



NUTRITION IN OBESITY: MODERN APPROACHES TO DIETARY MANAGEMENT AND PREVENTION OF COMPLICATIONS

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Abstract

Obesity is a chronic, multifactorial disease characterized by excessive accumulation of adipose tissue and an increased risk of developing type 2 diabetes mellitus, cardiovascular diseases, arterial hypertension, and other metabolic disorders. Balanced nutrition plays an important role in the comprehensive management of obesity. This article discusses the fundamental principles of dietary therapy, the importance of energy balance, the roles of proteins, fats, and carbohydrates, and the selection of appropriate food products. Particular attention is paid to the development of sustainable eating habits, limiting foods with high energy density, and individualizing dietary recommendations. The importance of an integrated approach involving dietary modification, physical activity, and behavioral support is emphasized.

Keywords: Obesity, balanced nutrition, dietary therapy, energy balance, weight loss, metabolism, prevention, healthy lifestyle.

Introduction

Obesity is one of the most significant public health challenges worldwide. Its prevalence has increased in many countries due to changes in dietary patterns, reduced physical activity, urbanization, and other socioeconomic and behavioral factors. Obesity is recognized as a chronic disease in which excessive accumulation of body fat may negatively affect health. It is associated with an increased risk of type 2 diabetes mellitus, coronary heart disease, arterial hypertension, metabolic dysfunction-associated steatotic liver disease, obstructive sleep apnea, and certain types of cancer.



One of the key factors contributing to obesity is a sustained imbalance between energy intake from food and energy expenditure. However, its development is also influenced by genetic predisposition, hormonal regulation of appetite, sleep quality, psychological factors, certain medications, and environmental conditions.

Therefore, obesity management should not be limited to short-term diets. An individualized and long-term approach is necessary to improve eating behavior, reduce excess body weight, and decrease the risk of associated diseases.

Aim of the Study

To analyze the fundamental principles of balanced nutrition in obesity, determine the role of dietary therapy in weight reduction and the prevention of metabolic complications, and formulate practical recommendations for organizing daily meals.

Materials and Methods

This article is a narrative review based on current scientific knowledge regarding nutrition in obesity and the principles of preventing associated metabolic disorders.

The review focuses on dietary energy intake, macronutrient composition, food quality, meal patterns, and the development of sustainable behavioral changes.

The article does not present findings from an original clinical study or primary statistical analysis.

Results and Discussion

1. Fundamental Principles of Nutrition in Obesity

The primary objective of dietary therapy is to establish a moderate energy deficit that enables the body to gradually utilize stored energy reserves. At the same time, the diet must provide adequate amounts of protein, essential fatty acids, vitamins, minerals, and dietary fiber.

The main principles of nutrition in obesity include:

- Individualized determination of daily energy requirements.



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- Reduction in the consumption of foods with high energy density.
 - Increased intake of vegetables, fruits, and other sources of dietary fiber.
 - Adequate protein consumption.
 - Limitation of added sugars and saturated fats.
 - Reduced consumption of sugar-sweetened beverages.
 - Regular eating patterns adapted to individual hunger and satiety signals.
 - Adoption of realistic, safe, and sustainable dietary habits.

There is no single diet that is equally effective for everyone. Mediterranean, moderately low-carbohydrate, and balanced calorie-restricted diets can all support weight loss when they create a sustainable energy deficit and suit the individual's health status and preferences.

2. Dietary Energy Intake

Energy balance is one of the principal factors determining changes in body weight. When energy intake consistently exceeds energy expenditure, body fat accumulates. Gradual weight loss requires reducing energy intake relative to individual energy needs.

In clinical practice, a moderate energy deficit of approximately 500–750 kcal per day below estimated energy requirements is often used. However, the appropriate deficit should be individualized according to age, sex, initial body weight, physical activity level, comorbidities, and medications.

For many adults, gradual weight loss of approximately 0.5–1 kg per week may serve as a general reference, although the actual rate varies between individuals. Slower weight loss can also provide meaningful health benefits.

Even a reduction of 5–10% of initial body weight can improve certain indicators of glucose metabolism, blood pressure, and lipid profiles. Maintaining the results over time is more important than achieving rapid weight loss within a short period.

Excessive calorie restriction, prolonged fasting, and unbalanced mono-diets are not recommended without appropriate medical indications and supervision because they may lead to nutrient deficiencies, loss of muscle mass, and other adverse effects.



3. The Role of Proteins, Fats, and Carbohydrates

Proteins. Protein is essential for maintaining muscle tissue, cellular repair, and normal body function. Adequate protein intake during weight loss helps minimize the loss of lean body mass and promotes satiety.

Preferred protein sources include fish, poultry, eggs, lean meat, natural dairy products, beans, lentils, peas, and other legumes. Individual protein requirements should be determined according to health status, particularly in people with kidney disease or other conditions requiring dietary modification.

Fats. Dietary fat should not be completely eliminated because it is necessary for the absorption of fat-soluble vitamins and the provision of essential fatty acids. It is advisable to limit excessive saturated fat intake from fatty meat, butter, and certain confectionery products while prioritizing unsaturated fats.

Sources of unsaturated fats include olive and other vegetable oils, nuts, seeds, and fish. However, the energy density of fats should be considered, as excessive consumption of even healthy foods may hinder weight loss.

Carbohydrates. Carbohydrates should primarily come from foods rich in dietary fiber and other beneficial nutrients. These include whole grains, vegetables, fruits, legumes, and whole-grain bread.

Sugar-sweetened beverages, excessive confectionery, sweets, and other products containing large amounts of added sugar should be limited. Complete elimination of all carbohydrates is not necessary for successful obesity management.

4. Foods Recommended for People with Obesity

A diet for people with obesity should be varied and include foods with high nutritional value and moderate energy density.

Food group	Recommended options
Vegetables	Cucumbers, tomatoes, cabbage, carrots, broccoli, and leafy greens
Fruits and berries	Apples, citrus fruits, pears, and berries
Protein sources	Fish, chicken, eggs, lean meat, and legumes
Dairy products	Natural yogurt, kefir, milk, and cottage cheese without excessive added sugar
Grains and cereals	Oatmeal, buckwheat, brown rice, and whole-grain bread
Sources of healthy fats	Nuts, seeds, and vegetable oils in moderate amounts
Beverages	Water, unsweetened tea, and coffee without excessive sugar



Vegetables and foods rich in dietary fiber help increase meal volume and support satiety. Whole fruits are generally preferable to fruit juices because they contain more dietary fiber and tend to promote a greater feeling of fullness.

5. Foods That Should Be Limited

During weight management, it is advisable to reduce the consumption of:

- Sugar-sweetened carbonated beverages, energy drinks containing sugar, and sweetened juices.
- Confectionery, pastries, and desserts with high energy content.
- Fast food and fried dishes containing excessive added fat.
- Sausages and processed meat products.
- Foods with high salt content.
- Alcoholic beverages, which can substantially increase total energy intake.

Limitation does not necessarily mean completely prohibiting all favorite foods. A more sustainable long-term strategy involves controlling portion sizes, reducing the frequency of consuming foods with low nutritional value, and developing a balanced dietary pattern that can be maintained over time.

6. Meal Patterns and Eating Behavior

The organization of meals is important in obesity management, in addition to the composition of the diet. Regular meals may help some individuals manage hunger and avoid overeating, although there is no universally optimal number of meals suitable for everyone.

The following recommendations may be helpful:

- Plan meals according to individual daily schedules.
- Eat slowly and pay attention to feelings of fullness.
- Control portion sizes.
- Avoid eating automatically while watching television or working at a computer.
- Identify situations that trigger emotional eating.
- Keep a food diary when necessary.
- Ensure adequate nighttime sleep.



Individuals experiencing recurrent episodes of uncontrolled overeating, intense guilt after eating, or other signs of an eating disorder should seek professional assistance.

7. Example of a Balanced Daily Menu

The following example illustrates one possible meal plan and should not be interpreted as an individualized calorie-restricted prescription.

Breakfast: oatmeal, natural yogurt or an egg, fresh fruit, and unsweetened tea.

Mid-morning snack, if needed: an apple or a small portion of natural yogurt.

Lunch: vegetable salad, baked chicken or fish, buckwheat or another grain, and water.

Afternoon snack, if needed: cottage cheese without added sugar or a small portion of nuts.

Dinner: stewed or baked vegetables served with fish, poultry, or legumes.

Beverages throughout the day: primarily water, with the amount adjusted according to individual needs, climate, physical activity, and medical recommendations.

Portion sizes and the total energy content of the menu should be individualized. People with diabetes, chronic kidney disease, pregnancy, or other specific conditions may require additional dietary guidance from a healthcare professional.

8. Physical Activity and a Comprehensive Approach

Balanced nutrition is most effective when combined with physical activity, adequate sleep, and behavioral support.

Adults are generally advised to gradually work toward 150–300 minutes of moderate-intensity aerobic physical activity per week, provided their health status allows it. Strength-training exercises are also important because they help preserve muscle mass.

Obesity treatment may include consultations with physicians and dietitians, behavioral modification programs, medication when indicated, and bariatric surgery in selected cases. The choice of treatment depends on the severity of



obesity, the presence of complications, previous weight-loss attempts, and individual patient characteristics.

It is important to recognize that obesity is a chronic disease and that weight regain is not necessarily caused solely by a lack of personal motivation. Ongoing support, regular monitoring, and a long-term management plan increase the likelihood of maintaining the results achieved.

Conclusion

Balanced nutrition is one of the fundamental components of the comprehensive prevention and treatment of obesity. The most important principles include an individualized energy deficit, adequate protein intake, a preference for unsaturated fats, increased consumption of fiber-rich foods, and limitation of added sugars and foods with high energy density.

Successful weight management requires more than following a strict diet for a short period. It involves developing sustainable eating habits and maintaining regular physical activity. Even moderate weight loss can improve certain metabolic indicators and reduce the risk of complications.

An integrated approach that considers the patient's health status, food preferences, psychological characteristics, and lifestyle can make obesity management safer and more effective. Individualized recommendations from healthcare professionals are particularly important for people with concomitant chronic diseases.

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