

OBESITY. PRINCIPLES OF HEALTHY DIET. DIETARY TREATMENT IN CIVILIZATION DISEASES.



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OBESITY (E 66)

- Chronic disease characterized by excessive accumulation of body fat (>25% of body weight in men and >30% of body weight in women)
- A disease related to excess body fat, not excess body weight.



DIAGNOSIS CRITERIA

1. BMI screening test
2. Waist measurement
3. Waist-hip ratio (WHR)



CLASSIFICATION OF BODY WEIGHT DISORDERS BMI (MC KG/ WZ M ²) ACCORDING TO

- BMI < 18.5 underweight
- BMI 18.5-24.9 normal
- BMI 25-29.9 overweight
- BMI > 30 obesity
- BMI 30-34.9 obesity I degree
- BMI 35-39.9 obesity II degree
- BMI >40 obesity III degree (morbid)



Obesity type WHR	women	men
Ventral, central	>0.85	>0.9
Thigh-gluteal	≤ 0.85	≤ 0.9



CLASSIFICATION OF BODY WEIGHT DISORDERS IN CHILDREN

- BMI percentile charts by age
- BMI ≥ 95 percentile obesity
- BMI ≥ 85 to < 95 percentile overweight



EPIDEMIOLOGY

- Obesity is a social problem in highly developed countries and may reach epidemic proportions in the future.
- It is considered a threat to civilization.



OBESITY - ETIOPATHOGENESIS

- **Nutritional causes**

improper diet

psychoreactive disorders

- **little physical activity**

aging

disability

- **genetic factors**

- leptin gene and its receptor

- POMC gene

- PC1 gene

- MCR4 gene

- medicines

- psychotropic

- steroids

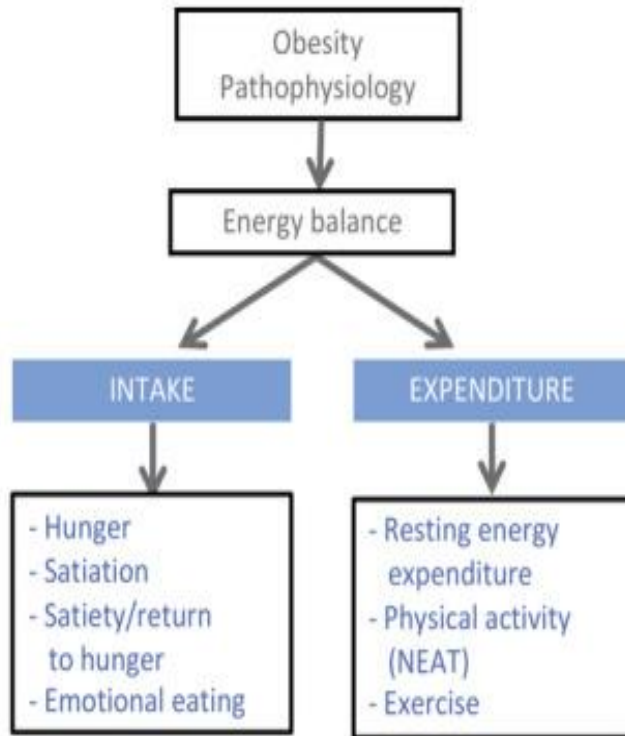


- **Endocrine causes**
- hypothalamic syndrome
- Cushing's syndrome/disease
- secretory insulinoma and hyperinsulinemia
- hypogonadism
- hypothyroidism
- pseudohypoparathyroidism
- growth hormone deficiency
- polycystic ovary syndrome

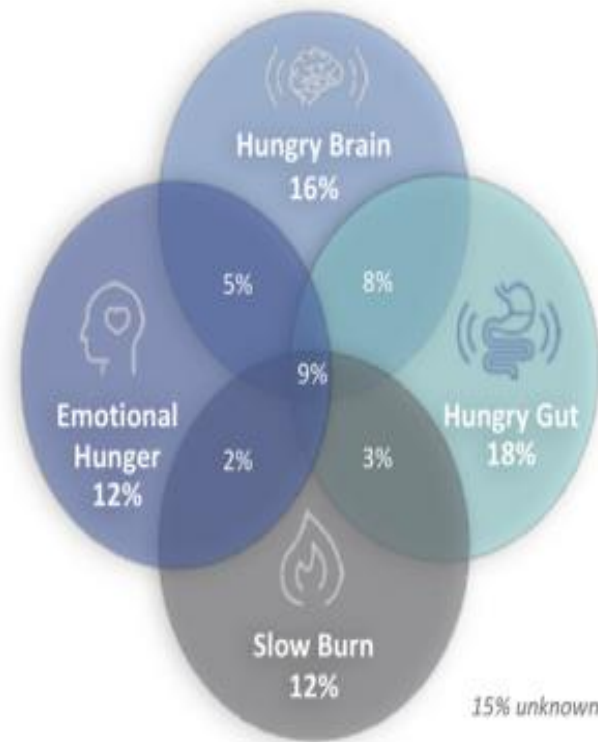


OBESITY PHENOTYPES

A



B



SIMPLE OBESITY

- Simple obesity is caused by excessive food intake in relation to energy expenditure.



**FOR THE MANAGEMENT OF
PATIENTS WITH OBESITY 2022,
POSITION OF THE POLISH
SOCIETY FOR THE TREATMENT
OF OBESITY, PRACTICAL
MEDICINE – SPECIAL EDITION,
MAY 2022.**





Review

Childhood Obesity: Position Statement of Polish Society of Pediatrics, Polish Society for Pediatric Obesity, Polish Society of Pediatric Endocrinology and Diabetes, the College of Family Physicians in Poland and Polish Association for Study on Obesity

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DISEASES ASSOCIATED WITH OBESITY

- hypertension and coronary artery disease
- type 2 diabetes and pre-diabetes
- degenerative disease of the knee, hip and spine joints
- venous thromboembolism and varicose veins of the lower limbs
- obstructive sleep apnea and hypoventilation syndrome
- gallstone disease
- menstrual disorders or hirsutism in women
- gynecomastia and libido disorders in men
- gout
- colorectal cancer, gallbladder cancer and hormone-dependent cancers (breast and endometrial cancer in women, prostate cancer in men)
- kidney failure
- nonalcoholic fatty liver disease



Complication	Therapeutic purpose	Clinical purpose
metabolic syndrome	↓10%	type 2 diabetes prevention
prediabetes	↓10%	type 2 diabetes prevention
Type 2 diabetes	↓ ≥ 5-15%	reduction in HbA1c, reduction in the number and/or doses of glucose-lowering medications, remission of diabetes, especially when the duration of diabetes is short
dyslipidemia	↓ ≥ 5-15%	TG reduction, LDL-C reduction, non-HDL-C reduction
arterial hypertension	↓ ≥ 5-15%	lowering systolic and diastolic blood pressure, reducing the number and/or doses of antihypertensive drugs
NAFLD	↓ ≥ 5-40%	reducing the intensity of steatosis, reducing the intensity of inflammation and fibrosis
PCOS	↓ ≥ 5-15%	ovulation, regularization of menstrual cycles, reduction of hirsutism, improvement of insulin sensitivity, reduction of androgen concentration in the blood, pregnancy and live birth
infertility in women	↓ ≥10 %	ovulation, pregnancy and live birth
male hypogonadism	↓ ≥ 5-10%	increased testosterone levels in the blood
obstructive sleep apnea	↓ ≥7 -11%	reduction of the apnea-hypoxia index
asthma / bronchial hyperreactivity	↓ ≥7-8 %	improvement of forced expiratory volume in the first second
degenerative joint disease	↓ ≥ 5-10%	reducing the severity of osteoarthritis symptoms, improving physical fitness
stress urinary incontinence	↓ ≥ 5-10%	reducing the severity of symptoms
Gastroesophageal reflux disease	↓ ≥ 10%	reducing the severity of symptoms
depression	uncertain	reducing the severity of symptoms

OVERWEIGHT AND OBESITY CAUSE DISABILITY AND REDUCED LIFE EXPECTANCY

- overall obesity shortens life expectancy by 6 to 7 years
- A BMI of 30–35 kg/m² shortens life expectancy by 2 to 4 years
- Morbid obesity (BMI > 40 kg/m²) shortens life expectancy by 10 years



5-10% WEIGHT REDUCTION CAUSES:

- ↓ 20% mortality
- ↓ 30% reduction in mortality due to diabetes
- ↓ 40% reduction in cancer mortality
- ↓ by 10% of systolic blood pressure
- ↓ by 20% of diastolic blood pressure
- ↓ by 50% of fasting blood glucose levels
- ↓ by 10% of total cholesterol
- ↓ by 15% LDL cholesterol
- ↑ by 8% HDL cholesterol



MEDICAL EXAMINATION OF AN OBESITY PATIENT

Dietary history – number of meals eaten at the table, snacking between meals (frequency, type of meal, circumstances), time of the strongest feeling of hunger, family history (obesity in the family, eating patterns and physical activity)

Psychological interview – episodes of overeating, feeling anxious, feeling of loss of control, eating despite being full, feeling ashamed of the amount of food eaten, feeling guilty

Assessment of motivation to introduce changes, feasibility of weight loss, period of obtaining the effect, reasons for motivation (improvement of health, sleep, well-being, appearance)

Environmental interview – assessment of physical activity, type of physical activity, frequency, physical activity questionnaire

Addictive substances: alcohol – frequency, type, quantity, cigarettes, drugs



MEDICAL EXAMINATION OF AN OBESITY PATIENT

- ❑ When did you **first** gain significant weight?
- ❑ It is necessary to determine **the amplitude of body weight changes** : the highest / lowest body weight in adult life
- ❑ Attempts to treat increased body weight - **what treatment?** Treatment effects. Time to maintain reduced body weight
- ❑ Common **chronic diseases**
- ❑ Actively looking for obesity complications:
 - carbohydrate metabolism disorders
 - obstructive sleep apnea
 - kidney or liver failure
 - diseases of the cardiovascular system
 - mental disorders



SUBJECTIVE EXAMINATION OF AN OBESITY PATIENT

- changes in body weight from childhood, through adolescence, and into adulthood; the rate of weight gain and the circumstances surrounding it
- obesity in the family
- family eating habits and eating behaviors (stress response, binge eating episodes)
- physical activity (lifestyle, professional work, exercise tolerance)
- the results of weight loss attempts to date (circumstances of success and failure)
- ailments resulting from obesity complications
- motivation to lose weight and possible limitations in achieving this goal (professional work, lifestyle, economic situation)



PHYSICAL AND LABORATORY EXAMINATION:

- Assessment of obesity complications: RR, varicose veins of the lower extremities, edema
- The following tests should be ordered: serum glucose levels, lipid profile, uric acid and TSH, as well as aminotransferase activity (AST and ALT)
- Serum glucose levels, lipid and uric acid profiles, and aminotransferase activity (AST and ALT) should be measured at least once every two years in overweight patients with obesity of the first degree, and at least once a year in patients with obesity of the second and third degree.



OVERWEIGHT AND OBESITY CHILDREN

- Screening tests (OGTT or HbA1c) for type 2 diabetes should be performed in children after the onset of puberty or after the age of 10 years, with a BMI \geq 85th percentile for age and sex, and risk factors for type 2 diabetes. If the test results are normal, they should be repeated at least every 3 years. Annual screening is necessary if the BMI increases, the cardiometabolic risk profile worsens, there is a strong family history of type 2 diabetes, or evidence of prediabetes.
- *Clinical recommendations for the management of people with diabetes - 2024 Position of the Polish Diabetes Association*



OVERWEIGHT

T

OBESITY

I°

OBESITY

II°

OBESITY

III°

TREATMENT OF TYPE 2 DIABETICS DEPENDING ON THE SEVERITY OF THE DISEASE:

BARIATRIC SURGERY

PHARMACOLOGICAL TREATMENT OF OBESITY

REDUCTION DIET + PHYSICAL ACTIVITY + PSYCHOTHERAPY

TREATMENT OF WEIGHT AND OBESITY WITH CONCOMITANT TYPE 2 DIABETES



WEIGHT LOSS PROGRAMS - DIET, CONTROLLED PHYSICAL ACTIVITY

- Most people are able to reduce their body weight by 5-10% of their initial weight.
- Achieving the desired body weight is impossible for most patients.
- Higher expectations regarding target body weight are associated with more frequent abandonment of the weight loss program.



DIETARY TREATMENT

- A review comparing low-fat diets with low-carbohydrate diets, diets with restricted overall energy intake, or diets with a low glycemic index did not show any advantage of one over the other (after 22 months, body weight loss was comparable)
- During the first 6 months, a greater weight loss is observed with a low-carbohydrate and low GI diet.



FACTORS THAT PREDICT SUSTAINABLE MAINTENANCE OF REDUCED BODY WEIGHT.

- continuing a low-calorie diet (average ~1400 kcal/day);
- eating low-fat foods with moderate carbohydrate content (~24% of energy from fat)
- frequent monitoring of body weight and constant monitoring of food intake

- physical exercise at least 60-90 minutes almost every day of the week (2800 kcal/week)

- eating breakfast every day (as opposed to the typical habits of people trying to lose weight)



PHARMACOLOGICAL TREATMENT OF OBESITY

- It is used in people with obesity or overweight and BMI ≥ 27 kg/m² and 1 of the obesity-related diseases (disorders of carbohydrate metabolism - prediabetes or type 2 diabetes, hypertension, dyslipidemia, obstructive sleep apnea) if the body weight could not be reduced sufficiently using non-pharmacological methods (these should be continued during pharmacotherapy)



ORLISTAT

- reduces fat absorption, by binding to intestinal lipases it inhibits the digestion and absorption of fats,
- increases fat excretion in feces, fatty diarrhea
- dosage: 120 mg 3 times a day

Contraindications to the use of orlistat include:

- malabsorption syndrome,
- cholestasis,
- pregnancy,
- breast-feeding,



METFORMIN

- Metformin is the first-line drug for treating type 2 diabetes in overweight and obese people.
- A drug with proven efficacy in treating pre-diabetes,
- Its effectiveness is almost half that of lifestyle modification (31% vs. 51%).
- The use of metformin can delay the development of type 2 diabetes by about 10 years.



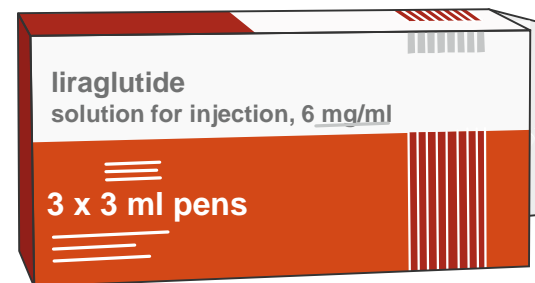
NALTREXONE+BUPROPION

- Naltrexone - opioid receptor antagonist
- Bupropion - dopamine and noradrenaline reuptake inhibitor
- Multidirectional mechanism of action on the satiety centers in the brain (arcuate nucleus of the hypothalamus) and the reward system (mesolimbic dopamine system)
- Available in Europe since 2017
- A combination product containing bupropion hydrochloride and naltrexone hydrochloride, most beneficial for people who have problems with excessive appetite and/or do not feel full after a meal, i.e. in most patients with obesity



LIRAGLUTID

- When treating obesity pharmacologically, it is also necessary to reduce the risk of developing its complications or assist in their treatment.
- The use of liraglutide is associated not only with benefits resulting from weight loss itself, but also, among others, with a reduced risk of transition from prediabetes to type 2 diabetes and a reduced cardiovascular risk (CVR), as indicated by the results of studies in diabetics treated with a lower dose of this drug.



LIRAGLUTID

- human GLP-1 analogue taken once daily
- Registered in the treatment of DM t. 2 as a supplement to appropriate diet and physical exercise in adults and children ≥ 10 years of age in monotherapy, in patients for whom metformin is not recommended due to intolerance or existing contraindications, or in combination with oral antidiabetic drugs and/or insulin.



LIRAGLUTID

Controls body weight, along with a reduced-calorie diet and increased physical activity:

1. In adolescents aged ≥ 12 years with obesity (BMI \geq 95th percentile according to the percentile chart for a given sex and age) or body weight > 60 kg
2. In adults with a baseline value of ≥ 30 kg/m² or in the range of 27- <30 kg/m² but with at least one comorbidity associated with abnormal body weight



SEMAGLUTIDE

- long-acting GLP-1 receptor agonist
- 94% homologous to GLP-1

- registered for the treatment of obesity in adults in December 2022 (FDA) and March 2023 (EMA) at a dose of max 2.4 mg once a week



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TIRZEPATYD

- Long-acting GLP and GLP-1 receptor agonist
- It is a sequence of amino acids including a dibasic C20 fatty acid, which allows it to bind albumin and extends the half-life (this is 5 days = use once a week)
- Plasma concentrations in patients with renal and hepatic impairment do not differ from those in healthy subjects.



SURGICAL TREATMENT OF OBESITY - BARIATRIC SURGERY

- Indications for surgical treatment financed by the National Health Fund include:
 1. obesity class III (BMI ≥ 40 kg/m²)
 2. Obesity class II (BMI 35–39.9 kg/m²), if ≥ 1 obesity complication is found and surgically induced weight loss may potentially improve obesity-related diseases



- Mainly laparoscopic procedures are performed to limit the digestion and absorption of food and to affect the neurohormonal regulation of food intake.
- Restrictive surgeries limiting stomach capacity (adjustable-reversible band, vertical gastropasty with banding, sleeve gastrectomy)
- Exclusion surgeries (Rou-en-Y gastric bypass, biliary-pancreatic bypass)
- The most commonly used surgical methods today include sleeve gastrectomy and gastric bypass with loop anastomosis or RouxY.
- Surgical treatment of obesity reduces the risk of death by 40%, is effective, annual weight loss of about 30-40 kg, complications similar to other digestive surgery

Since December 2021, a pilot program of comprehensive, coordinated medical care for patients with morbid obesity treated surgically (KOS-BAR) has been implemented in selected centers in our country.



ROLE OF LR IN THE CARE OF OVERWEIGHT AND OBESITY PATIENTS

- Promotion of a healthy lifestyle among all patients - principles of healthy eating, physical activity
- Obesity prevention, especially in children and adolescents
- Health education on the complications of obesity and the benefits of weight loss
- Screening tests as part of general preventive medical examinations, in adults every 2 years measurement of waist circumference, weight, determination of BMI
- Diagnostics of the patient with obesity (BMI, waist circumference), risk factors, obesity-related diseases, cardiovascular risk assessment, diabetes risk assessment, mental state assessment, laboratory and possibly imaging tests, diagnosis of obesity complications,
- Minimal anti-obesity intervention -5 P
- Treatment-lifestyle modification, dietary programs, increased physical activity, pharmacotherapy
- Referral to a dietitian, endocrinologist, bariatric surgeon, and other specialists
- Referral to sanatorium treatment and treatment programs
- Care after bariatric treatment, cooperation with specialists with specialists



PREVENTING OVERWEIGHT AND OBESITY IN ADULTS

To prevent overweight and obesity, the following should be recommended:

- principles of healthy eating presented in the form of the Healthy Eating Plate (NIZP-PZH 2020)
- regular consumption of 4-5 meals a day,
- regular physical activity: 45-60 minutes
- daily moderate physical activity during leisure time.



SHAPING GOOD HABITS RELATED TO PHYSICAL ACTIVITY IN CHILDREN.

At least 60 minutes of daily physical activity of moderate intensity (at 60-70% of maximum heart rate, calculated using the formula $220 - \text{age}$) should be recommended

Particularly recommended forms of exercise are brisk walking, cycling, swimming and water exercises.



NUTRITIONAL DISORDERS

Night eating syndrome
Food/Food Addiction
Emotional eating
Bulimia nervosa
Compulsive eating disorder

