Obesity is an unresolved public health problem, but it causes a variety of serious medical complications, reduces the quality of life and leads to increased morbidity and premature death. The article discusses current approaches for treating obesity. There are various methods for the treatment of obesity: diet therapy, exercise therapy, physiotherapy, pharmacotherapy, psychotherapy, surgical treatment.

**Keywords:** obesity, overweight, diet, physiotherapy, pharmacotherapy, prevention, cardiovascular disease, physical activity, diet, pharmacotherapy, treatment.

### Introduction

In accordance with the WHO - overweight and obesity are defined as excessive fat accumulation that presents a risk to health. A crude population measure of obesity is the body mass index (BMI), a person’s weight (in kilograms) divided by the square of his or her height (in metres). A person with a BMI of 30 or more is generally considered obese. A person with a BMI equal to or more than 25 is considered overweight, shown in table 1.

<table>
<thead>
<tr>
<th>Types of body weight</th>
<th>BMI (kg/m²)</th>
<th>Risk of co-morbidities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Underweight</td>
<td>&lt; 18.5</td>
<td>Normal</td>
</tr>
<tr>
<td>Normal weight</td>
<td>18.5-24.9</td>
<td>Low (increases the risk of other diseases)</td>
</tr>
<tr>
<td>Overweight (pre-obese)</td>
<td>25-29.9</td>
<td>Increased</td>
</tr>
<tr>
<td>Obesity I degree</td>
<td>30.0-34.9</td>
<td>High</td>
</tr>
<tr>
<td>Obesity II degree</td>
<td>35.0-39.9</td>
<td>Very high</td>
</tr>
<tr>
<td>Obesity III level</td>
<td>≥40.0</td>
<td>Extremely high</td>
</tr>
</tbody>
</table>

### Table 1 – Obesity Classification by body mass index* (WHO, 1997)

Overweight and obesity are major risk factors for diabetes, cardiovascular diseases and cancer. Once considered a problem only in high income countries, overweight and obesity are now dramatically on the rise in low- and middle-income countries, particularly in urban settings.

From the ingenious invention of nature - fat, that worn the protective function in the past, is now really affecting millions of people. Currently, in most countries of Western Europe and the United States more than 40% of the population are obese, whereas in Germany obesity index is up to 60%. Moreover, these figures are rising every year, even in developing countries [1]. In the United States from 1975 to 1984 the number of overweight people has increased by 5% and in the last 12 years the number of obese people has increased by 10% in this country. Ideal body weight for their height in the United States have only 22% of women and 20% of men [2]. Obesity can be determined as a heterogeneous and multifactorial disease, is closely associated and linked through a complex metabolic and hormonal disorders with hypertension, cardiovascular disease, type 2 diabetes and some cancers, impaired function of the musculoskeletal system, reproductive system and etc. [3].

Whole the percentage of obese people in the economically developed countries, the results of epidemiological studies in recent years is quite disappointing: every third inhabitant of these countries has a weight that exceeds the maximum allowable weight [4].

By 1998, obesity has already reached 34 million people in the United States. According to the latest census, 2/3 of the US population are overweight [5].

With regard to European countries, the prevalence of obesity figures are also impressive. The incidence somewhat higher in southern Europe than in Scandinavia. In the UK, 37% of men and 24% of women have a body mass index of 20 to 30 kg/m², whereas 9% of men and 12% of women have body mass index that exceeds 30 kg/m². In Scotland, the figure is even higher obesity - a BMI over 30 kg/m² is observed in 12% of men and 20% women. At the same time in England each year for the treatment of obesity and related diseases costs 12 billion pounds [6].

Obesity is one of the main, but avoidable risk factor for type 2 diabetes, cardiovascular diseases and cancer minutes, the pathology of the locomotor and digestive system, and reproductive dysfunction in women and men.

### Treatment of obesity

Obesity and all obesity related issues are becoming increasingly heavy economic burden on society. In the developed countries the treatment of obesity accounts for 8-10% of all annual healthcare costs [7].

Currently available weight loss treatment involves changing diet, increasing physical activity, behavior modification, medication and surgery.

**Diet change.**

The key treatment of obesity is a rational balanced diet that hypocaloric in body weight reduction period and ensures adequate intake of energy, vitamins and minerals. It can be said that the establishment of proper nutrition is central to defining place in the treatment of obesity.

It is recommended gradual and long-term changes in dietary patterns, eating habits, instead of temporary restriction of certain products. Changes in the nature and diet are difficult and lengthy process. During this period, the introduction of a food diary can help. Based on the analysis of the food diary individual recommendations for a balanced diet are provided. First of all, energy has to be decreased with food intake. This can be achieved by reduction of daily energy intake, decrease in consumption of fat and alcohol. Individual daily requirement is calculated according to the formulas by sex, age, weight and level of physical activity.
With minimal physical effort the result remains unchanged. With an average level of physical activity it is multiplied by a factor of 1.3 and at high level it is multiplied by a factor 1.5 [8].

**Physical activity.**

Compulsory component to reduce body weight is to increase physical activity. There including aerobic exercise, for weight loss and to maintain lower weight. This aerobic exercise helps to reduce body fat in the abdominal region and improvements in lipid and carbohydrate metabolism. However, only the increase in physical activity is an inefficient strategy for the initial weight loss.

**Medication.**

Conventional treatment of obesity associated with high incidence of recurrence. It is therefore most important goal of medical treatment is to maintain long-term weight loss. Medication can not be considered a quick way to weight loss because patients with the use of slimming drug treatment, usually return weight after cessation of exposure.

Drug therapy of obesity is needed as well as with any other chronic disease. It is designed to significantly increase the effectiveness of non-drug therapies, effectively help to reduce body weight, prevent relapse, improve metabolic parameters, increase the commitment to the treatment of patients [9].

First pharmacotherapy is indicated for the ineffectiveness of non-drug methods - weight loss of less than 5% within 3 months of treatment. The first publications on the treatment of obesity pharmaco-drugs appeared in 1893. Then, in order to reduce body weight for the first time began to apply the extract of thyroid tissue of animals. However, clinical experience has shown that long-term use at high doses the drug caused hyperthyroidism and increased appetite. The effectiveness of treatment remained very low. The search for new forms of drugs led to the emergence in 1933 of dinitrophenol. However, its long-term use was complicated by the development of cataracts and neuropathy. The breakthrough in the treatment of obesity was a synthesis in 1937 of a new drug amphetamine appetite suppressant. But it was soon noted that the drug has a high potential to cause drug dependence.

Current drugs for the treatment of obesity should have a known mechanism of action, proven clinical efficacy and safety, passing side effects, is well tolerated, does not cause dependence, have a positive impact on obesity related metabolic disorders.

**Surgical methods.**

Surgical treatment is carried out only for patients with severe obesity (BMI = 40), provided that the other treatments did not result in a clinically significant reduction in body weight or are severe comorbidities. It is now widely applied restrictive gastric surgery (vertical and horizontal gastroplasty) and combined intervention (gastrojejunal, Bilopancreatic bypass surgery). As a rule, after surgery reduced body weight in the first year by 50-70%, with the most intense - in the first 6 months [9].

**Conclusion.**

Thus, patients with the most common disease obesity cannot be left without medical assistance. According to WHO recommendations the effectiveness of the treatment is assessed at the stage of weight loss: successful-reducing it by more than 5 kg with a reduction in the influence of risk factors; excellent-reduction of more than 10 kg; exclusive - more than 20 kg. At the maintenance of body weight is increasing it less than 3 kg over 2 years of follow up, as well as a steady decrease in waist circumference by 4 cm.

Treatment of obesity, as well as any chronic disease is a lifetime process, and only the joint efforts of the doctor and the patient can achieve a positive result.

**REFERENCES**

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**For women**

18-30 years (0.0621 xmass in kg + 2.0357) x 240
31-60 years (0.0342 xmass in kg + 3.5777) x 240
over 60 years (0.0377 xmass in kg+ 2.7545) x 240

**For men**

18-30 years (0.0630 xmass in kg + 2.8957) x 240
31-60 years (0.0484 xmass in kg + 3.6534) x 240
over 60 years (0.0491 xmass in kg + 2.4587) x 240