DREW PROGRAM FOR OBESITY TREATMENT

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Obesity affects about 30 percent of adult Americans, causing significant morbidity. Contributing problems of poor self-concept and oral gratification may require intense therapy. This study was designed to see whether a multidisciplinary approach combining diet, exercise, and behavioral therapy, and run by a clinic staff would be effective.

Patients were Afro-American women at least 20 percent above ideal body weight. Attrition reduced sample size, making statistical analysis difficult; however, some general trends were observed. One half of those who completed the program lost one pound per week and maintained the loss during a two-month follow-up. Those who succeeded showed a higher level of dissatisfaction and greater ability to respond to external motivation in psychological tests. Weight loss was comparable to that achieved in behavioral groups described in the literature.

This project entailed a clinical trial of a multidisciplinary approach to the treatment of obesity. The estimated number of obese American adults is 30 percent, while the percentage of black women of low economic class is approaching 35 percent. Obesity is not only a cause of morbidity, but is a precursor to many other diseases, notably diabetes, osteoarthritis, and hypertension.

Obesity is one of the most prevalent disorders in medicine, and one of the most refractory to treatment. One-to-one office consultations with a physician have had little effect on patient weight loss. As a result, alternative treatment programs have been designed. The major treatment strategies currently in use are behavioral therapy, exercise, very low calorie diets, appetite suppressants, and therapies combining these elements.

Obesity is a symptom of heterogeneous origins. Various theories have been proposed regarding this disorder, including insensitivity to physiologic hunger and satiety cues, emotional deprivation, genetics, physical inactivity, denial, and poor self-image.[1]

Dramatic results have been obtained with very low calorie diets and protein-sparing modified fasts. Genuth[2] reported weight losses averaging 45 pounds in 12 weeks, but 56 percent had regained the weight at 22 months, and at 4.5 years, total loss equaled 15 pounds. Those who have undergone gastroplasty for morbid obesity also have regained part of the weight lost.

The link between obesity and psychosocial factors is under continuing investigation. Depression and anxiety are frequent correlates of dieting. Depression was observed by Stunkard[3] to decrease with weight loss, but increase as weight was regained. There is a need for weight programs to monitor psychological and social effects of weight loss.

Behavioral therapy is directed at retraining eating habits. Resultant weight losses of one pound per week in 12-week programs are consistent irrespective of group leaders, fees, or participant demographics. Weight loss is usually maintained at one year, with 25 percent of patients continuing to lose after the program period.[4] Weight loss was greater when some other modalities were added, particularly exercise and very low calorie diets.

Behavioral therapy shows the best results with respect to program attrition—19 percent, with a decrease to 10 percent when a refundable deposit was collected. In comparison, programs offered at the work place and programs featuring exercise have a 50 percent dropout rate.

Exercise has been shown to preserve lean body mass during dieting. Weight losses observed have been greater than that which would be predicted by caloric expenditure alone, suggesting an in-

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creased energy metabolism. Suppression of appetite by exercise has also been postulated. Miller[5] found exercise to be the only factor that was predictive of long-term weight loss.

Appetite suppressants are useful if combined with other modalities. Patients usually habituate in a month or two and no longer experience an anorexic effect. Drugs should not be used alone, or longer than three months. Diethylpropion hydrochloride and mazindol are drugs of choice.[6]

The objective of this project was to use a multifaceted approach to achieve weight loss in a group of obese black women. Psychological variables were monitored to detect change over time and to identify predictors of success. This paper will discuss the interventions used and the psychological variables that were positively correlated with weight loss. Of particular interest are indices of anxiety, depression, and self-image as assessed by the Minnesota Multiphasic Personality Inventory (MMPI).

METHODS

Participant Characteristics

The participant population consisted of obese patients (20 percent over ideal body weight) referred from the family practice clinic at King Drew Medical Center, medical center employees, and community people who learned of the program through flyers or by word of mouth. Participants were women. The age range was 26 to 69 years, most averaging a 15-year-history of obesity. The average income was $14,000 supporting a household of two.

Meetings

The participants met as a group with medical doctors, dietitians, and a clinical psychologist twice weekly for the first month and weekly for the next two months. Follow-up weigh-ins and group reinforcement occurred once a week for two months. Each session lasted approximately 1 1/2 to 2 hours. Each participant was weighed privately before each session. The group meetings included a didactic presentation of nutrition, behavior modification methods, group discussion, exercise, and relaxation.

Questionnaires were filled out by the participants at various points in the program to assess their psychological status and their understanding of nutrition. Questionnaires included demographics, an MMPI in the first meetings, a nutrition examination, and a second MMPI in the last month.

The behavioral treatment scheme involved self-monitoring, stimulus control, slowed rate of eating, nutrition education, exercise, and reinforcement.[7] The instructions and information given through behavioral therapy were reinforced in relaxation and group self-hypnosis sessions.

Diet diaries to record daily food intake were kept. This provided information to help analyze each individual eating pattern and increase the participants' self-awareness.

The participants were given behavioral suggestions that would help limit their exposure to food cues: limiting time, places, and activities associated with eating, keeping food out of sight, and shopping for foods only on the diet plan. Chewing slower and longer and putting utensils down between bites were encouraged. This allowed for less food to be eaten at the point when physiological satiety occurs.

With the diet plan to refer to, the participants were instructed in the various food groups and how much should be eaten from each group. Small group question-and-answer sessions about diet (with sample meal plans designed by the participants) were held in the first and second months. A test was given to assess knowledge.

Each session had a 20 to 30 minute yoga and aerobic exercise period. All exercise sessions ended with a period of deep physical and mental relaxation, to help rest the body and relieve the anxiety that spurs many people to overeat.

The clinical psychologist performed group relaxation and hypnosis three times in the first month; this was followed by relaxation and self-hypnosis tapes for each participant. These tapes also had suggestions to reinforce behavior modification.

The participants were encouraged to do something nice for themselves at least once a week as a reward for their efforts. Social rewards from group leaders were also given. These more immediate rewards were believed to help offset the discouragement that ensues when a long-range goal such as weight reduction is being pursued. Also, the

TABLE 1. DIFFERENCES BETWEEN PRE- AND POST-MINNESOTA MULTIPHASIC PERSONALITY INVENTORY IN GROUP MEMBERS

Scale	T	P
7	3.06	0.22
8	2.65	0.33

TABLE 2. MINNESOTA MULTIPHASIC PERSONALITY INVENTORY CHARACTERISTICS OF SUCCESSFUL DIETERS

Scale	Mean group 1	Mean group 2	F Value	Tail Probability
L	3	1.3	7.4	0.019
2	7	11.3	12.1	0.005

participants were rewarded with a resort spa visit, and the five participants losing the most weight received a Swedish massage.

RESULTS

Seventy-one participants signed up and attended at least one meeting. Of these, 28 attended at least four meetings. Fifteen attended eight meetings or more. A few people were reached to survey their reasons for discontinuing the program. Most commonly cited reasons were changes in schedule due to work or inability to follow the weight-loss program.

Because of attrition, it is difficult to interpret the results of the study by traditional statistical analysis, but some trends were observed. The target weight loss was one to two pounds per week, making a range of 12 to 24 lb over the 12-week period. Of the 15 who continued in the program, seven attained the targeted weight-loss goal, losing from 12 to 18 lb. Two in the group gained weight, one remained unchanged, and the remainder lost less than 12 lb. At the one month follow-up, three had gained weight, up to three pounds; the rest were losing at a rate slower than one pound per week. Skinfold measurements did not show significant change.

Prior studies had assigned negative prognostication to duration of obesity and prior treatment. This was not correlated with poor weight loss in this study.

Aerobic and yoga classes conducted at the one-month follow-up found the participants to have lost some flexibility, suggesting they had decreased their exercise regimen. Target heart rates were unchanged, and hypnosis and relaxation techniques showed little progress when observed during the sessions.

Diet diaries that were reviewed by the dietitian indicated fair compliance with the diet, improving with time.

All of the MMPI indices fell in the normal range; within this range, however, there were significant differences between groups in the study and between the same group given the test at the beginning and end of the program. An increased value in scale 7 ($P = .02$) of 3.5 was demonstrated in the participants who took the MMPI at the beginning and the end of the program (Table 1). The MMPI matched the individual's weight loss with psychological indices. Scales 1, 5, and 8 of the MMPI were found to correlate with one another. Weight loss was positively correlated with scales 1 and 8 (at .54 and .63) and negatively correlated with scale 5 (-0.51).

When the group who lost at least one pound per week was compared with those who did not lose as much, they were found to score significantly higher on the MMPI scales 1 and 2 (tail probability, 0.019 and 0.005, respectively) (Table 2).

DISCUSSION

The results indicate that a pound per week weight loss can be obtained in the obese black woman who adheres to a program including diet, exercise, and behavior modification.

Characteristics of the successful participants can be projected from the MMPI. They had a significantly higher L scale than other participants. The "L" scale includes many moralistic statements and is called the "lie scale" because it is commonly considered to reveal a person who is defensive or who is trying to make a good impression by making socially approved choices. These traits have also been noted in naive, rural, socioeconomically deprived, and very conscientious people.[8] Baughman[9] used MMPI scales to compare black and white teenagers and found blacks to have higher self-esteem, more sense of isolation, and more tendency to blame failures on the environment.[9] This may bear a relationship to the defensiveness of the answers in the study group.

The high "L" value in combination with the observed success could be interpreted as showing the value of self-esteem. The "two" scale, which was also elevated in the participants, indicates the degree of depression or sense that something is wrong.

Scales 1 and 8 were correlated with weight loss in the total group. These scales when high denote "hypochondriasis" and "schizophrenia." These scales were not elevated in the pathologic range. High side of normal scales can be indicative of persons who do honestly have somatic complaints and of those people who have unconventional ideas, respectively. Scale 5, which showed a negative correlation, is called the masculine-feminine scale. Decreased scores are seen in black women in general, but also indicate an interest in sports and less traditional female roles.

Scale 7 in the MMPI measures long-term anxiety. The increase in the level of anxiety during dieting is consistent with that found by other investigators.

As the project continued, poor comprehension of the diet and hypnosis techniques were discovered. If comprehension had been attained earlier, there may have been a greater weight loss. The successful groups were more compliant in submitting diet diaries and scored higher on the nutrition test.

Dropout rate is a continuing problem, which may not improve until expectations about obesity treatment become more realistic. Some groups in the literature used a refundable deposit, but this was thought to be an unrealistic demand upon this income group. Attrition might be decreased by handling the expectations of the group differently and avoiding regimens that seem too challenging.

Although there was no objective measure to evaluate group support, it appeared to be one of the most successful interventions in the program. All of the participants who lost the target weight or continued in the program had formed peer relationships. The group method is clearly superior to individual counseling by the physician.

CONCLUSION

Obese patients who would benefit from this type of treatment include the person who affiliates with organizations. These people may lack self-confidence and need to rely more on external cues, such as motivation provided by a doctor's encouragement. The need to please someone is also suggested by the psychological scale.

The importance of peer support was observed and becomes germane as many physicians organize their practice days by diagnosis. This would facilitate contact and group interactions.

Monitoring the diet diaries was required for conformance to the diet. This may explain some failures when patients are provided with an exchange type diet and left unsupervised. The average level of understanding of nutrition makes ongoing nutritional counseling a necessity.

The most practical suggestion that can be given to decrease attrition is to choose the participants for their compliance with appointments and medical regimens. Predictors of some success with the program include a relative preoccupation with the body, a rejection of traditional roles, and a unique point of view. Taking into account the population upon which the MMPI was standardized, this point of view may reflect the black urban culture more than anything else. The study showed that weight loss could be successfully achieved in a population fitting this psychological profile.

The authors plan further investigation into obesity treatment. More emphasis will be placed on the recruitment and containment of attrition rates. Dropouts will be interviewed to determine expectations and reasons for termination. Psychological profiles will be repeated to determine the reliability of the MMPI and other psychological scales for black obese women.

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Literature Cited

1. Blackburn GL, Greenberg T. Multidisciplinary approach to adult obesity therapy. In: Bray G, ed. Obesity: Comparative Methods of Weight Control. Westport, Conn: Technomic Publication Company, 1980.

2. Genuth SM. Supplemental fasting in the treatment of obesity and diabetes. Am J Clin Nutr 1979; 32:2579-2586.

3. Stunkard AJ, Rush J. Dieting and depression reexamined. Ann Intern Med 1974; 81:526-533.

4. Brownell K. Obesity. J Consult Clin Psychol 1982; 50(6):820-840.

5. Miller PM, Sims KL. Evaluation and component analysis of a comprehensive weight control program. Int J Obes 1981; 5:57-66.

6. AMA/Net Information Base, 1984. Chicago, Ill: American Medical Association, 1984.

7. Stuart RB. Behavioral control of overeating. Behav Res Ther 1967; 5:357-365.

8. Duckworth J. MMPI Interpretation Manual for Counselor and Clinicians. Muncie, Ind: Accelerated Development, 1979.

9. Baughman EE. Black American. New York: Academic Press, 1971.

10. Seddon R, Penfound J. Harrow slim club. J Human Nutr 1981; 35(2):128-133.

11. Coates TJ, Thorensen CE. Treating obesity in children and adolescents: A review. Am J Pub Health 1978; 68:143-152.

12. Webb JT. Configural Interpretation of the MMPI. Columbus, Ohio: Ohio Psychology Publishing, 1981.

13. Faschingbier TR. Short Forms of the MMPI. Lexington, Mass: DC Heath, 1978.

14. Bjorntrop P. Physical training in the treatment of obesity. Int J Obes 1978; 2:149-156.