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Review

Patterns used in weight loss in patients with obesity: A literature review

Alexandra Alexescu[1,2], Emilia Rusu*[2,3], Gabriela Radulian[3,4]

[1] Dr. Alexescu Alexandra, Private Practice, Bucharest, Romania
[2] Carol Davila University of Medicine and Pharmacy, Bucharest, Romania
[3] Clinic Hospital N. Malaxa, Bucharest, Romania
[4] National Institute of Diabetes and Metabolic Disease N.C. Paulescu, Bucharest, Romania

*Correspondence to: Emilia Rusu, U.M.F. "Carol Davila" Bucharest. Dionisie Lupu Street no 37, District 2, ZIP code 020021. Phone: +40 0742959946, E-mail: emiliarusumd@yahoo.com

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Abstract

Background and Aims: Obesity is one of the most common co-morbidities in the world and is on the rise. This article aims to analyze the nutritional approaches of these patients, analyzing as many food patterns as possible. **Material and Method:** We analyzed the literature available in the fields of PubMed and Scopus using the following filters: obesity management, dietary patterns in obesity management, diets for weight loss, and lifestyle intervention among obese patients. We have selected articles published exclusively in English, between 2014 and 2020. **Results:** A multitude of dietary patterns are published in order to help obese patients lose weight, but the difficulty of this process and cardiovascular risk can be influenced by severe diets, intense hyper lipidic. **Conclusions**: The implementation of a healthy diet, through food re-education, could lead to a weight loss similar to different food patterns, not only without increasing mortality but with increasing the health status of the patient.

Keywords: Diet, healthy eating, low-carb, obesity, weight management.

Background and Aims

Obesity is one of the most terrifying pathologies affecting, according to the World Health Organization, by 2016, over 650 million adults, over 340 million adolescents, and most worryingly, over 38 million children under the age of 5. It is important to note that these values represent a tripling of the 1975 incident [1].

Material and Method

The selection of the studies was made in the PubMed and Scopus platforms. The search terms from which the studies were selected are obesity management, dietary patterns in obesity, diets for weight loss, and lifestyle intervention among obese patients. Studies published in the period 2014–2020 were analyzed and those published in English were chosen exclusively.

Results

One of the key factors about obesity, also highlighted by the World Health Organization (WHO), is that this growing disease is completely preventable. The way we can do this is the purpose of this review, by analyzing the most current guidelines for managing obesity, maintaining health with an optimal nutritional

intake and, last but not least, by analyzing the various food patterns addressed today, not always with the physician approval [1].

The definition of obesity consists in a body mass index (BMI) greater than or equal to 30 kg/sqm, according to the calculation formula: BMI = G/T $(m)^2$ [1].

The causes that favor the development of obesity in both adults and children consist in the increased intake of foods with high caloric density, with a higher weight for the intake of lipids and sugars, at the same time with the decrease in physical activity [1]. Each of these two factors has an extraordinarily strong effect, but when they are found together in the same individual the effects are potentiated and the risk of weight gain is much higher.

In 2020, the WHO claims that obesity, in order to be combated, must be acted upon in two directions: at the individual level, it recommends that the intake of lipids and sugars decrease, increase the intake of fruits, vegetables, cereals, oilseeds and increase the level of physical activity, and at the industrial level supports the reduction of the use of fats, sugar and salt from processed foods as well as ensuring that consumers have as many healthy food options at hand [1].

Thus, obesity becomes a serious, worrying condition that can be prevented through good collaboration in society and the individual.

Recommendation of the Guidelines

To meet the practitioners who work with overweight patients come several guidelines that present their approach from a nutritional point of view.

The European Guide to Focusing on Obesity Management proposes that the right attitude in guiding an obese patient should start with improving communication with him, which is essential for adherence to nutritional therapy and motivation. Also, it is very important to avoid stigmatizing the patient as well as to clearly set weight loss goals, from the first visit (between 5 and 10% of the current weight) [5].

Obesity is an extremely complex pathology that affects the patient both physically, where a careful evaluation of the patient is recommended (current weight, maximum weight, abdominal circumference, evaluation of co-morbidities), and mentally, which is why the motivational interview is recommended to assess whether the patient is at the right time to start a weight loss program [5].

The initial recommendations of the European Guide do not contain strict measurements regarding food consumption, but rather recommend starting the program with lifestyle improvement, for a food discipline, avoiding weight fluctuations and increasing the level of physical activity. These interventions can lead to an achievement of the initial weight loss target in the proportion of 15–65% of the initial target [5].

General lifestyle optimization recommendations for obese patients include:

- Decreasing the caloric density food consumed by increasing the intake of vegetables, decreasing the intake of saturated lipids, refined carbohydrates, sugar, and sweetened drinks; decreasing the size of portions and consuming at least two fruits/day [5].
- Arranging the plate with half of it from vegetables [2]
- Increasing the palatability of food by adding spices and herbs [2]
- Keeping a food schedule as clear as possible, avoiding snacks or skipping meals [5].
- Discipline the body, by keeping the food schedule, to consume food when hunger occurs (hunger is defined as a sensation that occurs 4–5 hours after the last meal, felt as a "hole in the stomach" accompanied by a "specific noise") and stop eating when the state of satiety appears [5].
- Keeping a food diary [5]
- Adding low calorie density foods to appetizers (soup, appetizer salad, fresh fruit) [2]

Current Food Patterns

In addition to all these healthy eating recommendations for weight loss by adopting optimal, balanced nutrition, more and more studies of food patterns have been described in

the literature aimed at the exchange between the percentages of macronutrients, but keeping the same total energy consumption.

One of the most often used type of diet that aims to lose weight as fast as possible is the variant in which the carbohydrate intake decreases, as a total percentage in energy consumption.

Many publications blame carbohydrate intake, promoting it as unhealthy food. This theory is based on the idea that our ancestors, 50,000 years ago, consumed almost no cereals or starchy vegetables, the diet known as Paleo, and were limited to a maximum carbohydrate intake of about 35% [9].

Kaplan et al. [10] studied the population of Tsimana in South America, an extremely poor area that was found to have a macronutrient distribution of 72% carbohydrates, 14% protein, and 14% lipids. Despite this high carbohydrate intake, without general recommendations, this population has the lowest reported level of chronic diseases worldwide. The conclusion of this analysis was that the quality and not the quantity of carbohydrates is the key to a healthy diet [10].

In addition, Mazidi M et al. [15] published a study involving 24,825 subjects who analyzed all causes of mortality as well as specific causes of mortality for patients on a low-carb (LC) diet. The published results consisted of an overall increase in mortality of 32%, increased frequency of mortality due to cardiovascular causes (50%), cerebrovascular causes (51%), and cancer (36%). The authors conclude by saying that there is a significant association between LC diet and mortality of any cause and specific cause [15].

A hypoglycemic diet involves a carbohydrate intake below the minimum accepted limit, below 130 g/day. Another option is an intensely hypoglycemic diet in which the carbohydrate intake decreases between 20 g and a maximum of 50 g/day [4].

By decreasing carbohydrates intake, there are two other macronutrients that can be increased, proteins, or lipids.

Hyper protein diets have an increased amount of protein which leads to a very large and very rapid increase in satiety by increasing the concentration of cholecystokinin, GLP-1 and PP Y, as well as increasing the amount of amino acids and gluconeogenesis [6].

If the carbohydrate intake is low, then the amount of insulin is also decreased, decreasing lipogenesis and increasing lipolysis, which together lead to a very rapid weight loss. But if the intake of carbohydrates continues to be well below the minimum amount needed by the body, the central nervous system will use alternative ways of producing energy, a phenomenon that will lead to the appearance of ketone bodies.

Kim Bo-Yeon [6] studied the effects of the low-carb, high-fat diet (LCHF) on body weight, cardiovascular risk, and mortality. From the cardiovascular system point of view, in a prospective cohort study, LCHF diets with predominant fat intake from animal sources, led to an increased association with an increase in mortality from any cause and from cardiovascular cause in patients who have previously suffered a myocardial infarction [7].

The same diet, but from plant sources, called "Eco-Atkins" by Jenkins DJ et al [8] led to an improvement in LDL cholesterol compared to a hyperglycemic diet [8].

Therefore, as well as in the low carb pattern diets, so it happens in high lipid diets. It is not about the amount, but about the quality of food.

Sajjadi SF et al. [11] aimed to analyze if a low-carb diet can produce any modification to the metabolic rate. They did that by analyzing a group of 304 obese women by BMI, body analyses (percent of fat, percentage of lean mass, visceral fat), and basal metabolic rate measured by indirect calorimetry. Patients were divided into three groups in terms of the value of basal metabolism compared to the standard: below the standard, within its limit, and above. The composition of the diet of enrolled subjects was analyzed using a standardized, semi-quantitative, food frequency questionnaire.

The conclusion was that the LC diets did not show any statistical significance between the groups but the components of the diet such as sugars, refined cereals and monounsaturated fatty acids (MUFA) showed statistical significance between the three groups [11].

Another nutritional approach to weight loss is intermittent fasting. This involves either the classic option, in which the patient has at

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least one day of fasting or the time-restricted diet, in which the patient follows complete digestive rest at a certain time of day, every day [4].

A 12-week trial that included 32 obese subjects who followed the pattern of intermittent fasting, meaning that on fasting days they had an energy intake of 25% of the total, and the rest of the days they ate without restrictions, they presented a weight loss of 5.2 kg compared to the control group on which no nutritional intervention was applied [12]. In another trial that aimed to compare weight loss over a period of 1 year, between 3 groups, one of intermittent fasting (25% of NC), one of calorie restriction (75% of NC) and another without intervention, showed no difference between the groups that had a nutritional intervention [13].

Another relatively new approach to dieting for weight loss is the "Calorie Shifting Diet," in which patients receive a different caloric intake, either overnight or differently between groups of days.

Such a diet was studied by Davoodi SH and his collaborators [14], in the trial in which he enrolled 74 sedentary, obese patients. The study was conducted over a period of 10 weeks, six with active nutritional intervention and four follow-ups. Patients were divided into two groups in terms of nutritional intervention: the first group was CSD, in which patients had 11 days with four meals/day, at an interval of four hours, followed by three days without restrictions, and the second group, CRD, followed a balanced and constant diet in terms of macronutrients throughout the study. The minimum energy contribution in both ruptures was 1100 kcal. At the end of this trial, it was found that weight loss, satiety, and eating comfort were similar between the two groups but the average RMB decreased less in the CSD group [14].

Conclusions

The more attention is paid to the real problems caused by obesity, the more the variants in nutritional intervention and trials that confirm or refute certain ideas of food patterns appear.

Table 1: Different dietary patterns and the basic recommendations. Adapted from 2, 3, 4.

	Kcal/day	Proteins (%)	Carbohydrate (%)	Lipids (%)	Fiber (g)	Recommendations
Low calorie balance diet	1000–1500	10–35	45–65	20–35	20–35	Low-calorie variants of healthy diets: • Mediterranean diet: high levels of monounsaturated lipids and low levels of saturated lipids; increased consumption of fruits, vegetables, grains, and starchy vegetables • DASH diet: 4/5 servings of fruits and vegetables/day; low fat dairy products
Low fat diet	1000–1500	10–35	45–65	<30	20–35	• Increased intake of fruits, vegetables, whole grains, starchy vegetables • Consumption of proteins with lipid intake as low as possible • Saturated lipids <10%
Intense low-fat diet	1000–1500	13–20	70–77	10		
Low carb diet			26–45	20–35		50–130 g carbs/day
Intense low carb diet			<26	20–35		20–50 g carbs/day

Restrictive variants help more or less but what is really clear is that a nutritional intervention that involves a dietary re-education of patients shows weight loss and increase in patients' quality of life similar to restrictive, low-calorie variants with or without certain clear dietary patterns.

The studies included in this article have highlighted that the quality and not the amount of carbohydrates can be the key to losing weight and/or maintaining optimal health when approaching the style with a diet high in carbohydrates.

On the other hand, the LCHF diet can be extremely harmful or can be healthy, with the same amount of lipids, but it is extremely important if these lipids are of vegetable or animal origin, mortality being higher in patients with high animal lipid intake compared to those with an increased intake of vegetable lipids.

Conflict of Interest

The authors declare no conflict of interest.

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