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Review Article

Obesity prevention in children and adolescents – Current recommendations

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ABSTRACT

Introduction: The epidemic of obesity in children and adolescents is one of the major problems of 21st century society. About 70–80% of young people diagnosed with obesity in adolescence will become obese adults. In Poland, an excess of body weight affects every 7th teenager aged 13–15 (13.3%). The prevalence of excess body weight in 14–15 year olds has increased over the past 10 years by about 2.0% and obesity by 1.5%.

Aim: This work aimed at demonstrating the merits of obesity prevention and rehabilitation.

Discussion: The effectiveness of the prevention of obesity and being overweight among children and adolescents depends on early diagnosis, which involves screening in elementary, middle and high schools as well as the implementation of effective prevention programs and education. The planning of treatment for obese children should be guided by their family history, environment, neurological and physical examinations and the hitherto rehabilitation for the delineation of an optimal individualized rehabilitation program. In addition, laboratory tests should be taken into account for a complete assessment concerning the current condition of the child.

Conclusions: The prevention of obesity requires early diagnosis and rehabilitation as well as effective obesity prevention programs and education.

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1. Introduction

Obesity is a disease of modern civilization and is more common in industrialized countries.⁷ The epidemic of obese and overweight children and adolescents is one of the major problems of 21st century society.⁶ The current population of American children will be the first to have a shorter life expectancy than their parents.^{17,20} About 70–80% of people diagnosed with obesity during adolescence will become obese adults.⁶ In the United States, if current trends are maintained, obesity will become the most common cause of premature death, decreased quality of life and increased healthcare costs. This problem imposes a direct financial burden on society. Researchers from George Washington University estimate that an average obese person, due to the decline in their productivity and the need to ensure additional medical care for them, costs the American society about \$7000 per year.⁷

As defined by the World Health Organization (WHO), obesity is an abnormal or excessive accumulation of body fat, leading to deterioration in health and is the result of a long-term imbalance between the amount of energy input and its expenditure.²⁰ The basis of this mechanism is the regulation of energy which is subject to genetic (40–50%) and environmental factors (50–60%). Obesity can lead to hypertension, glucose metabolism and lipid disorders, macroelements, microelements and musculoskeletal disorders, sleep apnea, as well as psychological disorders such as low self-esteem and lowered self-esteem.²⁰

2. Aim

This paper is intended to outline the need for and the implementation of prevention and rehabilitation in the treatment of obesity in children and adolescents by increasing muscle mass and body fat reduction.

3. Discussion

3.1. Epidemiology and causes of obesity

By analyzing obesity among children and adolescents in relation to the country of its occurrence, it can be concluded that the following states are burdened with the epidemic: the United States, Canada, Brazil, Chile, Australia, Japan, Finland, Germany, Greece, Spain, and the United Kingdom. As compared to European countries, the number of overweight and obese children in Poland is average.^{14,20} In Poland, excess body weight affects one in seven teenagers aged 13–15 years (13.3%).^{14,6} The peak for being overweight and obese, in both boys and girls, occurs at the age of 14.² The prevalence of excess body weight for 14–15 year old adolescents has increased over the past 10 years by about 2.0% (2.4% in boys and 2.0% in girls) and obesity by 1.5% in boys and 2.0% in girls.⁶ Currently 42 million children under the age of five are overweight or obese, of which 35 million are living in middle and low income countries.²¹

The main causes of obesity are poor eating habits, a low level of physical activity and an inappropriate range of extracurricular activities. Research concerning the prevalence of obesity among children conducted in different Polish provinces and regarding the educational and professional status of their parents has shown no significant statistical differences.⁶ Another factor contributing to abnormal weight in children and adolescents is eating as a response to environmental stress and isolation from peers and teachers.²⁰ More than a third of overweight students do not participate regularly in physical education classes and 2% of them are permanently exempt.¹⁰ The risk of obesity is increased by frequent snacking between meals, consumption of highly sweetened carbonated beverages and having one or two obese parents (which is the case for 40% of children).⁶

Theoretical grounds for obesity are found at various levels: at the level of the central nervous system – in biochemical terms, constant overeating is similar to drug addiction; at the metabolic level – a low level of brown fat as compared to that of white fat in the subcutaneous and visceral tissue; and at the genetic level – the presence of over 20 different genes that predispose one to more rapid weight gain.⁷ The problem of obesity is influenced by the global economy (junk food is much cheaper than fresh produce) and marketing (food manufacturers use evolutionary and social conditions in order to maximize the sales of unhealthy products to generate high profits). Independent factors for being overweight or obese include a mother's poor diet during pregnancy, too short or too long a period of breastfeeding, and a family history of poor eating habits.²⁰ Also, irrational and extreme methods for losing weight like fasting, smoking, or induced vomiting contribute to being overweight.⁶

3.2. Effects of obesity

In overweight children and adolescents we can expect to find components of the metabolic syndrome such as increased levels of blood serum triglycerides, low HDL cholesterol levels and high blood pressure.^{10,20} These factors contribute to an increased risk or incidence of myocardial infarction, left ventricular heart failure, stroke, nephropathy, elevated plasma glucose, and fasting insulin resistance. Contemporary children present a significant increase in the left ventricular mass index (LVM) in relation to the previous generation (currently: 32.7 ± 7.8 g/m; previously: 31.5 ± 8.1 g/m) and this increase is linked primarily to the increase in body mass index (BMI) of about 8 kg/m^2 .⁹ Obesity is associated with endocrine disorders such as excessive growth of fat tissue around the nipples in boys (steatomastia), excessive accumulation of fat in the abdomen and pubic mound (pseudohypogonitalism), hyperinsulinemia, polycystic ovarian syndrome and precocious puberty in obese girls (average age at menarche is 0.3 years earlier than in their non-obese peers).^{6,20}

Regardless of etiology, obese patients have fatty liver. This condition can lead to inflammation and cirrhosis. Overweight children report psychosomatic disorders.⁶ Typical postural deformities of obese children are valgus knee as well as flat and lopsided foot due to overloading of joints, which may lead to pain in the future.¹² There is no correlation between the incidence of asthma and being overweight in children.²²

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