

Long-Term Follow-Up and Analysis of More Than 100 Patients Who Each Lost More Than 100 Pounds

Of 190 patients who each lost >100 pounds while following a very-low-calorie diet (VLCD) program, half maintained \geq 50% of their weight loss for at least 18 months after completing treatment. Most patients in this morbidly obese population had depression and highly traumatic life experiences, and success or failure at maintaining weight loss was predicted by certain adverse family experiences, including spousal alcoholism. Multivariate logistic regression analysis found that persons with a history of childhood sexual abuse had a distinctly higher likelihood of having regained the lost weight at 18 months after treatment.

Introduction

Very-low-calorie diets (VLCDs) are a recent technology that make it possible for morbidly obese patients to safely and routinely reduce their weight by amounts that hardly were conceivable 15 years ago. As a result of this development, the entire frontier of difficulty has now shifted from attainment of major weight loss to long-term maintenance of that now-routinized major weight loss.

Previous work^{1,4} indicated that traumatic life events such as sexual abuse, chronic depression, and dysfunctional family life play a major role in causation and persistence of obesity. In addition, strong social taboos discourage discovery and discussion of some key issues that are involved. History of traumatic life events, for instance, is routinely not inquired about in medical settings.

During a several-year period, we treated in one VLCD program 190 patients, each of whom safely lost more than 100 pounds and was treated for a period of several years. The large number of patients in this cohort provided an unusual opportunity to ascertain determinants of success in maintaining weight loss of this magnitude. We explored the life histories of these patients to identify factors that correlate with long-term success in maintaining major weight loss.

All patients were individually interviewed by the same physician and were reweighed one to three years after completion of treatment. The purpose of the interviews and of this study was twofold:

- To measure success of the study group in maintaining weight loss.
- To determine predictors of long-term success and failure in maintaining weight loss.

Methods

Setting

The Kaiser Permanente (KP) Weight Control Program in San Diego accepts 1400 adult patients each

year into a program which combines behavior modification* and 20 weeks of absolute fasting with Optifast 70[†] supplementation. Results of treatment during the early years of this program have been published.⁵ Patients entering the program range from being severely overweight to morbidly obese: mean weight loss at completion of the program is 57 pounds. Participants represent a broad cross section of our KP member population, which is predominantly white and includes large Hispanic, Asian, and black minorities. The population entering the Weight Control Program is predominantly middle-class and middle-aged. Eighty-five percent are white, and most of the others are black and Hispanic; women comprise 75% of the Weight Control Program population. Asians, the chronically unemployed, and the very wealthy are underrepresented in the Program. The Program is fee-for-service within the context of a large prepaid health care system.

Study Population

The study included all 190 persons who each lost more than 100 pounds while participating in KP's Weight Control Program during a three-year period and for whom initial as well as 18- and 30-month follow-up weights were recorded.

Statistical Analysis

Data were analyzed using a computerized SPSS data base with significance level set at $p < 5\%$. Student's t test and chi-square test were used to identify any statistically significant differences between clients who successfully maintained weight loss and those who were unsuccessful. Mean initial weight and BMI data were compared with outcomes to determine whether initial weight or BMI was related to likelihood of long-term success. Multivariate logistic regression analysis was done for the family dysfunction criteria, which were also used to predict each patient's success or failure in maintaining weight loss. Selection of these personal experiences and family criteria was based on previous work^{3,4} and included the following variables: history of depression (defined using DSM-III diagnostic criteria); history of personal, parental, or spousal alcoholism; history of having been sexually abused or subjected to incest; history of psychiatric hospitalization; childhood loss of a parent; and childhood history of household member's homicide, suicide, imprisonment, eating disorder, physical abuse, or a combination of these factors. Success was defined as maintenance of $>50\%$ of the initial weight loss at 18- and 30-month follow-up visits. Chi-square analysis of age and occu-

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"A careful family history was recorded for both childhood and adult years, with particular attention given to alcoholism, depression, loss of a parent, child abuse, and markers for dysfunctional family life (eg, suicide, abandonment, alcoholism or drug abuse, runaway children)."



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pation was done to identify any statistically significant differences between patients defined as successful vs. unsuccessful.

Evaluation of each patient began with thorough review of the patient's unified medical record, which contains medical and psychological information recorded in a standard format. A detailed personal interview was then conducted on a chronologic basis matching weight against life events and age and identifying medical or psychosocial events which occurred before or coincident with a reported or recorded weight change of at least 20 pounds. A careful family history was recorded for both childhood and adult years, with particular attention given to alcoholism,

depression, loss of a parent, child abuse, and markers for dysfunctional family life (eg, suicide, abandonment, alcoholism or drug abuse, runaway children). Marital status and number of siblings were also tabulated.

Results

Of the 190 subjects who participated in the study, 127 (67%) were female and 63 (33%) were male. Mean age was 40 ± 10 years. No statistically significant age difference was seen between male and female subjects. Most subjects were employed in professional, business, or administrative occupations. No correlation between age and occupation was seen. Of the 186 patients whose records included complete marital data for analysis, 129 (69%) were married at the time of 18- and 30-month follow-up. Only 12% were either currently separated or divorced, and 19% had never married. (This figure approximates the national average.) Marital status did not correlate with outcome.

Mean weight and body mass index (BMI) were calculated for all subjects as recorded initially and at 18- and 30-month follow-up (Table 1). Starting weights and full psychological information were available for all 190 subjects when they began the program, but full weight information was available for only 99 subjects at 18-month follow-up and for only 65 subjects at 30-month follow-up. Some patients could not be located for follow-up; others had not yet reached the 18- or 30-month postprogram point when they were contacted for follow-up. We found no evidence of selection bias: patients available and those unavailable for follow-up did not differ in initial weight, initial BMI, occupation, recorded psychological factors, or recorded life experiences. Initial mean weight for the study population was 303.2 ± 53.7 pounds (range, 221.0 to 657.0 pounds). Mean weight at completion of the weight loss phase was 183.7 ± 43.9 pounds (range, 118.0 to 478.0 pounds). Patients lost a mean 40% of initial weight.

Mean BMI at start of the program was 46.8 kg/m^2 ; at completion of the weight-loss phase, mean BMI was 28.3 kg/m^2 . Neither initial weight nor BMI predicted long-term success (Table 2).

At follow-up 18 months after completing the program, subjects had regained a mean 50.9% of their lost weight (Fig. 1). Men regained 47.9% of lost weight; women regained 53.7% of lost weight. This outcome for an expectedly difficult-to-manage, problem-laden group compares favorably with the Weight Control Program's overall results, wherein mean weight loss was 57 pounds and 50% of patients had maintained 60% of weight loss at 18 months after completing the program.

Table 1. Initial and follow-up weights by sex

Observation	Mean value \pm SD		
	Men	Women	Men + Women
Initial weight (lb)	322.2 \pm 59.6	288.4 \pm 43.9	303.2 \pm 53.7
End weight (lb)	210.0 \pm 45	170.4 \pm 37.5	183.7 \pm 43.9
Change (lb)	122.1 \pm 30.8	117.9 \pm 26.4	119.4 \pm 28.3
% weight loss regained at 18 mo	47.9 \pm 29.6	53.7 \pm 32.1	50.9 \pm 31.3
% weight loss regained at 30 mo	72.4 \pm 30.5	57.3 \pm 36.2	61.1 \pm 34.8

SD = standard deviation

Table 2. Initial weight vs. long-term success or failure in maintaining $\geq 50\%$ of weight loss

Result	Mean weight (lb) \pm SD			
	Initial	End	@ 18 mo.	@ 30 mo.
Women:				
success	281 \pm 37	159 \pm 31	190 \pm 42	194 \pm 71
failure	285 \pm 42	168 \pm 30	261 \pm 52	217 \pm 89
Men:				
success	309 \pm 32	191 \pm 23	219 \pm 26	269 \pm 49
failure	317 \pm 39	206 \pm 30	289 \pm 35	300 \pm 18



Tables 3 and 4 show the prevalence of the selected family dysfunction criteria among the 190 cases reviewed. The most striking finding is that 66% of subjects (70% of women, 63% of men) volunteered that they had a history of chronic depression. Sixteen percent of the overall cohort (23% of women, 2% of men) reported a history of incest. The effect of past incest on ultimate ability to maintain weight loss is shown (Fig. 2). Twenty-three percent of subjects reported a history of nonincestuous sexual abuse, including rape. Prevalence of this abuse was higher in women (31%) than in men (7%). Overall prevalence of sexual abuse was 39%. Eleven percent reported childhood physical abuse; data allowing breakdown by gender were lost. Only 7% of subjects had a history of personal alcoholism. Six percent had a history of psychiatric hospitalization.

As children, 24% of the overall cohort lived in a household with someone who was anorexic, bulimic, or severely obese. Twenty-three percent experienced childhood loss of at least one parent. Whereas only 7% of the subjects were alcoholic, 17% of subjects had parents who were alcoholic. Whereas 8% of women had alcoholic spouses, no men reported having alcoholic spouses. Three percent of subjects had a homicide or suicide within the household. Overall, 91% of subjects acknowledged one or more specified family dysfunction criteria.

Chi-square analyses of the family dysfunction criteria showed that failure to maintain weight loss, as defined, was associated only with the following factors:

- History of incest, whether male or female subject ($p < .01$);
- History of other sexual abuse, whether male or female subject ($p < .01$);
- Women with family history of eating disorders ($p < .03$);
- Women with alcoholic spouses ($p < .04$).

Discussion

Our findings are straightforward, and our goal is to use them in a clinically helpful way. Although disagreement and confusion persist about organic versus psychogenic contributions to development of obesity,^{6,7} our present evidence supports our prior studies of other obese populations, for who we showed that obesity commonly occurred after major childhood emotional trauma.^{3,4} Specifically, we found that these types of past emotional trauma among severely obese patients make weight loss more difficult. Overall, emotional trauma and household dysfunction appear to play an important role, both in initiation and in maintenance of severe obesity. Identifying the age at which weight gain began can help clinicians to understand potential correlations: because any cause of the weight gain necessarily preceded or coincided with the weight gain, knowing the age of onset of weight gain often narrows the possible explanations.

Table 3. Prevalence of personal criteria among >100 patients who each lost ≥ 100 pounds

Criterion	No. (%) patients affected by criterion		
	Men	Women	All
Depression, chronic	39 (63%)	87 (70%)	126 (66%)
Incest	1 (2%)	28 (23%)	29 (16%)
Other sexual abuse	4 (7%)	39 (31%)	43 (23%)
Physical abuse as child			20 (11%)
Patient alcoholism	6 (10%)	7 (6%)	13 (7%)
Psychiatric hospitalization	2 (3%)	10 (8%)	12 (6%)

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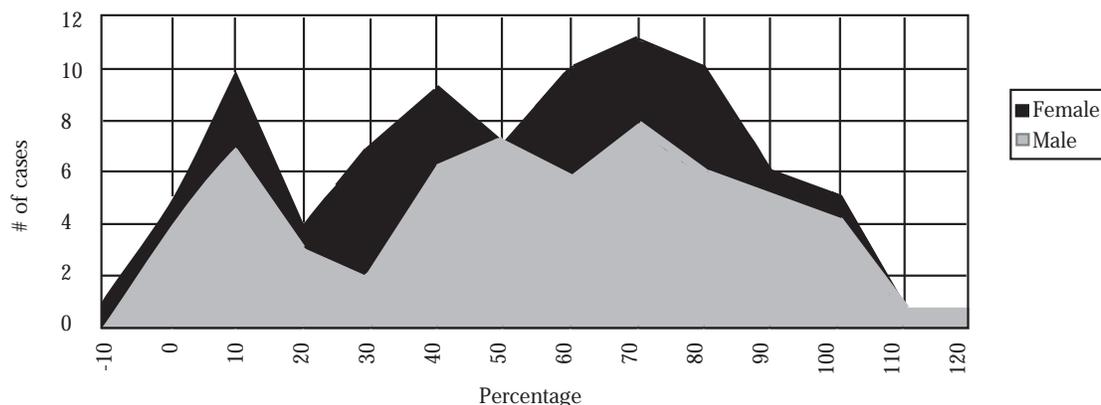


Figure 1. All cases: % of lost weight regained at 18-month follow-up



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As police and judicial records show, childhood sexual abuse is prevalent; nonetheless, many clinicians do not acknowledge this unpleasant reality in their practices,^{8,9} sometimes because of social taboos that have entered medical practice and sometimes because opinions differ regarding the presence or absence of psychopathology underlying morbid obesity.¹⁰⁻¹² This diversity of opinion may merely reflect variation in methods of ascertaining the cause of obesity; for instance, certain popular psychological instruments are well documented to have inherent weaknesses when used in investigations like ours.¹³ (We conducted detailed, personal interviews that did not rely on these instruments.)

Our finding that sexual abuse bears a strong inverse relation to maintaining weight loss illustrates the critical importance of identifying and responding to past sexual abuse before or at the outset of treat-

ing patients for morbid obesity. In addition, the inverse relation between successfully maintained weight loss and certain dysfunctional family settings (during both childhood and adulthood) indicates that the family history recorded for severely obese patients must extend into areas traditionally not inquired into (ie, patterns of household life). Thus, three factors must be in place before morbidly obese patients can be treated effectively:

- Clinicians must understand that the main focus of treatment is not obesity but the causal underpinnings of obesity;
- Clinicians must be willing to work with patients in the area of psychological medicine;
- When inquiring into family history, clinicians must ask about adverse experiences, both in childhood and later in life.

Indeed, this approach is complicated by the ease of misidentifying the actual problem. Contrary to conventional opinion, obesity was the solution—not the problem—for many of these patients. We have been told repeatedly by patients that they recognized they were using obesity as a device to distance themselves socially and sexually. Indeed, this statement explained why some obese patients dress in form-fitting clothing so as to accentuate their obesity. Further, we were told repeatedly by patients that major weight loss created a substantial sexual threat for them. In the memorable words of one woman who gained 105 pounds in the year after being raped, “Overweight is overlooked, and that’s the way I need to be.” That she made this statement while losing weight indicates the tension between the coexisting desire to be normal-sized and the fear of being attractive. Indeed, regain often was

Table 4. Prevalence of dysfunctional family criteria among >100 patients who each lost ≥100 pounds

Criterion	No. (%) patients affected by criterion		
	Men	Women	All
Home eating disorder	13 (21%)	32 (26%)	45 (24%)
Early parental loss	13 (21%)	30 (24%)	43 (23%)
Parental alcoholism	11 (18%)	20 (16%)	31 (17%)
Spousal alcoholism	0 (0%)	10 (8%)	10 (5%)
Homicide, suicide	2 (3%)	4 (3%)	6 (3%)

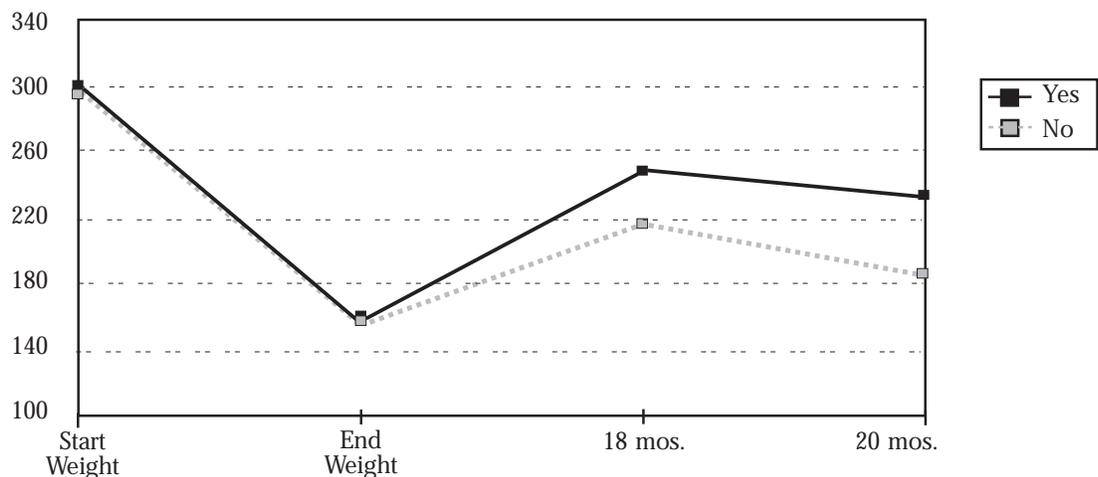


Figure 2. Weight regain with and without a history of incest



precipitated by a sexually threatening event. This point was made years ago by Rand and Stunkard: "Eating to avoid sex was a very frequent and distinctive behavior of the obese patients".¹⁴ In the same vein, marital stresses have long been recognized to commonly result from major weight loss after intestinal bypass surgery.¹⁵ Precisely this issue—eating to reduce sexual fears—is typically unrecognized by clinicians who treat obese patients. Yet, this response often underlies rapid regain and explains the severe psychological reactions¹⁶ and occasional psychotic disturbances befalling morbidly obese patients who have "successfully" lost weight.¹⁷ Given these observations as background, we are particularly gratified to see that so many of our patients are doing so well, both in attaining and in maintaining their weight loss.

Conclusion

In spite of the disturbing links which we have uncovered between morbid obesity and adverse experiences, both in childhood and later in life, we have shown that successful treatment of morbid obesity is more possible than might be believed, as long as the underpinnings of the problem are understood. Clinicians must always inquire into the childhood experiences of these patients by focusing on sexual abuse and the ways in which the family may have malfunctioned developmentally.¹⁸ The history will usually dictate an appropriate direction for treatment, as indeed it does in most medical practice. Obtaining a history that leads to individualized treatment focused on the underpinnings of morbid obesity will improve outcomes. Clearly, more effort is needed not to develop more effective dietary materials but to develop more affordable, effective approaches for treating the psychological consequences of these damaging life experiences. These approaches must be acceptable not only to patients but to physicians, who at present have great difficulty understanding the needs of these patients and consequently may fear that, as clinicians, they have little to offer by way of effective, lasting treatment. The more thoroughly clinicians come to understand the causes of severe obesity, case by case, the more progress they will make in its treatment. ❖

**Largely as a result of insights derived from this and related internal KP studies, the KP Weight Control Program has evolved to depend less on behavioral techniques and more on psychodynamic approaches.*

†Optifast 70 is a useful product manufactured by Novartis Nutrition (Minneapolis, Minn.) solely for use as a nutritional supplement to prevent death and disability in patients who are following a therapeutic regimen of prolonged absolute fasting. This special, exclusive function is important to understand.

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