

# The effect of an individual versus group program on weight loss

KS Steinbeck MBBS (Hons) PhD FRACP, AM Droulers BA BsocStud, ID Caterson BSc(Med) MBBS PhD FRACP

*Metabolism and Obesity Services, Dept of Endocrinology, Royal Prince Alfred Hospital, Sydney, Australia*

The therapy of obesity is difficult and success rates are low. Because of these observations many different therapeutic modalities have been advocated. In this study the short term weight loss results using individual and group approaches are described. For both approaches changes in lifestyle and behaviours were emphasised. The major finding of the study was that while patient retention rates were better in the group approach, weight loss was greater in those patients who were seen individually. The reasons for these findings are discussed and some suggestions are made as to how the group approach, which has the significant advantage of making more efficient use of health professionals' time, might be made more therapeutically effective.

## Introduction

Obesity is associated with an increase in both morbidity and mortality<sup>1-3</sup>. Overall the results for weight loss and maintenance of that weight loss are poor<sup>4-6</sup> and thus many strategies have evolved to achieve weight loss in the obese<sup>1,7-9</sup>. When considering what type of weight control program to implement it is important to make the most effective use of available staff time and expertise.

The Metabolism and Obesity Services at Royal Prince Alfred Hospital offer a multidisciplinary, ambulatory, behavioural and lifestyle based weight management program. The service is based in a large 900 bed inner city university teaching hospital. The current study was undertaken to assess the effectiveness of two different approaches to weight loss therapy, individual clinic visits versus a group. The results so obtained were to be used in future planning of weight control therapy approaches.

## Materials and methods

Patients were either self-referred or referred by their local medical officer or another physician within the hospital. Patients were allocated to two study populations, 'group (G)' and 'individual (I)'. The latter comprised all patients seen individually in the weight control program during the period that the group programs took place. Exclusion criteria for the group were inadequate English conversation and reading skills, inability to attend an afternoon session and previous psychiatric illness. In addition data on all patients seen individually in the weight control program over the previous eighteen months was retrieved for comparative purposes (Individual Total).

## Individual program

At the first visit each patient was assessed by a physician, dietitian and physiotherapist. At the time this study was performed waist and hip ratios were not routinely measured and thus body heights and weights only are available on all patients. Each patient was given an eating plan, an exercise program and printed educational material and then allocated to a primary therapist. Food and exercise diaries were kept continuously and new educational material was presented each week. Patients were required to attend weekly for the first 10 weeks and to notify the therapist if they intended to cancel their visit. Patients were contacted if they failed to attend without reason. Referral to other specialists e.g. psychiatry, relaxation therapy was as required. At the end of 10 weeks, longer term follow up was negotiated individually.

## Group program

The first visit involved an assessment identical to that for individual patients. Following visits, weekly for 10 weeks, were held in a hospital area separate from out-patients. There was a maximum of 13 patients in each group. The groups extended over

30 consecutive weeks. A dietitian and physiotherapist ran the groups.

A physician and clinical psychologist from the weight control program were also present when specific expert involvement was required. Patients were to notify the program coordinator if they wished to cancel any group day and were contacted if they failed to attend without a reason. Patients in the group program were given identical educational material to those patients seen individually. Food intake and exercise diaries were reviewed weekly, with hand written comments, by one of the weight control program staff attending the group. The duration of each group session was 90 minutes, the format was similar each week. Each group member was weighed. There was then a 30 minute exercise class - 5 minutes warm up, 20 minutes aerobic exercise, 5 minutes relaxation. Patients recorded their pulse rate and attempted to reach their calculated goal heart rate. Each week the topic for discussion was related to the educational material received. Visual aids and practical teaching exercises were utilised. Each patient had a star chart based on a point system for physical activity undertaken and changes in eating behaviours completed. These charts were on display during the group session. If any patient had an individual problem requiring attention, time was made available after the group session to discuss this problem with the appropriate therapist. At the end of the group program patients were offered placement in the individual management program.

Single sex (female) was chosen for the group to maximise effectiveness and participation and because few men were available for the middle of the day sessions. Completion was defined as attendance to tenth week of the individual or group program. Patients were classified as drop-outs if they failed to come after the first visit or if they failed to reappear after any visit up to the ninth visit.

## Statistical analysis

Results are expressed as mean  $\pm$  SEM. Statistical analysis was performed using the BMDP software package. Statistical significance was estimated using Student's t test, analysis of variance and the Chi-square statistic. A P value < 0.05 was considered statistically significant.

## Results

Thirty seven patients were enrolled in the group program and 45 patients entered individual follow-up during a four month period. A total of 220 patients had been enrolled in the weight control

**Correspondence address:** Dr Kate Steinbeck, Metabolism and Obesity Services, Level 2 QEII Building, 59 Missenden Rd, Royal Prince Alfred Hospital, Camperdown, NSW, 2050 Australia  
Tel: +61-2-9550-9770; Fax +61-2-9550-6725

program over the previous 18 months. Twenty one, 15 and 93 patients (56.8%, 33.3% and 42.3% respectively) completed the initial 10 weeks. Twenty percent and 23% of the total drop-outs left between the first and second week of the program for Group and Individual respectively. No drop-outs occurred after the first four weeks in the Group, whereas in Individual attrition continued through out the 10 weeks. Rate of weight loss was not correlated with drop-out frequency over the course of the program.

Initial data for Group and Individual are shown in Table 1. Patients in both groups were of similar age. There was the expected difference in sex ratio as Group patients were female only. The female to male ratio for Individual was similar to that for Total, 2.8:1 and 3.1:1 respectively. There was a small but significant difference in body mass index (BMI) for Group versus Individual patients,  $37.1 \pm 1.00$  versus  $40.8 \pm 1.85$  kg/m<sup>2</sup> ( $p < 0.05$ ). This difference was not maintained when the Total value,  $38.7 \pm 0.53$  kg/m<sup>2</sup> was included in the analysis. The prevalence of childhood/adolescent obesity, young adult (20-40 years) onset obesity, type 2 diabetes and hypertension was not significantly different between Group and Individual and was also similar in Total. There was a significantly higher prevalence of arthritis (defined as joint pain and/or swelling which limited mobility) in Group versus Individual, 45.9% versus 13.3% ( $p < 0.05$ ). This difference was not maintained when the prevalence for Total, 19.9% was included in the analysis.

**Table 1.** Initial characteristics of patients enrolled in group and individual programs.

|                                  | Group<br>n = 37 | Individual<br>n = 45 | p Value |
|----------------------------------|-----------------|----------------------|---------|
| Age (yr)                         | 46.4±1.65       | 44.1±2.27            | n.s.    |
| Sex F:M                          | 1:0 (37,0)      | 2.8:1 (33,12)        | < 0.01  |
| BMI (kg/m <sup>2</sup> )         | 37.1±1.00       | 40.8±1.85            | < 0.05  |
| Initial weight (kg)              | 99.9±3.19       | 104.1±4.06           | n.s.    |
| <b>Prevalence - absolute (%)</b> |                 |                      |         |
| Childhood onset obesity          | 13 (35.1)       | 16 (35.5)            | n.s.    |
| Young adult onset obesity        | 16 (43.2)       | 19 (42.2)            | n.s.    |
| Type 2 Diabetes                  | 3 (8.1)         | 3 (6.6)              | n.s.    |
| Hypertension                     | 19 (51.4)       | 21 (46.7)            | n.s.    |
| Arthritis                        | 17 (45.9)       | 6 (13.3)             | n.s.    |

mean ± SEM

More than half of the patients in Group and Individual had never smoked and over a quarter of the patients in the two groups had never used alcohol. The prevalence was not significantly different between the two groups. Twenty seven (62.2%) and 35 (77.7%) of patients from Group and Individual programs described stress induced overeating. This difference was not statistically significant.

Table 2 shows weight loss data between weeks one and 10 for patients in Group, Individual and Total categories. Those patients in the Group program lost significantly less weight than those in the Individual program -  $3.4 \pm 0.74$  versus  $7.2 \pm 1.75$  kg ( $p < 0.05$ ), although this finding was not duplicated when Group weight loss was compared to Total weight loss.

**Table 2.** Weight loss for group and individual programs.

|                                    | Group<br>n = 21 | Individual<br>n = 15 | Total<br>n = 93 |
|------------------------------------|-----------------|----------------------|-----------------|
| Total weight loss (kg) in 10 weeks | 3.4±0.74        | 7.2±1.75*            | 4.9±0.58        |
| Weight loss per week(kg)           | 0.4±0.07        | 0.7±0.16*            | 0.5±0.05        |

$p < 0.05$ , group versus individual programs

n = patients who completed 10 weeks

The positive aspects of the group program, as viewed by both the patients and therapists, were group problem solving, group interpersonal support and the use of practical demonstrations such as exercise, foodstuffs or relaxation. Difficult aspects of the group

program, as viewed by therapists, were problems in being directive in terms of education and the awareness that the goal of weight loss became obscured by the patients' other needs.

Individual and group programs differed with respect to use of therapist's time. For the individual program the ratio of the time spent by the therapist compared to the time spent by the patient at the program was one. For the group program this ratio fell to 0.25.

## Discussion

The short term results for two different approaches to weight reduction have been studied. The group program was educational and advocated a lifestyle change, as did the individual program. Thus the group program is best compared to group education programs utilised in diabetes management, for example<sup>10</sup> or to self help community weight loss programs<sup>11,12</sup>. The group intervention did not use strict behavioural techniques with interpretative feedback and specific goals. Thus the results of the group program are not as easy to compare with much of the literature on group work in the management of obesity<sup>13-15</sup>.

The gender difference between group and individual programs was considered unavoidable as attendance at the group program generally reflected no outside the home employment. In addition it was considered that a mixed gender group might create some difficulties due to markedly differing needs and experiences, and therefore be ineffective.

The attrition profile for the group and individual programs was similar to the general clinic attrition rate<sup>16</sup> and to the attrition rates reported in some other studies<sup>17,18</sup>. The unexpected finding was the failure of further attrition after the first month in the group program. This suggests that the perceived support and positive reinforcement from other group members may allay any decision to leave the program. The attrition observed in the group program in the first month might have been the result of external factors or client dissatisfaction with the group approach. Both this and other weight loss programs have demonstrated that it is not easy to predict reasons for attrition in a weight control program and specifically attrition may not be related to the rate of weight loss<sup>19,20</sup>.

The only significant differences in baseline data between group and individual, other than gender, were for the initial BMI and the prevalence of arthritis. In terms of obesity management a BMI difference of this degree is of no real import. The patients in the group program had a higher prevalence of arthritis. Although the exercise records did not allow the intensity of exercise to be assessed, the incidence of arthritis in the group may have limited exercise intensity and may have been one of the factors responsible for the lesser observed weight loss in group patients compared to those patients receiving individual management.

That short term weight loss was lower in the group compared to the individual program differs from a number of studies<sup>21-23</sup>, as well as differing from the total data. There are a number of possible reasons for these observations. They relate to the complex aetiology of established obesity in humans, where both genetic and environmental factors are considered to play a role<sup>24-27</sup>. It is well established that lower body segment adipocytes are more resistant to lipolytic stimuli than abdominal adipocytes<sup>28</sup>. This physiological observation may influence the rate of weight loss in an all-female group, although the modification of rate of weight loss by body fat distribution is remains unproven<sup>29-31</sup>. Early weight loss rates in any weight control program may reflect the amount of time spent both on an assessment of individual habits that will require modification to lose weight and the time spent ensuring that such specific changes are made. It may well be that while group programs allow for the dissemination of information that may enable a person to lose weight, such programs do not as effectively permit the assimilation and use of such information in the manner that individual therapy does. Therapists for the group program noted that patients were inclined

to be distracted from the purpose of the group if issues peripheral to weight loss were raised.

It should be acknowledged that weight loss is not the only indicator of success in a weight loss program. The mean BMI of patients in both groups was in the obese range and weight loss is certainly to be recommended. Nevertheless acquisition of knowledge enabling weight loss at a later date, the institution of healthier lifestyle habits and an improvement in self esteem can all be viewed as potential successes in a weight loss program.

The most effective use of health professionals in patient management is an important concept in the budget conscious arena of public health. The investigators had hoped to demonstrate

that a group program, which made more efficient use of health professional's time, was as effective at establishing weight loss as was the individual approach. The results did not entirely support this concept. It is likely that a number of changes to the group program may make it more effective. These changes might include more specific selection criteria and more time spent in an explanation to the patients about the purpose of the group, additional education in group dynamics for the health professionals involved and more attention to the setting and achievement of individual goals within the group. Such changes may enable group programs to become an integral part of the weight control program described in this study.

### The effect of an individual versus group program on weight loss

KS Steinbeck, AM Droulers, ID Caterson

*Asia Pacific Journal of Clinical Nutrition (1997) Volume 6, Number 2: 119-121*

## 比較個別和群體減肥的效果

### 摘要

治療肥胖症是困難的，成功率是低的，正因為如此提出了許多不同的治療方案。本文用個別和群體減肥方法研究了短期減肥的效果。兩個方法都強調改變行為和生活方式。該研究的主要發現為群體減肥病人中途退出較少，而個別減肥病人則減重較大。該文對這些發現的原因加以討論，並提出一些意見，認為群體減肥如能多用健康專業時間，治療效果會更好。

#### References

- Black D. Obesity, A report of the Royal College of Physicians. *J Roy Coll Phys(Lond)* 1983 17:5-63.
- Sjostrom L, Larsson B, Backman L *et al.* Swedish obese subjects (SOS). Recruitment for an intervention study and a selected description of the obese state *Int J Obes Relat Metab Disord* 1992 16:465-79
- Sichieri R, Everhart JE & Hubbard VS Relative weight classifications in the assessment of underweight and overweight in the United States. *Int J Obes Relat Metab Disord* 1992 16:303-12
- Hyman FN, Sempos E, Saltsman J *et al.* Evidence for success of caloric restriction in weight loss and control. Summary of data from the industry. *Ann Int Med* 1993 119:681-7.
- Stunkard A & McClaren-Hume M. The results of treatment of obesity: areview of the literature and report of a series. *Arch Int Med* 1959; 103:79-85.
- Wing RR Behavioural treatment of severe obesity. *Am J Clin Nutr* 1992 55 (2 Suppl) 545S-551S.
- Garrow JS. Treatment of obesity *Lancet* 1992 340:409-13.
- Guy-Grand B INDEX (International dexfenfluramine study) as a model for long term pharmacotherapy of obesity in the 1990s. *1992 Int J Obes Relat Metab Disord* 16 Suppl 3:5-14.
- Foreyt JP & Goodrick GK Evidence for success of behaviour modification in weight loss and control *Ann Int Med* 1993 119:698-701.
- Beeney LJ & Dunn SM. Knowledge improvement and metabolic control in diabetes education: Approaching the limits. *Patient Education and Counselling* 1990;16:217-229.
- Cameron R, MacDonald MA, Schlegel RP *et al.* Toward the development of self-help behavioural change programs: weight loss by correspondence. *1990 Can J Public Health* 81:275-9
- Bjorvell H & Rossner S. Long term effects of commonly available weight reducing programs in Sweden. *Int J Obesity* 1986; 11:67-71.
- Kirschenbaum DS, Stalonas PM, Zastowny TR *et al.* Behavioural treatment of adult obesity: attentional controls and a 2 year follow up. *Behav Res Ther* 1985; 23:675-82.
- Stalonas PM, Perri MG & Kerzner AB. Do behavioural treatments of obesity last? A five year follow up investigation. *Addictive Behav* 1984 9: 175-83.
- Westover SA & Lanyon RI. The maintenance of weight loss after behavioural treatment. *A Review Behaviour Modification* 1990; 14: 123-37.
- Steinbeck K, Richman R, Caterson I. A retrospective and prospective study of dropouts in a weight control program. In preparation.
- Bennett GA & Jones SE. Dropping out of treatment for obesity. *J Psychosom Res* 1986;30:367-73.
- Seaton DA & Rose K. Defaulters from a weight reduction clinic. *J Chron Dis* 1985;18:1007-11.
- Douglas JG, Ford MJ & Munro JF. Patient motivation and predicting outcome in a hospital obesity clinic. *Int J Obesity* 1981; 5:33-38.
- Yass-Reed EM, Barry NJ & Dacey CM. Examination of pre-treatment predictors of attrition in a VLCD and behaviour therapy weight loss program. *Addict-Behav* 1993; 18:431-5.
- Bowser LJ, Trulson MF, Bowling RC *et al.* Methods of reducing Group therapy vs individual clinic. *J Am Dietetic Assoc* 1953; 29:1193-1196.
- Karvetti RL & Hakala P. A seven year follow up of a weight reduction program in Finnish primary health care. *Eur J Clin Nutr* 1992 46:743-52.
- Prochaska JO, Norcross JC, Fowler JL *et al.* Attendance and outcome in a worksite weight control program: processes and stages of change as process and predictor variables. *1992 17:35-45.*
- Bouchard C. Current understanding of the aetiology of obesity: genetic and nongenetic factors. *Am J Clin Nutr* 1991 53 (6Suppl): 1561S-1565S.
- Price RA & Stunkard AJ Comingling analysis of obesity in humans. *Hum Hered* 1989 39:121-35.
- Blundell JE, Burley VJ, Cotton JR & Lawton CL. Dietary fat and the control of energy expenditure: evaluating the effects on meal size and post-meal satiety. *Am J Clin Nutr* 1993 57 (5Suppl)772S-777S.
- Tucker LA & Kano MJ Dietary fat and body fat: a multivariate study of 205 adult females. *Am J Clin Nutr* 1992 56: 616-22.
- Rebuffe Scrive M, Eldh J, Harfstrom L *et al.* Metabolism of mammary, abdominal and femoral adipocytes in women before and after menopause. *Metabolism* 1986;9:792-97.
- Casimirri F, Pasquali R, Cesciri MP *et al.* Interrelationship between body weight, body fat distribution and insulin in obese women before and after hypocaloric feeding and weight loss. *Ann Nutr Metab* 1989 33:79-82.
- Presta E, Liebl RL & Hirsch J Regional changes in adrenergic receptor status during hypocaloric intake do not predict changes in adipocyte size or body shape. *Metabolism* 1990 39:307-15.
- Kanaley JA, Andresen-Reid ML, Oenning L *et al.* Differential health benefits of weight loss in upper and lower body obese women. *Am J Clin Nutr* 1993 57:20-6.