

# Assessment of reducing weight diets used by overweight or obese subjects

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**Abstract:** We assessed reducing weight diets used by subjects with excessive body mass. The study involved 100 volunteers who completed a weekly diet diary. Diets of most women (69.2%) did not meet daily estimated energy requirement, being highly energetic, however, in 66.7% of men. The study showed an abnormal content of nutrients. Women preferred high-protein, high fat, but low-carbohydrate diets. In men, the high-fat, low-protein, and low-carbohydrate diets were predominant. A misbalanced diet with respect to energetic value and major nutrients may be responsible for the accumulation of fatty tissue and not for body mass reduction. The knowledge of patients in this field is scarce.

**Key words:** overweight, obesity, adults, nutrition, reducing weight diets

## INTRODUCTION

Epidemiological studies have confirmed that body mass reduction leads to a decreased morbidity rate and a drop in the number of complications due to excessive fatty tissue [1-4]. Increased physical activity and low-energy diets are the major elements of the treatment. In order to obtain a reducing weight diet, the calorific value of food should be strictly adjusted for energetic expenditures of the organism, and in the obese person it should be reduced by 500-1,000/ kcal/day [5, 6]; 1,200-1,500 kcal/day are usually used [5, 7]. Greater caloric limitations may cause malaise, apathy, and sometimes physical and mental deficiency. Moreover, the patient frequently feels hungry and may ignore the recommended diet. On the other hand, when food intake is too low, there is a slight and slow decrease in body weight, which may discourage the patient from continuing the dietetic therapy. With protein deficits in a low-calorie diet, body weight reduction is not only due to fat loss but to a large extent to muscle mass reduction, which is an unfavorable change. Nowadays, obese people frequently try different diets available from newspapers or via the Web. Therefore, the aim of the current study was to assess the reducing weight diets used by people with excessive body mass.

## MATERIALS AND METHODS

Questionnaire surveys were conducted in a group of 100 volunteers with excessive body mass (91 women and 9 men), who reported to the Podlasie Centre for Obesity Treatment due to overweight and obesity (reporting ineffectiveness of the reducing weight diets they used). Reducing weight diets were assessed in a group of 100 adults (women aged 18-67.0 years; mean 44.8±11.3 and men – 35.0-70.0 years (mean 53.4±12.5). The state of nutrition based on BMI (kg/m<sup>2</sup>) showed overweight in 33.0% of women (n=30), obesity in 60.4% of women (n=55) and in 66.7% of men (n=6), and pathological obesity in 6.6% of women (n=6) and 33.3% of men (n=3).

Their nutrition was assessed based on weekly diet diaries they had to complete (they were first instructed how to assess cooking

measures and used the atlas of products and dishes). A computer program 'Dieta 2' (The National Food and Nutrition Institute in Warsaw) was used for calculations. Weekly diets were evaluated with respect to the energetic value and content of basic nutrients. Data were averaged for each patient and compared with the safe norms recommended for subjects who have low physical activity (Recommended Daily Allowances – RDA, established by The National Food and Nutrition Institute in Warsaw). The accepted norm was 15% of daily estimated protein requirement, 30% for fats and 55% for carbohydrates, but the low-protein diets - <12% of estimated protein requirement, >20% for high-protein diets, <25% for low-fat diets, >30% for high-fat diets and <50 low-carbohydrate diets. Results were presented as means, SD and percentage values.

## RESULTS

Analysis of the diets revealed that 18.7% of women and 66.7% of men consumed high energy diets (Table 1). The mean protein content in daily food rations was below the norm in 14.3% of women and in 22.3% of men, and above the norm in 83.5% of women and in 77.7% of men (Table 1). Consumption of animal protein was higher than that of vegetable protein in 96.7% of women and in 100% of men. It was found that 45.1% of women and 77.7% of men consumed high-fat diets, while 50.5% of women and 22.3% of men had low-fat diets (Table 1). The level of cholesterol intake was within the norm in 60.4% of women and in 33.3% of men. A cholesterol-rich diet (>300 mg/day) was preferred by 39.6% of women and 66.7% of men. The carbohydrate intake was below the safe norm in 91.5% of women and in 44.4% of men, and above the norm in 8.8% of women and in 55.6% of men (Table 1). The mean fibre content of food rations was below the norm in 58.2% of women and 33.3% of men; within the norm (20-40 g/day) – in 39.6% of women and 44.4% of men, and below the norm in 2.2% of women and in 22.3% of men.

The overweight and obese subjects consumed various types of diets. In 48.3% of women and 33.3% of men, these were high-protein, high-fat and low-carbohydrate diets; in 29.7% of women and 44.4% of men – low-protein, high-fat and low-carbohydrate diets; in 7.7% of women and 11.1% of men – high-protein, low-fat and low-carbohydrate; in 7.7% of women and 11.1% of men the diets were well-balanced; 6.6% of women consumed other diets.

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**Table 1** Realization of requirements and recommendations for intake of energy and macronutrients with reducing weight diets used by patients with overweight and obesity.

Examined parameters		Below norm	Norm	Above norm
Mean energetic value (kcal/day)	Women	69.2% (n=63)	12.1% (n=11)	18.7% (n=17)
	Men	22.2% (n=2)	11.1% (n=1)	66.7% (n=6)
Protein (g/day)	Women	14.3% (n=13)	2.2% (n=2)	83.5% (n=76)
	Men	22.3% (n=2)	0.0	77.7% (n=7)
Fats (g/day)	Women	50.5% (n=46)	4.4% (n=4)	45.1% (n=41)
	Men	22.3% (n=2)	0.0	77.7% (n=7)
Carbohydrates (g/day)	Women	91.5% (n=83)	0.0	8.8% (n=8)
	Men	44.4% (n=4)	0.0	55.6% (n=5)
Cholesterol (mg/day)	Women	0.0	60.4% (n=55)	39.6% (n=36)
	Men	0.0	33.3% (n=3)	66.7% (n=6)
Fibre (g/day)	Women	58.2% (n=53)	39.6% (n=36)	2.2% (n=2)
	Men	33.3% (n=3)	44.4% (n=4)	22.3% (n=2)

## DISCUSSION

Many researchers both in Poland and abroad have been concerned with the failure of modern non-pharmacological methods used to treat obesity [6, 8]. Although much of the fault lies in the patients themselves (e.g. lack of strong will or time, economic factors, or others), also doctors, dieticians or remedial gymnasts, i.e. professionals whose duty is to educate patients, should feel responsible. The majority of overweight subjects who want to slim down, obtain their dietary knowledge from the mass media (newspapers, radio, TV, Internet). Therefore, the current study objective was to discover what types of diets our patients used and whether these diets were well-balanced. The women preferred high-protein, high-fat and low-carbohydrate diets (48.3%) and low-protein, high-fat and low-carbohydrate diets (29.7%). The high-protein and low-calorie diet has many advantages, especially in the treatment of obesity, since body mass reduction, first of all, is due to fat loss and not a decrease in free fatty tissue, and does not occur with negative nutrition balance [9]. Low-calorie but high-protein diet also reduces the fat-muscle index [10]. Patients using this type of diet even for a long time, do not feel weak and are capable of both physical and mental efforts. A high-protein diet causes a greater feeling of satiety than high-carbohydrate diet of analogical caloric value. However, a decrease in the amount of fat in a high-protein diet is difficult. Most protein products contain a great amount of hidden fat, which was also observed in the diets of women in our study. This may be the reason why the diets did not lead to body mass reduction although in 69.2% of women the diet included low-calorie products. Similar results have been obtained by other researchers [11-14].

Obese men, however, preferred other types of diets: low-protein, high-fat and low-carbohydrate (44.4%) and high-protein, high-fat and low-carbohydrate (33.3%). Besides, the consumption of high energy diets by the majority of men confirms that energy intake higher than the body demands plays a key role in obesity development and cannot cause effective body mass reduction, even if the man claims that he eats less than before (usually thinking that it is a reducing weight low-calorie diet). In the current study, only 7.7% of women and 11.1% of men consumed qualitatively well-matched products, but these diets showed a higher calorie level. A reduction in the intake of animal fats, especially 'hidden' fats, seems to be of particular significance in the dietetic treatment of the obese. Obese subjects exhibit limited potential to convert

fat into thermal energy. However, they show greater ability to metabolize carbohydrates and proteins [3, 11-13, 15, 16].

## CONCLUSIONS

1. Failure of the reducing weight diets in the women involved in the study may be caused by qualitative food abnormalities (high-protein diet with the predominance of animal protein and high content of 'hidden' fat). In men, calorific limitations and excessive fat intake were the main disadvantages.
2. It seems that knowledge of well-balanced reducing weight diets is scarce; therefore, the need exists for dietary education among patients with a risk of fatty tissue accumulation in the body.

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