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Weight Loss and Maintenance in Overweight and Obese Patients with Cardiovascular Disease

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Abstract

We assessed 87 overweight and obese patients with cardiovascular disease in order to explore the weight change over time, and related psychological, behavioural and environmental variables. After hospitalisation, all patients received recommendations for decreased calorie intake combined with physical activity. All of them were contacted for a follow-up after 6 to 23 months in person (N = 43) or in a telephone interview (N = 44). Results show that patients who attended the follow-up in person increased their weight significantly less and maintained their body weight more successfully in comparison with the group of patients contacted over telephone. In the present study, the most desirable techniques for weight reduction seem to be the low calorie diet and exercise. However, the level of attendance at received recommendations for dieting and exercise was not satisfactory. Patients reported different reasons that interfered with their weight loss attempt, such as problems at work or financial problems. We have discussed the necessity of continued contact and support for patients in the period of loss and maintenance of weight loss, considering their psychological, behavioural and environmental problems, and particularities.

Keywords: obesity, overweight, depression, weight loss, cardiovascular disease

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Effective and life-long weight management is an important goal for every person, but especially for the population at the highest risk of cardiovascular disease (CVD) and for individuals who have already developed CVD. For all persons with known CVD risk, weight control is a priority because of the beneficial effects of weight loss on blood pressure, lipid profile, and insulin resistance (Svetkey et al., 2008).

In fact, the obesity literature presents many different weight loss programmes that are effective in producing clinically significant weight loss. Low-calorie diets, exercise, meal replacement, cognitive-behavioural therapy, and pharmacological agents are usually effective at inducing 8-10% weight reductions in the period of 6 months (Ulen, Hiuzinga, Beech, & Elasy, 2008). Observational studies suggest that continued intervention contacts (Jeffery et al., 2000; Phelan & Wing, 2005); self-monitoring of dietary intake, physical activity, and weighting (Wadden, Butryn, & Wilson, 2007; Wing & Phelan, 2005; Wing et al., 2007); accountability (Wadden, Butryn, & Wilson, 2007; Wadden, Crerend, & Brock, 2005); and regular physical activity (Hill, Wyatt, Phelan, & Wing, 2005) lead to sustained weight loss. However, in the year following the treatment most patients regain about 30% of the weight that they have lost and return to their baseline weight in three to five years (Weiss, Galuska, & Kettel Khan, 2007).

Systematic reviews of pharmacological, behavioural, and diet-based weight loss treatments conclude that continued therapy is essential for preventing or reducing possible weight regain after weight loss (Ayyad & Andersen, 2000; O'Meara, Riemsma, Shirran, Mather, & ter Riet, 2004; Rucker, Padwal, Li, Curioni, & Lau, 2007; Saris, 2001).

In order to understand the factors that may influence successful weight control, the researchers examined many psychosocial, environmental and behavioural variables. Between psychosocial variables, they studied the role of depression, self-esteem, negative emotions, body image, motivation for weight loss, quality of life and many others. Results obtained in different studies (Goodman & Whitaker, 2002; Stice, Presnell, Shaw, & Rohde, 2005; Scott et al., 2008) suggest that negative affect is the general risk factor for obesity. Negative emotional states are highly prevalent in obese patients, and predict poor treatment outcomes, particularly for women (Linde et al., 2004). The self-efficacy is a concept that refers to individual's belief in his/her ability to perform and succeed in challenging situations. In the field of obesity and weight management, results indicated that weight-related self-efficacy often improves completion of a weight loss programme (Cargill, Clark, Pera, Niaura, & Abrams, 1999). Greater baseline self-efficacy tends to predict greater weight loss success, but this is not always the case (Fontaine & Cheskin, 1997). Frequently explored concepts in this field are body image and body dissatisfaction. It is interesting to note that changes in body image and subjective well-being (e.g., self-esteem) are often reported as outcomes in the

treatment of obesity. However, they may also influence behavioural adherence and success in weight loss (Palmeira et al., 2009).

Behavioural variables usually included dieting behaviour, exercise, TV viewing. Researchers reported that successful weight losers consume a low-fat diet, eat breakfast regularly, participate in physical activity, and limit TV viewing (Butryn, Phelan, Hill, & Wing, 2007; Raynor, Phelan, Hill, & Wing, 2006).

Regarding the environmental variables like food storage and exercise equipment available at home, Phelan et al. (2009) concluded that changes in home environment might help obese persons in their behavioural changes. For example, presence of exercise equipment in the home correlated with self-reported physical activity.

Weight loss maintenance is a very complex process influenced by many different factors. Understanding the role of these factors is essential to improving and supporting obese persons in their attempt to obtain and maintain lower body weight. The goals of the this study are a) to determine the prevalence of weight change over time, b) to determine the preferred technique for weight loss, and c) to examine some psychological (self-efficacy, anxiety, depression, anger, body dissatisfaction, motivation for weight loss), behavioural (attendance to dieting suggestions) and environmental variables (disturbances in the attempting to weight loss) among overweight and obese CVD patients.

METHOD

Subjects

The research includes overweight and obese patients who, at the time of the first measurement, were admitted to the Department of cardiology and cardiac rehabilitation at the Clinic for treatment, prevention and rehabilitation of cardiovascular disease Thalassotherapia in Opatija. The patients in question have suffered a major cardiovascular event, acute myocardial infarction or myocardial revascularisation. The research group includes 87 overweight and obese patients (69 males and 18 females) aged between 33 and 72 years ($M = 56.26$; $SD = 7.20$), with the body mass index ranging from 26.37 to 42.25.

Procedure

At the time of hospitalization at the Clinic for treatment, prevention and rehabilitation of cardiovascular disease Thalassotherapia in Opatija, all participants completed a number of scales described in the *Instruments* as well as single items. The weight-loss treatment consisted of decreased caloric intake combined with recommendations for physical exercise that all patients received.

Follow-up

The subjects were contacted again in 6 to 23 months with the aim of monitoring the weight changes and their general health status. The subjects received a written invitation to attend the psychological and cardiac follow-up examination at the Cardiac rehabilitation unit at Thalassotherapia in Opatija, and they confirmed their attendance by telephone. During the follow-up measuring, the patients completed all the scales of the first measure once again. Forty-three subjects participated in the follow-up.

Telephone Follow-up

Forty-four subjects who did not respond to the invitation were contacted again in 12 to 23 months, when a short telephone interview was conducted. They were asked about their health status, weight and the reasons for not attending the follow-up examination. As a result, 43 patients were examined at the Cardiac rehabilitation unit while 44 were checked in a telephone interview.

We used a semi - structured telephone interview prepared by a group of experts to classify reasons for dropping out (Grossi et al., 2006). Participants answered 12 questions related to weight history, weight measurement, the present strategy used to control their weight, and general health status after being discharged from the hospital. A specific section was devoted to investigate the cause(s) of attrition. The patient were asked to select all the answers that described best their reason(s) for treatment interruption (*You were satisfied with the weight loss results; You were confident to lose additional weight without professional help; You had practical difficulties: living far from the medical centre, problems at work, family problems, financial problems, health problems other than obesity, holidays; You were not motivated enough*). Only the patients who did not come for the control visit participated in the telephone interview (N = 44).

Instruments

Self-efficacy was assessed with the *Weight Efficacy Life-Style Questionnaire* (WEL; Clark, Abrams, Niaura, Eaton, & Rossi, 1991), which consists of twenty items designed to measure five hypothesised dimensions of efficacy for weight management: availability, negative emotions, physical discomfort, positive activities, and social pressure. There are four items per scale, scored using a ten-point Likert-type format. Participants were asked to rate their confidence in resisting overeating in twenty different situations, using ten-point scale (from 0 to 9). The WEL provides a total weight self-efficacy score based on the sum of the item scores (total range = 0-180), and it is considered reliable and valid in obese populations. Higher scores indicate greater self-efficacy. The WEL demonstrated

good internal consistency reliability; Cronbach's alpha coefficient for the WEL was .94 in this sample.

Depression and anxiety were assessed using the *Hospital Anxiety and Depression Scale* (HADS; Zigmond & Snaith, 1983). The HADS is a self-report questionnaire consisting of 14 four-point Likert-type format, assessing anxiety (HADS-A) and depression (HADS-D) over the last two weeks. HADS is a widely used self-rating scale originally designed for detecting depression and anxiety in patients with cardiac disease and other medical conditions. Participants were asked to rate their anxiety and depressive symptoms, using four-point scale (from 0 to 3). It was specifically designed to avoid false-positive cases among individuals with somatic illness. It contains no questions on somatic symptoms, sleep, or appetite disturbance, focusing on the psychological and cognitive symptoms relevant to the two disorders. A cut-off score of 8 in each sub-scale has been found to be the optimal level for case finding. Cronbach's alpha coefficient for the HADS-A was .90, and for the HADS-D was .76 in this sample.

We have measured the experience, expression, and control of anger with State-*Trait Anger Expression Inventory* (STAXI-2; Spielberger, 2001). Studies support its use in research on heart disease, hypertension and a variety of psychosomatic and behavioural disorders. The *Trait anger scale* that was used in this research measures how often angry feelings are experienced over time. The Anger expression and Anger control scales assess four relatively independent anger-related traits: (a) expression of anger toward other persons or objects in the environment (*anger expression-out*); (b) suppression of angry feelings (*anger expression-in*); (c) control of angry feelings by preventing the expression of anger toward other persons or objects in the environment (*anger control-out*); and (d) control of suppressed angry feelings by calming down (*anger control-in*). In this research, we use anger expression-out scale and anger control-out scale. Participants were asked to rate their reaction or behaviour when they are angry using four-point scale (from 1 - almost never to 4 - always). Cronbach's alpha coefficient in this sample was .67 for anger expression was and .81 for the anger control.

The *Figure Rating Scale* developed by Stunkard, Sorensen, & Schulsinger (1983) consists of nine schematic silhouettes ranging from very thin to very obese. The scale has been used frequently as a measure of body dissatisfaction, requiring participants to self-select a figure rating. Participants were asked to rate how they perceive their current as well as their ideal body shape by choosing two images; the first that corresponds to their figure on a scale ranging from 10 to 90, with 10 being the thinnest body type and 90 being the largest, most obese type; and the second that corresponds to their ideal figure. The difference between the two choices was calculated to give discrepancy score and the level of body dissatisfaction.

We asked the participants to rank different techniques for weight loss from the most to the least preferred (ranging from 1 to 7). At the time of second

measurement we have asked patients to assess the level of motivation for weight loss (not motivated, moderately motivated or very motivated), the level of disturbance in the weight loss attempt (not disturbed, moderately disturbed or very disturbed), and the level of adherence to the diet suggestions (not attend, moderately or very much).

All the patients included in the study have signed an informed consent to a contact interview during follow-up, including telephone interview.

RESULTS

Table 1 shows the BMI of the subjects as well as the number of subjects who decrease, increase or maintain weight over a period from 6 to 23 months.

Weight Change

One of the main goals of this study was to determine the weight change over time in overweight and obese CVD patients. At the beginning of the research, there were no statistical differences in relation to body mass index between two groups in follow-up (Table 1). In the next stage of the research, however, there were significant differences between the two groups. Compared to the group with whom only a telephone interview was conducted, the group which attended the follow-up examination had less patients who gained weight and more patients who kept the same body weight (Chi-square = 6.99; df = 2; $p < .05$).

Table 1. Physical characteristics of the sample

		Whole sample N = 87	Follow-up N = 43	Telephone follow-up N = 44
BMI	M	31.54	31.53	32.24
	SD	2.86	3.46	3.16
Weight change	Decrease	32.20%	34.90%	27.30%
	Same	26.40%	37.20%	18.20%
	Increase	41.40%	27.90%	54.50%

Patients who attended the follow-up examination evaluated their weight loss as insufficient (N = 18), modest (N = 9) or good and very good (N = 15). Those that evaluated their weight loss as very good have lost 4.70 kg, those that evaluated loss as moderate lost 0.17 kg, while those that evaluated their weight as insufficient have gained 1.35 kg.

Median and inter-quartile range of preferred techniques for weight loss are presented in Table 2. The median is used because it better describes the typical

value and because of asimetric distribution of this variable. The two most desirable techniques for overweight and obese patients with cardiovascular problems seem to be the low calorie diet and exercise. Next is the combination of a few possibilities (most often diet and exercise), followed by psychotherapy, weight loss medication, implantation of intragastric balloon, and finally bariatric surgery.

Table 2. Preferred methods of weight loss for the overall sample

Methods for weight loss	Median*	Inter-quartile Range
Weight loss medication	5	4 - 5
Intragastric balloon	6	6 - 6.50
Bariatric surgery	7	6 - 7
Low calories diet	2	1 - 3
Physical activity / exercise	2	1 - 2
Psychotherapy	4	4 - 4
Combination of a few possibilities	3	1 - 3

***** Median referst to rank of preferred techniques

Psychological Variables

Means, standard deviations and range for all used psychological measures are presented in Table 3, and correlations between variables in Table 4. The data were collected with the overall sample of obese patients at the time of the first measurement.

Table 3. Descriptive statistics for all measures

Scale name	M	SD	Range
Self-efficacy	150.39	21.10	78-180
Anxiety	5.23	3.53	0-18
Depression	4.46	2.62	0-12
Anger control	23.73	4.99	9-32
Anger expression	14.65	3.84	8-27
Body dissatisfaction	18.35	9.93	0-60

The analysed sample indicates that up to 25.3% of patients have elevated result on the anxiety scale, while 17.7% show elevated result on the depression scale (above cut-off result).

The results suggest that 96.2% of patients are dissatisfied with their body image and want to change it. It seems that they would like to be thinner, i.e., they,

on average, choose from the scale silhouettes that are two sizes thinner than the self-evaluation of their current body image (Median = 20, Range = 0-60). The overall sample (N = 87) indicates that the actual average weight loss of the patients included in the study is 0.69 kg (SD = 5.52). The patients who have lost weight decreased their weight over a period between the two measurements by minimum of 2 and maximum of 11.30 kg, while the patients who gained weight increased their weight in the range from 2 to 14 kg. Some patients did not exhibit weight change (26.4%); rather, their weight changed in the range of plus or minus 2 kg in comparison to the previous measurement.

Table 4. Correlation coefficients for overall sample among all measured variables

	1	2	3	4	5
1. Self-efficacy	-				
2. Anxiety	-.26*	-			
3. Depression	-.15	.41**	-		
4. Anger control	.25*	-.29**	-.42**	-	
5. Anger expression	-.13	.12	.22*	-.50**	-
6. Body dissatisfaction	.14	.10	.21	-.08	-.06

*p < .05; **p < .01

Correlation matrix based on the results of the overall sample reveals significant positive relationships among self-efficacy and anger control, as well as depression and anger expression with small effect size, and depression and anxiety with moderate effect size. As expected, higher scores on anxiety were associated with lower scores on self-efficacy and anger control with small effect size. It is important to note that higher score on anger control was associated with lower scores on anger expression, anxiety, and depression all of them with medium size effect. According to Cohen, small and moderate effects are frequently at issues in clinical psychological research ″because of the attenuation in validity of the measures employed and the subtlety of the issue involved″ (Cohen, 1988).

Table 5. The mean values of all measures in relation to the level of motivation

	Level of motivation			$F_{2,39}$
	Not motivated N = 9 (1)	Moderately motivated N = 16 (2)	Very motivated N = 17 (3)	
Anxiety	$3.22_{2,3}$	7.25_{1}	6.47_{1}	2.36[a]
Depression	3.89	5.50	4.94	0.53
Anger control	24.89	24.19	22.47	0.76
Anger expression	14.00	14.25	14.71	0.15
Body dissatisfaction	17.78	18.75	16.47	0.22
Self-efficacy	124.78	141.63	142.65	1.24

[a] $p < .10$

$_{1,2,3}$ Index number indicates the groups that differ significantly *(Student-Newman-Keuls post-hoc test)*

Patients evaluated their motivation for weight loss. Groups of overweight and obese CVD patients, who have different levels of motivation for weight loss, did not differ significantly in any tested variables; between-group differences were analysed using Student-Newman-Keuls post-hoc test (Table 5). These analyses were conducted during the follow-up on the group that came to the control visit.

The only difference among the groups of patients with different motivation for weight loss is in the level of anxiety. The patients that are not motivated for change are less anxious than the patients who are moderately or very motivated for weight change. We should be cautious in this conclusion, as this difference does not reach statistical significance. In any case, this tendency might be attributed to the small and relatively homogenous sample (all of them are overweight or obese; they have CVD and are mostly male).

Behavioural Variables

The patients were also analysed based on whether they followed the diet suggestions given to them. Even though the majority of CVD patients estimated that they followed the given suggestions and recommendations moderately (50%) or thoroughly (33%), a smaller group did not follow them at all (17%). There is a significant difference in the depression level among these groups. The subjects who did not follow doctors' suggestions were considerably more depressed (Table 6). A post-hoc analysis was performed using Student Newman-Keuls test.

Table 6. The mean values of all measures in relation to the level in which patients attended the diet suggestions

	Level of attending the diet suggestions			$F_{2,39}$
	Not attend N = 7 (1)	Moderately N = 21 (2)	Very much N = 14 (3)	
Anxiety	7.00	7.14	4.00	2.15
Depression	7.71_3	5.29	3.00_1	4.69*
Anger control	21.43	23.95	24.29	0.76
Anger expression	15.14	13.67	15.07	0.99
Body dissatisfaction	17.14	19.05	15.71	0.48
Self-efficacy	121.29	139.81	144.93	1.58

*p < .05

$_{1,3}$ Index number indicates the groups that differ significantly *(Student-Newman-Keuls post-hoc test)*

Environmental Variables

When asked if they were disturbed in their attempt to weight loss, one-half of the patients stated that they were not disturbed or only little, one quarter was moderately disturbed, and one quarter very disturbed. Patients that were not disturbed in their attempt to weight loss had significantly lower level of anxiety and depression then moderately disturbed ones. Regarding depression, they were also significantly less depressed then very disturbed patients (Table 7). Between-group differences were analysed with Student-Newman-Keuls test.

Table 7. The mean values of all measures in relation to the perception of disturbance in the attempt of weight loss

	Level of disturbance in the attempt of weight loss			$F_{2,39}$
	Not disturbed N = 22 (1)	Moderately disturbed N = 10 (2)	Very disturbed N = 11 (3)	
Anxiety	4.05_2	8.82_1	7.30	4.97*
Depression	$3.00_{2,3}$	7.36_1	6.30_1	7.89**
Anger control	24.10	24.91	21.30	1.42
Anger expression	14.19	13.91	15.30	0.53
Body dissatisfaction	15.71	18.18	21.00	1.00
Self-efficacy	142.52	130.55	138.50	0.58

*p < .05; **p < .01

$_{1,2,3}$ Index number indicates the groups that differ significantly *(Student-Newman-Keuls post-hoc test)*

The patients who were contacted in the telephone interview stated various practical reasons for not coming to the follow-up examination (Table 8). The analysis of reasons has shown interesting results: only one patient stated that he did not like the idea of coming to the follow-up examination, while one patient stated that he managed to obtain his desired weight on his own and, as a result, considered the follow-up unnecessary. Practical difficulties accounted for 75% of the primary causes for dropping out, while 9% of the patients stated scarce motivation as their reason for not attending the follow-up examination. None of the patients expressed confidence in the ability to lose additional weight without professional help.

Table 8. Practical reasons for attrition as reported by phone interview

Reason[a]	N	%
Family problems	1	1.8
Problems at work	10	18.6
Living far from the medical centre	13	24.0
Health problems other than obesity	7	13.0
Financial problems	11	20.4
Holidays	0	0
Other reasons	12	22.2
Total	54	100

[a] Patients could report more than one reason

In general, practical difficulties were the most frequent cause for not attending the psychological examination. These included remoteness (24%), financial problems (20.4%), and problems at work (18.6%), and health problems other than obesity (13%).

DISCUSSION

This research has followed a group of overweight and obese cardiac patients in their attempt to reduce weight during and after the hospitalisation. During their stay in hospital and upon their discharge, CVD patients received lifestyle change recommendations, instructions on eating habits and physical activity recommendations (walking, power walking, cycling, etc.).

Weight Change and Psychological Variables

CVD patients have identified low calorie diet, physical activity (i.e., exercising), and the combination of these two methods as the most acceptable and efficient methods for weight loss. They have rarely considered other options such as psychotherapy, weight loss medication, intragastric balloon or surgical interventions. The choice of method for weight loss is correlated with the person's attitude towards the method, their knowledge about the method, and, in all likelihood, their perception of the suitability of the method for their general health status. Diet and physical activity are the most non-invasive and affordable methods available. Their efficiency is related to their regularity and duration, that is to a dietary and exercise regimen, but they also presuppose significant lifestyle change. These results are in accordance with the studies that suggest that dietary and lifestyle modification efforts are the primary methods for treating and preventing obesity (Dansinger, Tatsloni, Wong, Chung, & Balk, 2007). A number of important systematic reviews show that dietary-based lifestyle modification can significantly improve body weight and reduce related medical problems (Anderson, Konz, Frederich, & Wood, 2001; Ayyad & Andersen, 2000; Glenny, O'Meara, Melville, Sheldon, & Wilson, 1997). Weight-loss programmes involving diet, exercise and behaviour modification produce initial weight losses of approximately 10% (Wing, 2004), and result in clinically important health benefits.

The major problem is that, during the year following the treatment, most patients regain about one third of the weight lost, and are typically back to baseline in 3 to 5 years (Waden & Phelan, 2002). The motivational level, which is variable, is an important factor in the weight change that inevitably includes the lifestyle change. Over a period of 6 to 23 months after the hospitalisation, the patients have estimated their motivation for weight change very differently (not motivated, moderately motivated and very motivated). The reason for not finding significant differences among patients of different motivation level in the included psychological variables (e.g., anxiety, depression) might be in the sample characteristics (small size and relative homogeneity of the subgroups). The question is why the more motivated patients show a greater tendency toward anxiety. We might find the answer in the negative correlation between anxiety and self-efficacy. If patients are more anxious they believe that they are less effective in weight management and perceive themselves as less confident in resisting overeating in different situations. It is possible that low self-efficacy interferes with motivation. Reduced motivation or self-efficacy associated with anxiety and depression may interfere with initiating or maintaining exercise programs or diet change in obese (Carter, Bulik, & Joyce, 1994; Cassidy et al., 2004).

Body dissatisfaction is often considered to be a significant factor, which motivates the obese people to change. As far as this studies' sample of obese patients with CVD is concerned, body dissatisfaction was not a significant factor,

neither in relation to other psychological characteristics, nor in motivation and dietary habits. We believe that this can be explained by the fact that the sample included a number of male subject for whom this aspect of change is less important than it would be for younger female subjects.

Weight Change and Environment

While introducing changes into their lifestyle people encounter difficulties and obstacles of various intensities. These interferences can be very different, but they usually include life events such as the children's education, family illness or problems at work. The patients who were moderately disturbed in their attempts to lose weight have shown considerably higher levels of anxiety than not disturbed patients. In addition to this, patients who were moderately or considerably disturbed were much more depressed than the ones who lost weight without being disturbed. This result demonstrates the importance of both social and familial support in attempting to lose weight and change lifestyle. This support has a positive influence on the patient's mood; those who have encountered obstacles in their attempts have exhibited more depressive disturbances during the follow-up period. Participants in behavioural weight loss programs typically report improvements in mood (Wadden et al., 2004), but improvements in mood may not be specifically correlated with weight loss. Findings by Simon et al. (2010) are consistent with a conclusion that improvement in depression leads to greater weight loss or that greater weight loss leads to improvement in depression, or that the two are mutually reinforcing.

Attendance to Dieting Suggestions

Upon hospital release patients received recommendations for weight reduction and the instructions on eating habits and exercising, but their adherence to these was variable. The majority of CVD patients believe that they have followed the received instructions and recommendations moderately or highly, while a smaller group did not follow them at all. There was also a significant difference in depression levels. The individuals who did not follow doctors' diet suggestions and did not exercise were considerably more depressed than the ones who did. Activity limitations due to obesity or obesity-related chronic illnesses may increase risk of depression through distressing physical symptoms or decreased involvement in rewarding or pleasurable activities (Roberts, Strawbridge, Deleger, & Kaplan, 2002). Physical inactivity characterises many depressed persons (Paluska & Schwenk, 2000), but also predicts weight gain.

Even though they are not statistically relevant, there are other differences in psychological variables, which might be important. It seems that the patients who followed the instructions fully were the least anxious and dissatisfied with their body image, and they had higher anger control and self-efficacy.

It is interesting to note that the patients' average self-efficacy level in weight control was relatively high. However, the weight change that occurred after a period of 6 to 23 months was far from satisfactory. Many patients changed in an unwanted direction, i.e., they gained weight. Given that, there was a higher percentage of those that gained weight in the group that did not attend the follow-up examination but was contacted by telephone than in the group that attended the examination (54.5% of patients contacted by telephone vs. 27.9% of those who attended the follow-up examination). We could assume that the failing to control weight and the sense of shame might be some of the reasons for not attending.

Due to lack of data, these are just assumptions that should be further verified in the next stage of the research. Furthermore, this weight change illustrates the inefficiency of dieting and exercising at home which, because of scarce motivation, disturbances and failure to follow the regimen, leads to the changes that additionally damage the health of CVD patients. Numerous researches indicate that it is necessary to provide continuous support for individuals who are attempting to lose weight (Jeffery et al., 2000; Kumanyika & Brownson, 2007; Phelan & Wing, 2005). However, in our case we need to approach this by giving more structured instructions on weight loss and exercising that is on daily calorie burn and, more importantly, reduction of calorie intake.

The major problem in the treatment of obesity is maintenance of weight loss. Results obtained by Wing, Tate, Gorin, Raynor, & Fava (2006) suggest that, with minimal intervention, 72% of successful dieters will regain more than 2.3 kg over a period of 18 months. The interventions used in their study, which focused on teaching self-regulation of body weight, significantly decreased the risk of regaining 2.3 kg or more. However, only the face-to-face format reduced the amount of weight regained. Continued contact with a health care provider after weight loss is beneficial (Ross, 2009).

Recommendations for Therapy

Overweight and obese persons can chose between numerous methods for weight loss. Some methods are more effective than others, and patients mainly choose the low calorie diet and physical activity. However, results of the present study have indicated that the simple at-home exercise and dieting were not always efficient enough, therefore these patients need professional support through longer period as a help in the process of weight loss, especially in the maintenance process. The psychological treatment that would be especially useful for overweight and obese patients is certainly the cognitive-behavioural treatment (CBT). The main goal of this treatment is eating regulation: given that obese patients have very inadequate eating behaviour, a structured therapy can help them organise their life and make order in their eating habits. On the other hand, that kind of therapy helps them overcome the discouragement related to their earlier

unsuccessful attempts to lose weight. With CBT treatment patients can successfully lose 10% of their body weight and can cope with potential hindrances in weight maintenance, such as motivational problems, different external stimuli that lead to binge eating, impossibility to cope with high-risk situations, interpersonal problems, binge eating, dysfunctional thoughts, absence of social support, stress, emotional problems, and so on.

CBT treatment of individuals trying to lose or maintain weight focuses on their psychological characteristics. Low motivational level for weight change, difficulties in anger control and expression, high depression levels or lack of social support are just some of the factors, which can, in particular cases, compromise the outcome of the treatment. The special emphasis should be placed on dealing with the practical issues that can interfere with the weight loss/maintenance process, such as financial problems or problems at work, which in some situations can be the reason for a negative outcome of the treatment or its termination. These particularities stress the need for an individual approach and monitoring, since the group in question is very heterogeneous and the problem of overweight is acute and resistant to change.

Limitations of the Study

One of the main limitations of the present study refers to the small simple size composed in prevalence of male patients. It is possible that some of the characteristics revealed in this one appear different in female sample (e.g., type of disturbances in the attempt of weight loss) or in turn, that some problems that are not present in male may be very relevant in the female sample (e.g., body dissatisfaction). So, our further research effort will be aimed at exploring such gender differences in a larger sample.

Our study is also limited by the use of the follow-up procedure. This is the only type of procedure that permits to register the change over time, but with consequence (as in our case) of great sample reduction. In order to minimize the effect of drop out we decided to apply the telephonic follow-up. Another consequent limitation due to the use of the telephonic follow-up measurement is that contacted patients give less information than others. This data are based solely on their self-report and in fact it is not possible to compare these data with those obtained with the rest of the sample. Despite the existence of some limitations, we belive that studies on clinical sample can provide useful evidence and convincing support for adopted theoretical model, development of new models, and for the future practice and intervention.

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