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FEATURES OF PREVENTING NUTRITIONAL OBESITY AND ITS IMPACT ON HEALTH

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Abstract
Obesity is a chronic disease characterized by excess accumulation of body fat, which poses a health risk and is a major risk factor for a number of other chronic diseases, including type 2 diabetes mellitus (T2DM) and cardiovascular disease (CVD). Obesity is a multifactorial condition whose development involves, in addition to an imbalance between energy intake and expenditure, various neurohumoral mechanisms and environmental factors. A high-calorie diet and a sedentary lifestyle are among the most important causes of obesity [1].

Introduction

Obesity is currently considered a chronic, progressive disease characterized by excessive fat deposition in the body. The mechanisms underlying obesity are numerous and not fully understood. The most important factor in the development of the disease is excessive exogenous intake of easily oxidized lipids and their deposition in adipocytes. As the volume of metabolically active adipose tissue increases, the natural mechanisms regulating many physiological processes in the body are altered. Increased production of resistin, an insulin antagonist, inhibits insulin-dependent lipid breakdown. The sensitivity of the central nervous system to leptin, a hormone that regulates eating behavior, is significantly reduced. A vicious cycle of pathogenicity develops. Genetically determined changes in lipid metabolism, leading to their excessive accumulation, may also play a role. The combination of all these factors leads to the development of the disease [2]. Obesity is one of the most common chronic diseases worldwide, reaching epidemic proportions. The current rise in obesity is due to objective factors. Thanks to technological advances and the introduction of advanced technologies, the proportion of physical labor has decreased in both industry and agriculture, as well as in everyday life, with transportation virtually replacing walking. As people's lifestyles have changed, so have their diets. The modern diet now includes fewer natural foods and more processed foods requiring significant amounts of oil for preparation, as well as industrially produced dishes rich in easily digestible carbohydrates. The popularization of fast food, high-calorie drinks, and the computerization of leisure activities all contribute negatively to the development of obesity. According to the WHO, the number of people worldwide who are overweight (according to the Kettler index above 25 kg/mcg) is 1.7 billion. Among this population, 250 million people suffer from chronic obesity and associated early atherosclerosis, cardiovascular disease, type 2 diabetes, and some forms of cancer. It has been scientifically proven that every third premature death worldwide is related to diseases caused by obesity and physical inactivity. The rate of obesity spread in the modern world is such that, according to WHO experts, these figures will double by 2025 [3,4]. Nutrition plays a fundamental role in the system of medical and preventive measures aimed at strengthening and

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maintaining public health, as it determines the body's adaptive capacity and is the most physiological means of accelerating adaptation to adverse environmental factors. The rate of development and effectiveness of the body's adaptive responses to the effects of a range of adverse factors largely depend on an adequate supply of substrates for energy and plastic metabolism, as well as other essential nutritional factors. Deviations in the structure and quality of diets (protein-calorie malnutrition, deficiency of essential vitamins, macro- and micronutrients) exacerbate the adverse effects of natural, climatic, and environmental factors, causing a decrease in immune system activity and thereby contributing to the development of nutrition-related pathologies [5, 6]. According to the WHO, obesity is considered "abnormal or excessive accumulation of body fat that can adversely affect health." A number of foreign researchers classify overweight and obesity as complex, multifactorial, multigenic disorders that are closely linked to the characteristics of the psychosocial and cultural environment. Previously, the problem of obesity was considered relevant for countries with a high standard of living; however, the number of people suffering from overweight and obesity is currently growing in low- and middle-income countries, especially in urban areas. Currently, more than 30 million overweight children live in developing countries and 10 million in developed countries. The epidemiology and incidence of many chronic diseases, including obesity, depend on racial and ethnic differences, as well as on the characteristics of geographic and socioeconomic conditions of life [7,8]. Today, there is a significant increase in the number of patients with obesity, especially among the working-age population, which is an important medical and social problem. Millions of people worldwide suffer from obesity. According to WHO data, in 2022, 2.5 billion adults over the age of 18 were overweight, of which 890 million were obese to varying degrees. Recently, a trend has been observed towards an increase in the number of children and adolescents with obesity. In 2022, more than 390 million children aged 5 to 19 years were overweight (of which 160 million were obese), and 37 million children under 5 years of age. The global incidence of obesity allows us to talk about an obesity epidemic in the 21st century [9,10]. Despite the significant influence of environmental factors, the role of the genetic component in the development of obesity cannot be underestimated. Early family [8–11] and twin [12–14] studies have established that the contribution of genetic factors to BMI variability can reach 70–80%. Population-based studies of the prevalence of obesity in various ethnic groups also highlight the influence of genetic characteristics [11,12]. Through programs implemented in schools and workplaces, opportunities for physical activity in everyday life, such as active transportation, should be created and made accessible to the entire population. It is crucial that such measures reach all segments of society and that they are supported at all levels—from local communities to central government and the international level [13,14]. Modern dietary therapy for obesity includes a normocalorie diet balanced in all nutrients [18]. The diet should not interfere with the child's physical and mental development or interfere with physical activity, and the diet should provide sufficient satiety while being tasty and varied [15,16]. The urgency of the problem of excess weight is difficult to overestimate. Alimentary-constitutional obesity, especially its severe forms, is associated with a number of serious medical conditions. These include type 2 diabetes mellitus (DM), arterial hypertension (AH), coronary heart disease (CHD), obstructive sleep apnea syndrome (OSAS), cholelithiasis, osteoarthritis, and others. All of these conditions cause early disability and mortality and require significant treatment and rehabilitation costs. According to data accumulated to date, obesity, especially severe obesity, is a risk factor for

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the development of depressive disorders, which affect the quality of life of these individuals. At the same time, people suffering from depressive disorders have an 18% higher risk of developing alimentary-constitutional obesity [8]. Depression itself, being a trigger for obesity, can significantly worsen the results of its treatment. [16, 17, 18].

To prevent obesity, it is necessary to maintain a balance between calories consumed and expended, follow healthy eating habits, and increase physical activity throughout the day. Thus, the high incidence rates, high risk of developing comorbidities, disability, and mortality among working-age patients, as well as among children and adolescents, underscores the medical and social significance of the obesity epidemic.

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