight, with losses ranging from 33.7 to 66.8 kg.

A more recent pilot study has examined the combination of medication with group behaviour modification (74). Over the course of a year, patients were given treatment manuals and assignments for behaviour change, along with obesity medications dl-fenfluramine and phentermine, which were approved for use at the time of the study. Although the group was led by a professional nutritionist, the substantial losses (15.4 kg) that patients achieved by the end of the year suggest that adding lifestyle modification groups to medication regimens can enhance weight losses compared to the more modest effects typically produced by medication alone (75). Such groups could undoubtedly be conducted by lay persons or individuals who have themselves maintained weight losses.

Finally, self-help programmes have been used as a component of a maintenance programme following initial treatment with more intensive behaviour therapy. Patients received instruction and practice in how to form their own peer self-help groups, called 'buddy groups', which used a problem-solving approach to weight maintenance. This maintenance programme has been found to result in significantly lower attrition rates and better maintenance than standard behavioural therapy at the later months of follow-up: months 9 (7.8 vs. 3.1 kg), 15 (5.8 vs. 2.1 kg) and 21 (4.5 vs. 0.4 kg) (76). However, although this maintenance programme enhanced weight loss progress, it postponed – but did not prevent – relapse (9). It is possible that if the self-help group had been extended indefinitely using a continuing-care model, the achievements of patients might have been maintained.

## Cost-effectiveness

### Cost-effectiveness of bibliotherapy

Several studies have examined the cost-effectiveness of bibliotherapy for weight reduction. The correspondence course implemented by Marston and colleagues cost an average of \$4.42 per lb lost (\$9.74 per kg), with a total cost of \$55 and an average loss of 12.5 lbs (5.7 kg) for patients completing the course (32). At a Stanford clinic programme during the same time period, the cost to patients was \$54.95 per lb lost (\$121.00 per kg) (77). Pezzot-Pearce *et al.* reported significant differences in cost-effectiveness between treatments using behavioural

manuals and those relying on a traditional group-therapy format (41). They also found a substantial increase in cost-effectiveness with reduced frequency of therapist contact, as a result of decreased cost and equal effectiveness. Although no specific dollar amounts are listed, the investments in therapist time ranged from 15 min to 300 min (under conditions ranging from minimum to maximum contact), but all produced losses of 11–12 lbs (5.0–5.4 kg) six months later. The recent report of a moderately successful correspondence course conducted by Cameron and colleagues documented a cost of \$10.87 Canadian dollars per kg lost for women in the most intensive treatment conditions (described above), and \$4.64 per kg lost for all males who were treated (36). These authors compared the costs with those of a professionally run behavioural programme that resulted in similar total weight losses but cost \$50.00 Canadian dollars per kg lost (78).

Yates has argued that the cost-effectiveness of obesity treatments can be substantially improved by a careful choice of delivery systems, and some strategies, such as using para-professionals or delivering behavioural programmes by mail, can produce excellent cost-effectiveness ratios (77). With modern advances in communication, the possibilities for further increasing cost-effectiveness by administering behavioural interventions via the Internet, hand-held computers and television, are expanding. After treatment, computer-assisted therapy alone was significantly more cost-effective than behavioural therapy or computer therapy accompanied by a support group, but these differences diminished after 12 months when weight losses were not maintained in any group (46). It is possible that computer therapy is more cost-effective only during treatment or as a longer term treatment. A self-help programme of television viewing was significantly more cost-effective than a live-treatment group (48). In addition, this analysis was performed only for the limited number of known participants in the study. A potential advantage of this medium is the accessibility to large audiences at no increased production cost.

### Cost-effectiveness of self-help groups

Yates estimated the cost-effectiveness of a commercial programme to be \$3.00 per 1% reduction in percentage overweight (77). This figure was subsequently adjusted for inflation to \$7.31 (79). However, the evaluation in dollars of pure cost-effectiveness does not take into account another aspect of cost that can vary depending on the treatment modality: the party responsible for this cost. In the case of for-profit commercial programmes, the patient is responsible for much of the cost, whereas in non-profit self-help groups, it is often shared between the patient and the volunteer leaders of the programme. The cost of work-site interventions may occasionally be absorbed by the



participating companies. In bibliotherapy programmes, researchers do not often report that a fee was charged, suggesting that the cost is often covered by an affiliated university, hospital, or government grant. Reports are also often lacking in information about whether patients' medical insurance programmes were used to cover costs.

It is unclear where the responsibility should lie for covering the expense of obesity treatment. Some would argue that the individual is responsible, whether personally or through medical coverage; commercial programmes closely fit a model that assumes personal responsibility. On the other hand, work sites have a strong financial incentive to keep their employees healthy, and some would argue that it is their responsibility to do so.

### Conclusions and recommendations

Self-help programmes for obesity, administered through self-help manuals, self-help groups, or as part of a maintenance plan, can be an effective weight-loss strategy for a proportion of patients. Their lower cost is unequivocal. Especially in cases of mild obesity, a stepped-care approach, starting with the most cost-effective forms of treatment, may be appropriate. Another useful function of self-help may be as an adjunct to more intensive treatment, such as a VLCD or pharmacological therapy, as medications for obesity will often need to be continued indefinitely. Compliance difficulties and attrition generally faced with medicated patients (75), could in part be addressed within the context of a self-help programme.

More generally, it is becoming increasingly clear that while many treatment delivery systems of varying cost can produce initial weight losses (77), not a single treatment method has been found that can sustain these weight losses for more than  $\approx 1$ –2 years after treatment termination (79). Extending the length of treatment and maintenance programmes does effectively postpone relapse (9). The solution, although simple, can be expensive and difficult to implement. Lifelong, continuing care that focuses on the achievement of long-term objectives may be necessary to permanently forestall relapse in obesity, a chronic condition similar to hypertension or diabetes (8). One major limitation of extending treatment indefinitely is the labour-intensive and expensive nature of behavioural therapy. The use of cost-effective lay therapists and self-help delivery systems addresses this concern. A continuing-care model still faces numerous other challenges, such as declining attendance and reduced motivation after the first year of treatment (8). However, the two studies that provided continuing treatment over a 4–5-year period found that a substantial proportion of individuals did remain in treatment, and their weight losses averaged 12.6 kg (12) and 15.7 kg (or 17.3% of initial body weight) (56) after 4 and 5 years, respectively.

The opportunity to administer ongoing and inexpensive care for obesity, a chronic illness whose present treatments are still largely unsuccessful in the long term, is now available. Studies utilizing and further examining these methods should be a research priority. For example, future research could evaluate the effects of long-term self-help treatment used as an adjunct to pharmacotherapy. Randomized, controlled trials could be used to compare the effects of various treatment modalities, such as long-term professional treatment and long-term self-help groups. It would be useful to identify ways to further improve adherence in successful continuing-care programmes, such as the Trevoise Behaviour Modification Programme. Finally, a fruitful area for research will be to evaluate the generalizability of self-help treatment models based on continuing care, such as the Trevoise model, by examining their effectiveness in other contexts, and to disseminate such models of treatment and make them available to a larger number of obese individuals.

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