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Dieting and Depression

An Assessment of Affective Disturbance occurring during the Clinical Trial of a New Anorectic Preparation

By J. TREVOR SILVERSTONE and B. D. LASCELLES

Introduction

Obesity, one of the major threats to health and longevity in Western society, is usually treated with some form of weight-reducing regime. However, in recent years several authors have cautioned against the widespread prescription of reducing diets for obese patients because of the danger of inducing severe depression. The present investigation was undertaken to determine the actual risk of such severe depressive illness occurring among a group of obese dieters attempting weight reduction under the supervision of their general practitioner.

Hamburger (1951), describing his experience with 18 obese patients, noted a high incidence of emotional illness. "In some, the emotional illness appeared when the patient lost weight." Bruch (1952) cited three adolescents who developed severe emotional disturbance while dieting. Brosin (1954), discussing obesity in older patients, warned, " . . . physicians should be extremely cautious about weight reduction programmes for patients in middle life." He added, "Depressive states with irritability are rather common in reducing programmes." Stunkard (1957), under the title "The Dieting Depression", reported that 54 of 100 patients attending a nutrition clinic, when asked about their feelings during previous dietary regimes, stated that they had experienced symptoms of "weakness", "nervousness", "irritability", "fatigue", or "nausea". In a more intensive prospective study of 25 patients on a reducing diet, he found that 9 (36 per cent.) developed "severe emotional disorders" which were characterized by anxiety followed by prolonged depression, severe enough to interfere markedly with the patient's work. If such untoward effects are as common as the above reports would suggest, then extreme care should indeed be taken before any obese patient is advised to reduce (*Brit. med. J.*, 1964).

However, doubts have recently been cast on the general applicability of the figures quoted. Rome (1960) did not believe that the incidence of depression was particularly high among obese dieters. Rynearson (1960) felt that those patients who did become depressed while on a diet simply stopped dieting, thereby avoiding further symptoms. Shipman and Plessett (1963) examined the emotional effects of dieting in 151 obese patients. They concluded that of those who persevered, "there is only a small proportion of the dieters who are upset at the end of a diet, and most of these were upset at the beginning of the diet . . . Few cases became depressed". In addition, they found that the more depressed and anxious patients lost the least weight. Unfortunately the majority of their patients did not continue their diet for more than six weeks. Nor was there any uniformity of treatment—approximately half the patients were treated in private practice, were seen weekly and were not given a standard diet; the other half were seen monthly in a hospital out-patient department and were placed on a fixed calorie diet.

The present study was undertaken in an attempt to determine whether or not there is really much risk of severe emotional disturbance occurring among obese patients who are placed on a standard weight-reducing regime and who persist with their diet for a reasonable length of time.

It has been suggested by Modell (1960) that amphetamine compounds are effective in weight reduction only because they alleviate the

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depression which he believes accompanies dieting, and thereby allow patients to keep to their diets more easily. We have been able to examine this proposition by comparing the symptoms of depression reported by our patients when they were receiving the anorectic preparation Durophet-M 12½, with the symptoms of depression reported when they were receiving a placebo. The drug was given according to a double-blind cross-over design. We have previously reported that this anorectic preparation is more effective than a placebo in assisting this group of patients to lose weight (Silverstone and Lascelles, 1965).

Methods

Subjects

All the patients in one urban general practice who were known to be overweight were asked if they wished to attend a special evening clinic to be held for the purpose of helping them to lose weight. Seventy-two of the 88 patients contacted indicated that they wished to attend. These 72 patients are the subjects of the present report. The patients were asked to attend fortnightly for 16 weeks. If a patient failed to attend on any one occasion he was sent a card reminding him of the date of the next clinic. Sixty patients (83 per cent.) completed the 16-week trial, of whom 14 were men and 46 women. The ages of those completing ranged from 12 to 73, but the great majority (52 patients) were aged between 20 and 65.

Weight-Reducing Regime

Each patient was placed on a low carbohydrate diet which was known to be as effective as 1,000 calorie diet, but easier to follow (Silverstone and Lockhead, 1963). The dietary instructions were explained in detail to each patient. At each attendance patients were given a two-week supply of the anorectic preparation Durophet-M 12½, or a placebo, according to a randomized double-blind cross-over schedule. Durophet-M 12½ is a combination of dextro and laevo-amphetamine in a 3 : 1 ratio, plus methaqualone which is reputed to possess the properties of a tranquillizing agent. The patients were weighed fortnightly and appropriate advice and encouragement were given when required.

Rating Procedures

(*a*) *Depression*. At each attendance the patients were asked the following standard question: "How have your spirits been during the last two weeks?" If they indicated that their mood had not been at all depressed (by replying "Fine") then no further questions were asked about their mood. If the patient indicated that he had felt depressed during the previous two weeks an attempt was made to assess the depth of the depression. This assessment was always made by the same investigator (J.T.S.) and was based on the usual clinical criteria, such as tearfulness, loss of interest, loss of efficiency, self-recrimination and suicidal thoughts, etc. The symptoms of anorexia and insomnia were not used when assessing degree of depression, since either might have resulted from the amphetamine medication, and these were rated separately (see below).

The depression of each patient reported was rated on a four-point scale as follows:

Grade 0	Not at all depressed	
Grade 1	Slightly depressed	Occasional, temporary feeling of sadness or despair. Occasional untoward irritability. Occasional tearfulness (women only).
Grade 2	Moderately depressed	Loss of interest in surroundings. Frequent tearfulness, marked irritability, reduced libido, persistent feeling of depression.
Grade 3	Severely depressed	Ruminations of guilt, feeling of hopelessness, contemplation of suicide, lack of ability to cope.

The patient was rated at each attendance, but it is the mean monthly scores which we present in the tables.

(*b*) *Anxiety*. In a similar fashion the patient was asked: "Have you felt anxious or tense during the last two weeks?" According to the reply and to the answers of any accessory questions the patient was rated according to the following scale:

Grade 0	No anxiety	
Grade 1	Slight anxiety	Occasional feelings of nervousness or tension.
Grade 2	Moderate anxiety	Obtrusive anxiety, tremulousness, palpitations.
Grade 3	Severe anxiety	Tension, nervousness or anxiety of such a degree that it interfered with the patient's normal employment and other activities.

(*c*) *Hunger*. Each patient was asked at each attendance: "How has your appetite been during the last two weeks?" The replies were rated as follows:

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TABLE I

The Number of Patients Exhibiting the Various Degrees of Depression During the Weight-reducing Programme

Grade of Initial Depression	No. of Patients	Degree of Depression					Mean Weight Loss (lbs.)
		None	Mild	Moderate (1 month)	Moderate (2–4 months)	Severe	
Absent (grade 0)	41	18	10	10	3	—	15·2
Mild (grade 1)	13	2	4	4	3	—	13·4
Moderate (grade 2)	6	—	1	3	2	—	13·6
Severe (grade 3)	—	—	—	—	-	—	—
Total	60	20	15	17	8	—	—

Grade 0	Not hungry	
Grade 1	Mild hunger	Hungry for less than two hours a day on average.
Grade 2	Moderate hunger	Hungry for two to four hours a day.
Grade 3	Severe hunger	Hungry for more than four hours a day on average.

(*d*) *Sleep*. The replies to the question "How have you slept during the last two weeks?" plus any necessary additional clarifying questions were rated according to the following scale:

Grade 0	No insomnia	More than six hours' sleep a night without any difficulty.
Grade 1	Slight insomnia	More than six hours' sleep, but some difficulty.
Grade 2	Moderate insomnia	Four to six hours' sleep a night.
Grade 3	Severe insomnia	Less than four hours' sleep a night.

RESULTS

(1) *The Incidence of Depression*

Severe depression (grade 3) did not occur in any of the 60 patients completing the 16-week course, nor did it occur in any of the 12 who dropped out earlier.

Moderate depression (grade 2) was found in only 8 patients. As 2 of these patients had been moderately depressed at the start of the dietary programme, in only 6 patients at most could the depressive symptoms be attributed to the diet. On the other hand, 4 patients who had begun with symptoms of moderate depression improved somewhat during the course of the diet. The details are presented in Table I.

TABLE II

The Number of Patients who Exhibited the Various Degrees of Anxiety during the Weight-reducing Programme

Initial Anxiety	No. of Patients	Degree of Anxiety					Mean Weight Loss (lbs.)
		None	Mild	Moderate (1 month)	Moderate (2–4 months)	Severe	
Absent (grade 0)	36	18	5	7	4	2	14·4
Mild (grade 1)	19	6	6	2	5	-	14·7
Moderate (grade 2)	4	2	-	-	2	-	17·3
Severe (grade 3)	1	—	-	-	-	1	12·0
Total	60	26	11	9	11	3	—

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TABLE III

The Number of Patients on Durophet-M and on Placebo with (a) *Depression and* (b) *Anxiety Each Month, Plus the Mean Monthly Depression and Anxiety Ratings*

(a) *Depression*

Severity of Symptoms	No. of Patients									
	Month 1		Month 2		Month 3		Month 4		Total	
	D	P	D	P	D	P	D	P	D	P
Grade 0	17	20	19	24	20	20	25	18	81	82
Grade 1	6	7	6	2	9	2	3	5	24	16
Grade 2	5	5	5	4	3	6	4	5	17	20
Grade 3	—	—	—	—	—	—	—	—	—	—
Totals	28	32	30	30	32	28	32	28	122	118
Mean Rating ..	0·6	0·5	0·5	0·3	0·5	0·5	0·3	0·5	1·9	1·9

(b) *Anxiety*

Severity of Symptoms	No. of Patients									
	Month 1		Month 2		Month 3		Month 4		Total	
	D	P	D	P	D	P	D	P	D	P
Grade 0	19	21	18	25	23	17	26	20	86	83
Grade 1	4	7	4	4	4	3	1	3	13	17
Grade 2	4	3	6	1	5	8	5	5	20	17
Grade 3	1	1	2	—	—	—	—	—	3	1
Totals	28	32	30	30	32	28	32	28	122	118
Mean Rating ..	0·5	0·5	0·7	0·2	0·4	0·7	0·3	0·4	2·0	1·8

D=No. of patients on Durophet-M.
P=No. of patients on placebo.

Transient, mild, or moderate depression was found more frequently. However, if these transient symptoms were the result of dieting we should expect them to become more frequent as the diet continued. This was not the case. As can be seen from Table IIIa, the number of patients with depressive symptoms did not increase from one month to another, nor did the mean depressive score increase from month to month.

(2) *The Incidence of Anxiety*

The number of patients who were anxious during the dietary programme is given in Table II. Three patients complained of severe anxiety during the trial, and 11 others had persistent moderate anxiety. Three of these 14 patients were moderately or severely anxious to begin with, so 11 at most became markedly anxious because they were on a reducing diet. The number of patients with mild or transient

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TABLE IV

The Mean Weight Lost by (a) *Patients not at all Depressed or Anxious,* (b) *Patients Slightly Depressed and/or Anxious,* (c) *the Most Depressed and Anxious Patients*

	Affective Grouping	No. of Patients	Mean Total Depression and Anxiety Scores	Mean Total Weight Loss (lbs.) ±S.E.
(*a*)	No depression or anxiety	15	—	14·6±1·92
(*b*)	Mild or moderate depression ±anxiety (Total score less than 5) ..	24	2·25	15·7±1·44
(*c*)	Mild or moderate depression +anxiety (Total score at least 5) ..	21	8·4	13·0±1·45

moderate anxiety did not increase as the diet continued, nor did the mean monthly anxiety score, Table IIIb. Such mild symptoms are therefore very unlikely to have been brought about by the diet itself.

(3) *The Effect of Durophet-M 12½ on Depression and Anxiety*

As can be seen from the figures presented in Table III, Durophet-M 12½ had no greater effect than placebo on the prevalence or severity of either depression or anxiety. This lack of effect held true for each month of the trial as well as for the trial as a whole.

(4) *Depression, Anxiety and Weight Loss*

The 60 patients could be divided into three groups according to the degree of depression and anxiety they experienced during the diet period:

(*a*) Fifteen patients who had no depression or anxiety at all throughout the 16 weeks (total depression score + total anxiety score = 0);

(*b*) Twenty-four patients who had only slight depression and/or anxiety (total depression score + total anxiety score = 1–4);

(*c*) Twenty-one patients who had more marked depression and anxiety (total depression score + total anxiety score = 5–12).

Although there was also no overall correlation between either depression scores or anxiety scores and total weight loss (r = −0·04 and r = −0·02 respectively) the patients who were the most depressed and anxious lost the least weight—Table IV.

(5) *Depression, Anxiety and Hunger*

In order to examine the effect of hunger on affective symptoms we have correlated the total hunger score of each patient with his total

TABLE V

Details of 10 Patients Who Failed to Complete Weight-reducing Programme

Age	Sex	No. Weeks Attended	Total Weight Lost (lbs.)	Depression Rating		Reason Given for Dropout
				Initial	Final	
50	M	2	−1½	0	0	None
30	M	2	14	0	0	Moved
66	F	4	5	0	0	Hospitalized
28	M	4	5	1	0	None
54	M	4	−3	0	1	None
40	F	6	17	0	0	None
33	F	6	9	0	0	None
56	F	6	19	0	0	None
65	F	6	9	0	0	"Palpitations"
10	F	8	14	0	0	None

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depressive score and with his total anxiety score. The overall correlation between hunger and depression ($r = 0{\cdot}22$, $0{\cdot}10 > p > 0{\cdot}05$) just fails to reach significance at the 5 per cent. level, but that between hunger and anxiety $r = 0{\cdot}26$ $p > 0{\cdot}05$ is statistically significant. Increasing hunger therefore does have a tendency to be associated with increasing depression and anxiety.

(6) *Dropouts and Depression*

If depression does not commonly appear in a population on a reducing diet it might be because those who are depressed cease to attend. In our series, 12 patients dropped out during the course of the investigation; we have adequate records of 10 of these patients. The relevant details are given in Table V. It is obvious that the dropouts were not depressed at the time of their last attendance and it would seem unlikely that depression led them to stop attending. It also appears from the figures that many of the dropouts were losing weight satisfactorily, therefore despondence due to lack of success was unlikely to have been a factor in the non-attendance of those particular patients.

(7) *Insomnia*

Only 10 patients experienced any persistent difficulty in sleeping during the four months of the study. These 10 had a mean total depression score of 2·4 (mean score of the other 50 was 1·9) and a mean total anxiety score of 2·8 (mean score of the others was 1·7). Thus those who found difficulty in sleeping tended to be more depressed and anxious than those who slept without difficulty. The insomnia was not a drug effect, as it occurred with equal frequency whether the patients were on placebo or on Durophet-M 12½.

Discussion

In the population we studied there was very little increase in either depression or anxiety during the course of a 16-week weight-reducing regime. More significantly, perhaps, there was not one single case of severe depression. Of those who were moderately depressed we have not distinguished the patients who were depressed in reaction to circumstances other than diet, such as a bereavement. Thus, if anything, we have over-emphasized the effect of dieting on mood. We would therefore agree with Shipman and Plesset that few patients on a reducing diet are likely to become depressed.

The much greater incidence of untoward emotional reactions reported by previous authors was probably due to patient selection. Each of the authors quoted who warned of the dangers of dieting was a psychiatrist, and patients were referred to them because of emotional disturbances complicating their obesity (Stunkard, 1965). On the basis of our results we are of the opinion that there are no psychiatric contra-indications to weight reduction by obese patients who have neither a history of, nor symptoms of, severe emotional disturbance.

We have no evidence to support Rynearson's (1960) contention that depression is uncommon among obese dieters because patients stop dieting as soon as they become depressed. Those patients of ours who did give up were certainly not particularly depressed at the time of their last attendance. We have no reason to believe that they subsequently became suddenly depressed during the two weeks before their next visit became due.

The combination of d-amphetamine, l-amphetamine and methaqualone contained in the preparation Durophet-M 12½ appeared to have no effect on the incidence or severity of the mild or moderate depressive symptoms which did occur. Thus we could find no support for Modell's proposition that amphetamine compounds are effective in weight-reducing programmes only because they relieve the gloom associated with dieting. We have already reported that this preparation is effective as an adjunct to a weight-reducing programme; our present findings indicate that this effectiveness is not due to any mood-elevating properties of the drugs contained in it.

Although the overall correlations between depression and weight loss, and between anxiety and weight loss were very low, we did find that the most anxious and depressed tended to lose the least weight. This is in keeping with Shipman and Plesset's results in American obese patients; it is also in keeping with our

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findings in another group of obese dieters in which the most "neurotic" patients lost the least weight (Silverstone and Solomon, 1965).

Summary

1. Seventy-two obese patients took part in a 16-week weight-reducing programme which included a double-blind cross-over trial of an anorectic preparation Durophet-M 12½. The patients attended fortnightly and at each attendance depressive symptoms, anxiety symptoms, hunger and insomnia were rated on a four-point scale.

2. No patient became severely depressed at any time. In only 6, at most, of the 60 completing the trial, were there even moderate symptoms of depression which persisted for more than one month. None of those who dropped out of the trial (12 patients) became depressed prior to terminating. We thus have no evidence to suggest that it is depression which is the reason for so many obese patients failing to persevere with a weight-reducing programme.

3. The amount of weight lost bore no relationship to either the initial or final depression rating.

4. Durophet-M 12½ was found to be without any greater effect than a placebo on either depressive or anxiety symptoms.

5. We conclude that there is little danger of marked depression occurring among the large majority of obese patients who try to lose weight by dieting, provided this is done under supervision and there is no previous history of psychiatric illness.

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