Obesity as a medico-social issue

Moath Abdelrahman Ahmed, student of 5th course

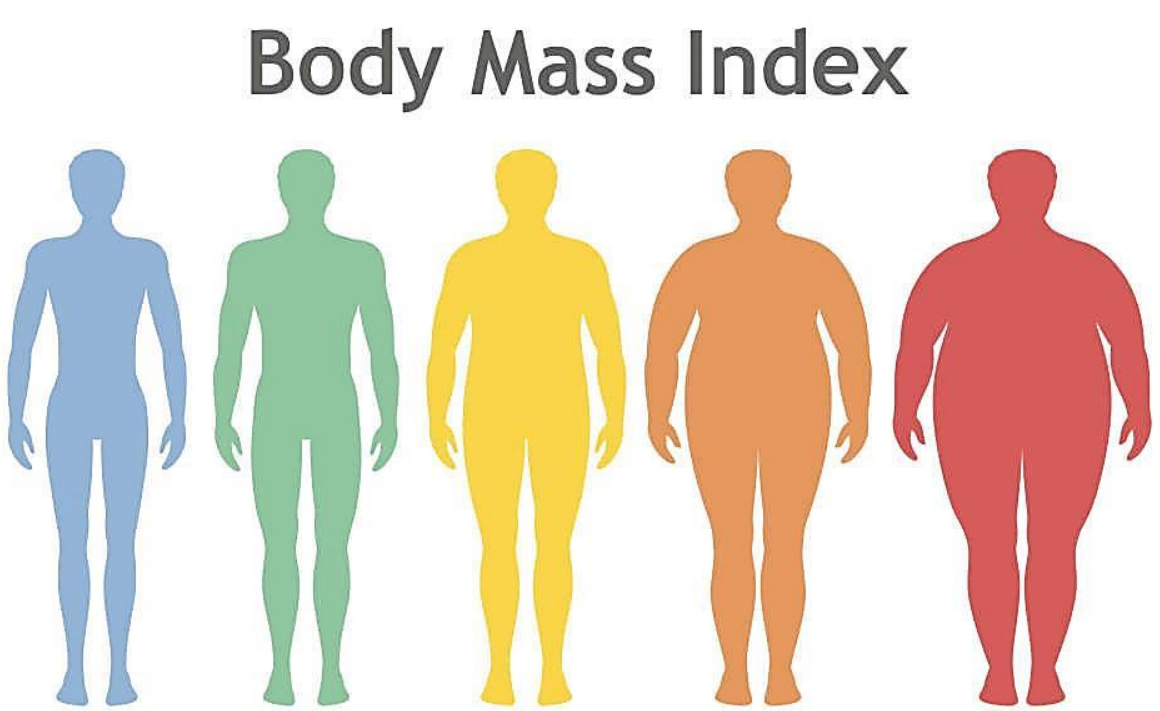
Supervisor: Golubkina E.O., assistant prof., Skokova N.I., assistant prof.
Department of Internal Medicine
V. N. Karazin Kharkiv National University

What is Obesity?

- The World Health Organization (WHO) has declared obesity as the largest global chronic health problem in adults which is increasingly turning into a more serious problem than malnutrition.
- **Obesity** represents a state of abnormal or excessive storage of body fat that may impair health with BMI (body mass index) greater or equal 30 kg/m^2 .
- Obesity is associated with an excessive caloric intake, decreased energy expenditure and/or a combination of the two.

https://www.who.int/features/factfiles/obesity/en/

Obesity classification



European Guidelines for Obesity Management in Adults, 2015

Category	BMI, kg/m^2
Underweight	<18.5
Healthy weight	18.5–24.9
Pre-obese state	25.0–29.9
Obesity grade I	30.0–34.9
Obesity grade II	35.0–39.9
Obesity grade III	≥40

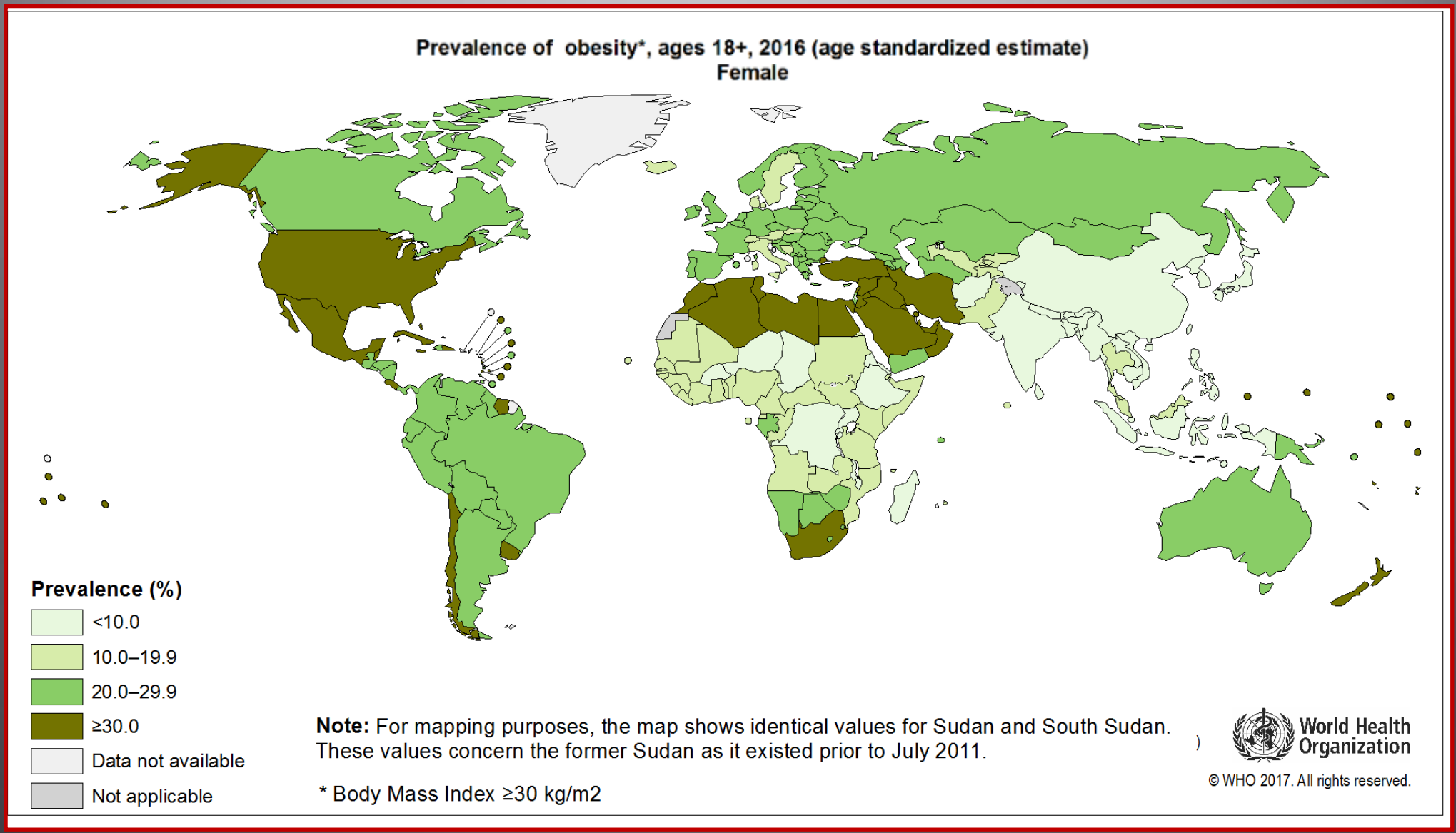
https://thescrutinizer.org/wp-content/uploads/2015/12/BMI-Classification-1.jpg

Epidemiology of obesity

- According to the WHO, the obesity epidemic has more than doubled between 1980 and 2014.
- In 2016, over 1.9 billion adults (18+ years) were overweight, with over 600 million being obese. Obesity is more prevalent in females.
- In Europe, obesity accounted for more than 1 million deaths and 12 million life-years of ill health in 2010.
- Similar data are being reported in other parts of the world, including from many developing nations. Reports from countries such as Malaysia, Japan, Australia, New Zealand, and China have detailed an epidemic of obesity in the past 2-3 decades.
- Data from the Middle Eastern countries of Bahrain, Saudi Arabia, Egypt, Jordan, Tunisia, and Lebanon, among others, indicate levels of obesity often exceeding 40%.

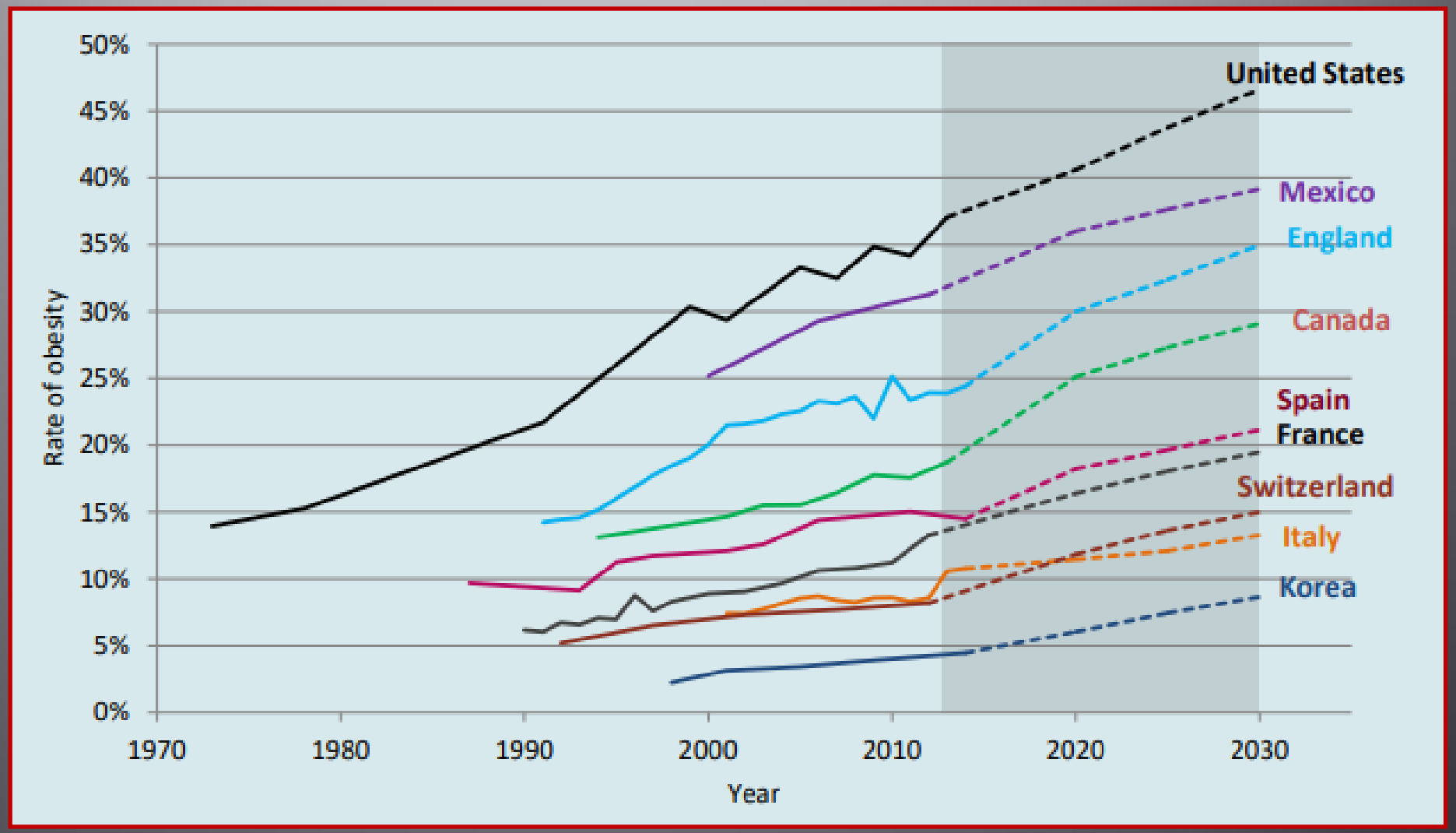
https://www.who.int/news-room/fact-sheets/detail/obesity-and-overweight

Worldwide obesity in females, 2016 (WHO)



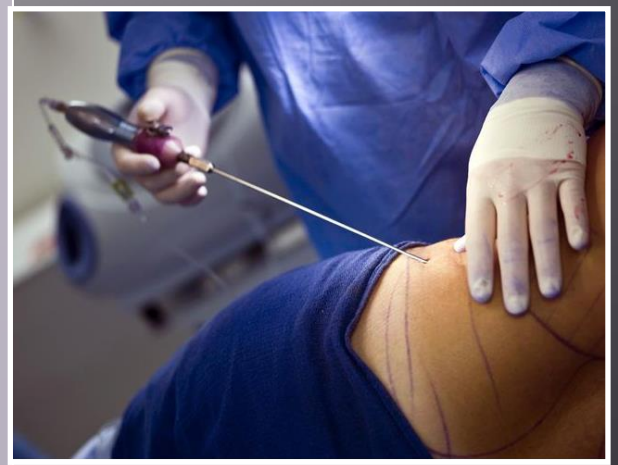
Projected rates of obesity

OECD OBESITY UPDATE 2017



Facts about obesity

- There are some countries considered obesity an important feature of beauty such as Mauritania, especially in rural areas;
- Obesity can lead to lesions of different organs and systems, it is closely associated with DM 2 type and cardiovascular diseases;
- The most famous country for liposuction is Germany, where it has many clinics and hospitals specialized only in these operations;
- In United State almost $121 billion is spent annually on weight-loss products and services;
- Cost of liposuction operation starts from 3000$.



https://www.verywellhealth.com/thmb/05iD32l8aV3D_Xy8LkEUREDBeak=/768x0/filters:no_upscale():max_bytes(150000):strip_icc()/1575891 12-56a733fb5f9b58b7d0e7d872.JPG
http://www.visiontimes.com/uploads/2019/09/Women_Risk_Their_Lives_To_Be_Fat_In_This_Country3.jpg

Etiological factors

- Metabolic factors
- Genetic factors
- Endocrine factors
- Race, sex, and age factors
- Pregnancy and menopause
- History of gestational diabetes
- Lactation history in mothers
- Smoking cessation

- Socioeconomic status
- Dietary habits
- Level of physical activity
- Ethnic and cultural factors
- Psychological factors (i.e. stress eating)
- Lack of public information about obesity prevention

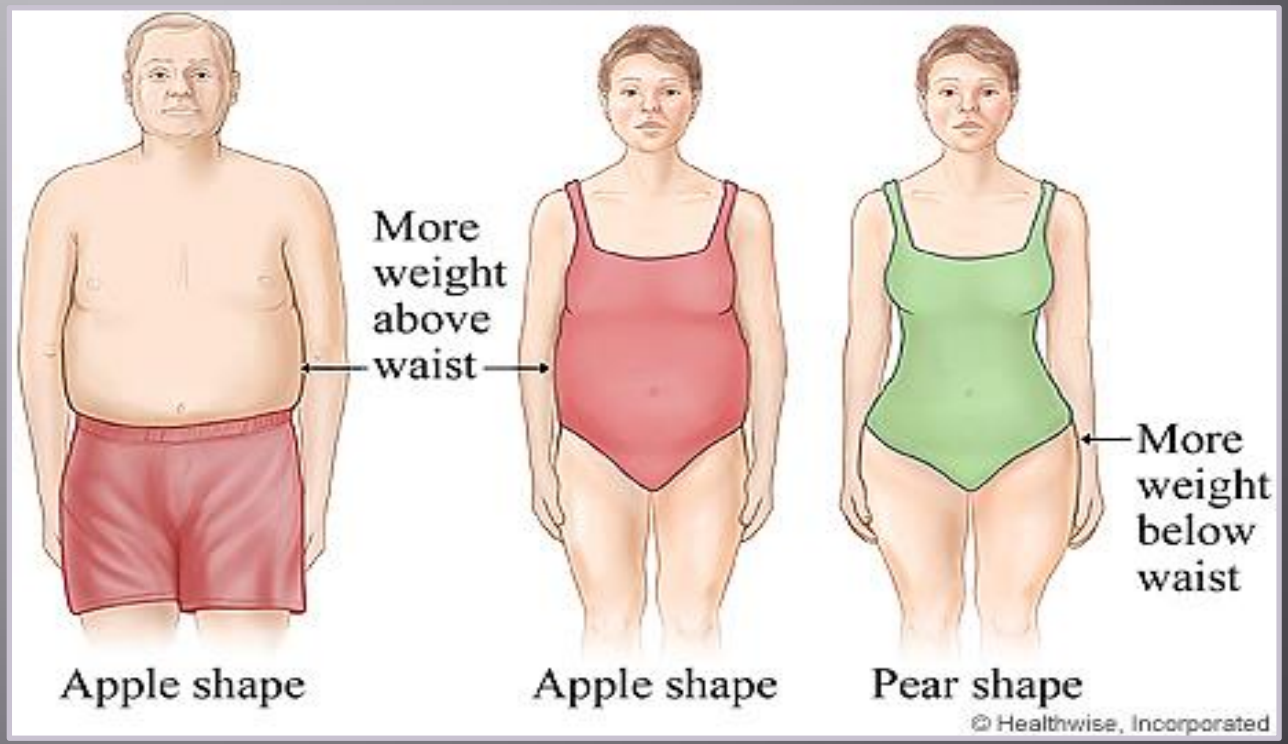
Social aspects of obesity

- Bad eating habits: fast food, late night eating, stress-eating, etc.
- Sedentary lifestyle;
- Chronic stress;
- Housing condition;
- Working conditions;
- Poverty.

https://s3.ap-southeast-1.amazonaws.com/cdn.deccanchronicle.com/sites/default/files/Woman-eating-junk-food_0_0_0_0_0.jpg

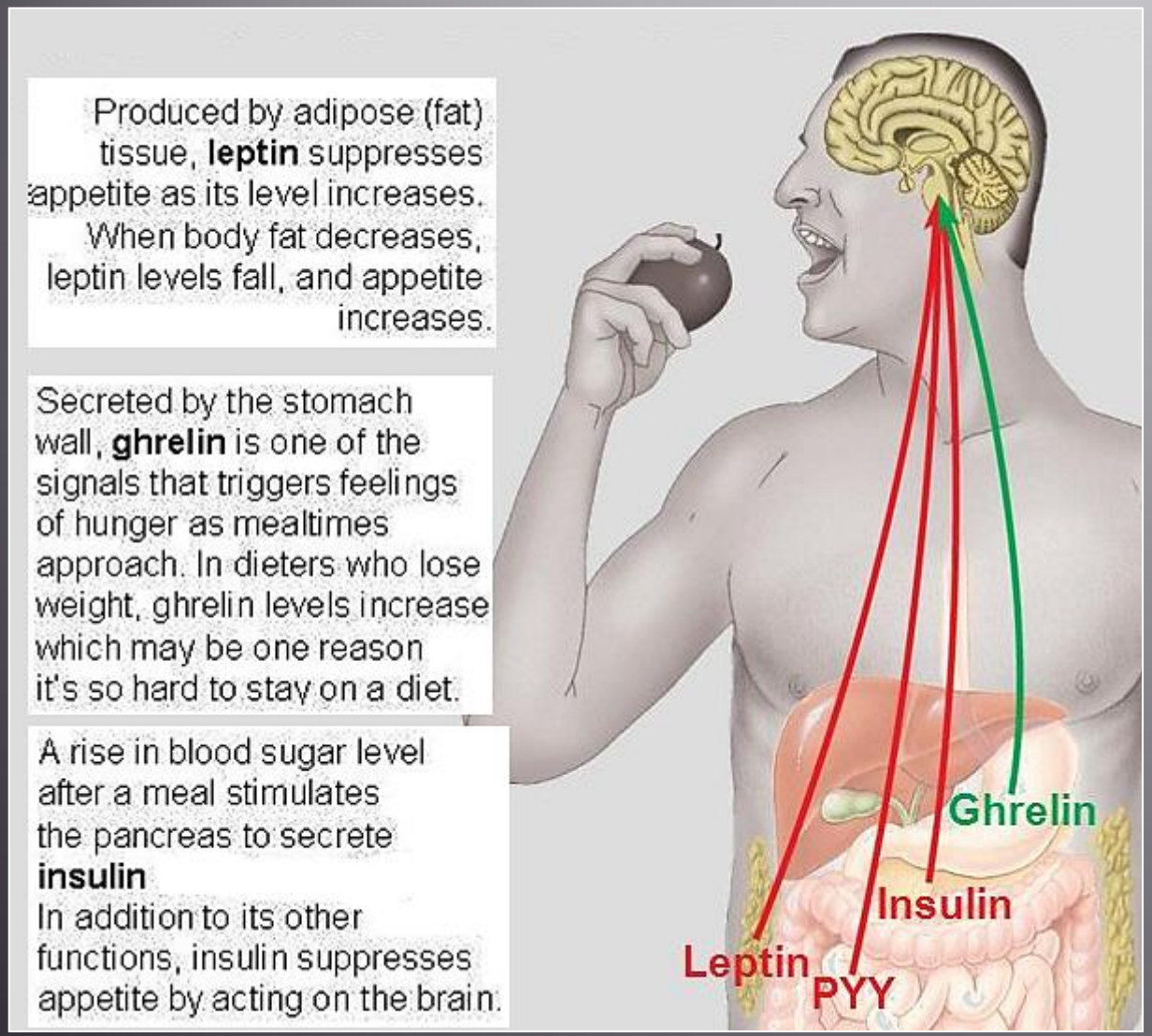
Fat distribution in obesity

- **Android:** body fat around the trunk and upper body, in areas such as the abdomen, chest, shoulder and nape of the neck.
- **Gynoid:** body fat that forms around the hips, breasts and thighs.

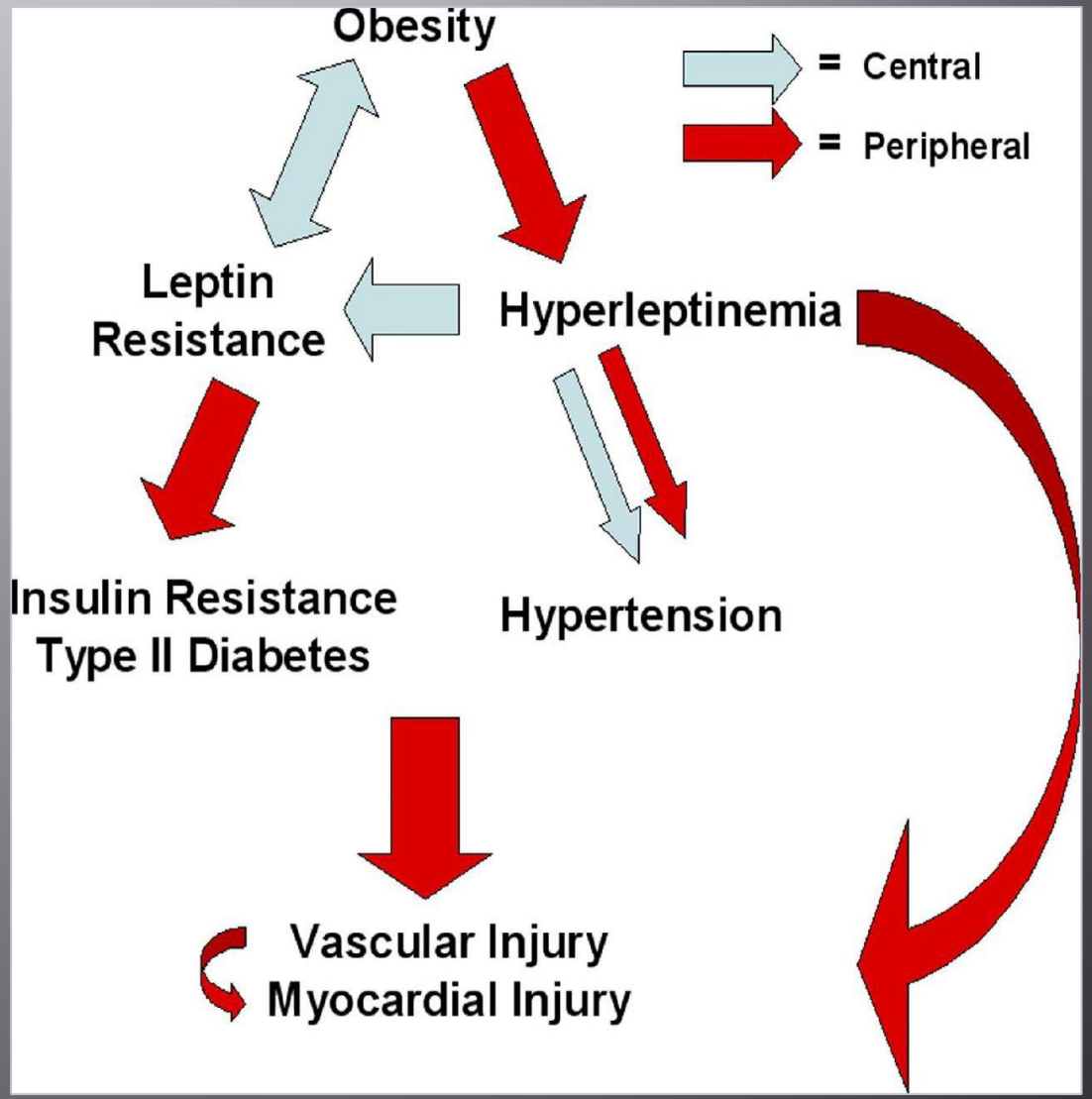


https://www.google.com/url?sa=i&source=images&cd=&cad=rja&uact=8&ved=2ahUKEwj5__C37rPmAhVBfZoKHdYjAkoQjhx6BAgBEAI&url=https%3A%2F%2Fwww.healthlinkbc.ca%2Fhealth-topics%2Fzm6365&psig=AOvVaw3tg9Xf3ycuriZ9EiZ2Xm7i&ust=1576369039865022

Pathophysiology of obesity



http://thefitcoach.files.wordpress.com/2012/06/41_05appetiteregulation.jpg



http://www.onlinejacc.org/content/52/15/1201/F3.large.jpg

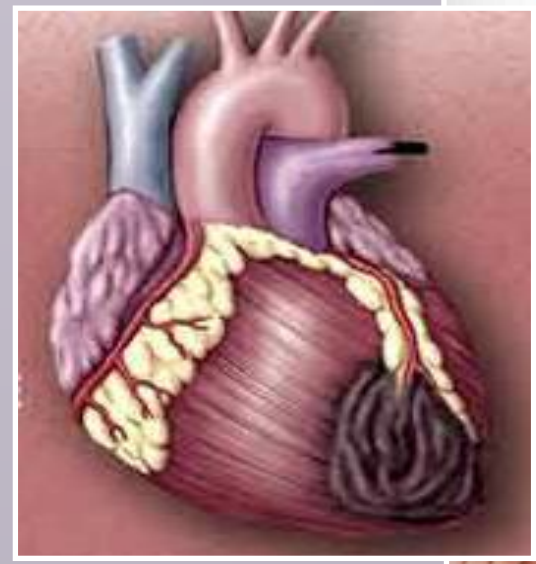
Medical Consequences of obesity -I

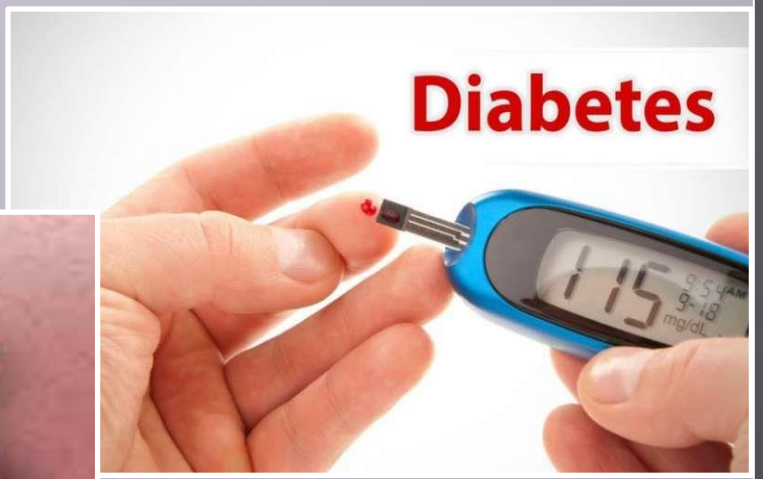
I. Metabolic complications

- Diabetes mellitus type 2
- Dyslipidaemia Metabolic syndrome
- Hyperuricaemia, gout
- Low-grade inflammation

II. Cardiovascular disorders

- Coronary heart disease
- Arterial Hypertension
- Congestive heart failure
- Stroke
- Venous thromboembolism





http://healthy-ojas.com/diabetes/heart-disease.html
https://scx1.b-cdn.net/csz/news/800/2017/1-rudnuniversi.jpg

https://media.consumeraffairs.com/files/news/High_blood_pressure_reading_vchalup_Fotolia.jpg

Medical Consequences of obesity -2

III. Respiratory disease

- Asthma
- Hypoxemia
- Sleep apnea syndrome
- Obesity hypoventilation syndrome

IV. Malignancies (cancer) of

- Esophagus, small intestine, colon, rectum, liver, gallbladder, pancreas;
- kidney;
- leukemia, multiple myeloma, and lymphoma;
- In women: endometrial, cervix uteri, ovary, breast cancer after menopause;
- In men: prostate cancer

https://www.womenfitness.net/wp/wp-content/uploads/2017/10/obesity-linked-to-asthma-in-women1-1000x667.jpg

Medical Consequences of obesity -3

V. Musculoskeletal lesions

- Osteoarthritis
- Chronic lumbago

VI. Gastrointestinal lesions

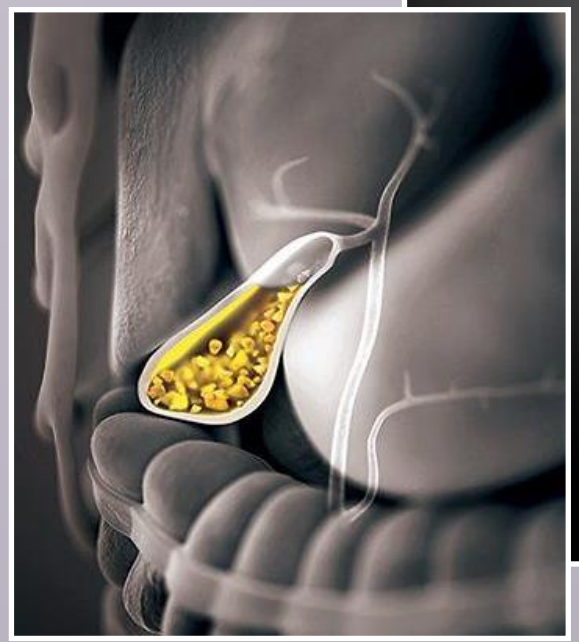
- Gallbladder disease

(cholecystitis, cholelithiasis)

- Non-alcoholic fatty liver disease

(NAFLD)

- Gastro-esophageal reflux
- Hernia



https://images.everydayhealth.com/images/digestive-health/gallbladder/link-between-gallstones-and-obesity-rm-722x406.jpg?w=1110

https://i.pinimg.com/236x/79/3d/eb/793debdeef94b417300660c68e212066--arthritis-joint.jpg

Social Consequences of obesity

- Discrimination,
- Lower wages,
- Lower quality of life,
- Susceptibility to depression,
- Closers' relationships affection
- Self esteem
- Poor academic performance

https://www.google.com/url?sa=i&source=images&cd=&cad=rja&uact=8&ved=2ahUKEwitmZ2p67PmAhUhwsQBHRufBQ0Qjhx6BAgBEAI&url=https%3A%2F%2Fhah.life%2Fvideo%2FyIbEDh6d16_4%2F-%2FHandler%2520Trying%2520To%2520Fatten%2520Me%2520Up!%2520%257C%2520Monster%2520Hunter%2520World%2520(Funny%2520Moments)&psig=AOvVaw37u2caPub5GVECmaSYro9z&ust=1576368198549812

Obesity and food addiction

- Michael Hebranko had suffered from morbid obesity his entire life gaining and losing weight.
- "I know eating is killing me," said Michael. "I am a food addict, just like an alcoholic or a drug addict.
- I would eat up to four meatball subs or turkey sandwiches at work for lunch.
- Then I would secretly eat 6 Big Mac's on the way home from work. As the chef at home I would then make an enormous meat loaf and eat that. My wife begged me to stop eating 100,000 times.“

In 2012 Michael was weighing 250 kg. He was suffering from congestive heart failure, kidney and liver failure and died in 2013.

Some secondary causes for obesity

Category	Cause
Endocrine	Hypothyroidism
	Growth hormone deficiency
	Cushing's syndrome
	Pseudohypoparathyroidism
Syndromes	Down syndrome
	Prader-Willi syndrome
	Bardet-Biedl syndrome
Drug induced	Steroid treatment
	Secondary to sodium valproate
Genetic/ monogenic obesity	Leptin deficiency

http://www.scielo.org.za/img/revistas/samj/v106n7/13t3.jpg

https://www.degruyter.com/view/j/jpem.ahead-of-print/jpem-2013-0070/graphic/jpem-2013-0070_fig1.jpg

https://cdn1.i-scmp.com/sites/default/files/styles/1200x800/public/images/methode/2018/05/19/f8fd70c4-5a4e-11e8-a7d9-186ba932a081_1280x720_165621.JPG?itok=3sA9vyy5

Assessment of the patient with obesity

History Taking

- Ethnicity
- Family history
- Dietary habits
- Physical activity frequency and nature
- Eating pattern and possible presence of an eating disorder (binge eating disorder, night eating syndrome, bulimia)
- Presence of depression and other mood disorders
- Previous treatments for obesity.

Physical Examination in obesity

- Measurement of weight and height (from which BMI is calculated), waist circumference (WC) , blood pressure (appropriate size cuff - grade 3)
- Assessment of obesity-related diseases (diabetes, hypertension, dyslipidaemia; cardiovascular, respiratory and joint diseases; non-alcoholic fatty liver disease (NAFLD), sleep disorders etc.)
- Detection of acanthosis nigricans which is associated with insulin resistance, etc.

Laboratory Examinations

- Fasting blood glucose
- Serum lipid profile (total, HDL and LDL cholesterol, triglycerides)
- Uric acid
- Thyroid function tests (T3, T4, thyroid-stimulating hormone (TSH) level)
- Liver function (hepatic enzymes)
- Cardiovascular assessment, if indicated
- Endocrine evaluation if Cushing's syndrome or hypothalamic disease suspected
- Liver investigation (ultrasound, biopsy) if abnormal liver function tests suggest NAFLD or other liver pathology
- Sleep laboratory investigation for sleep apnea.

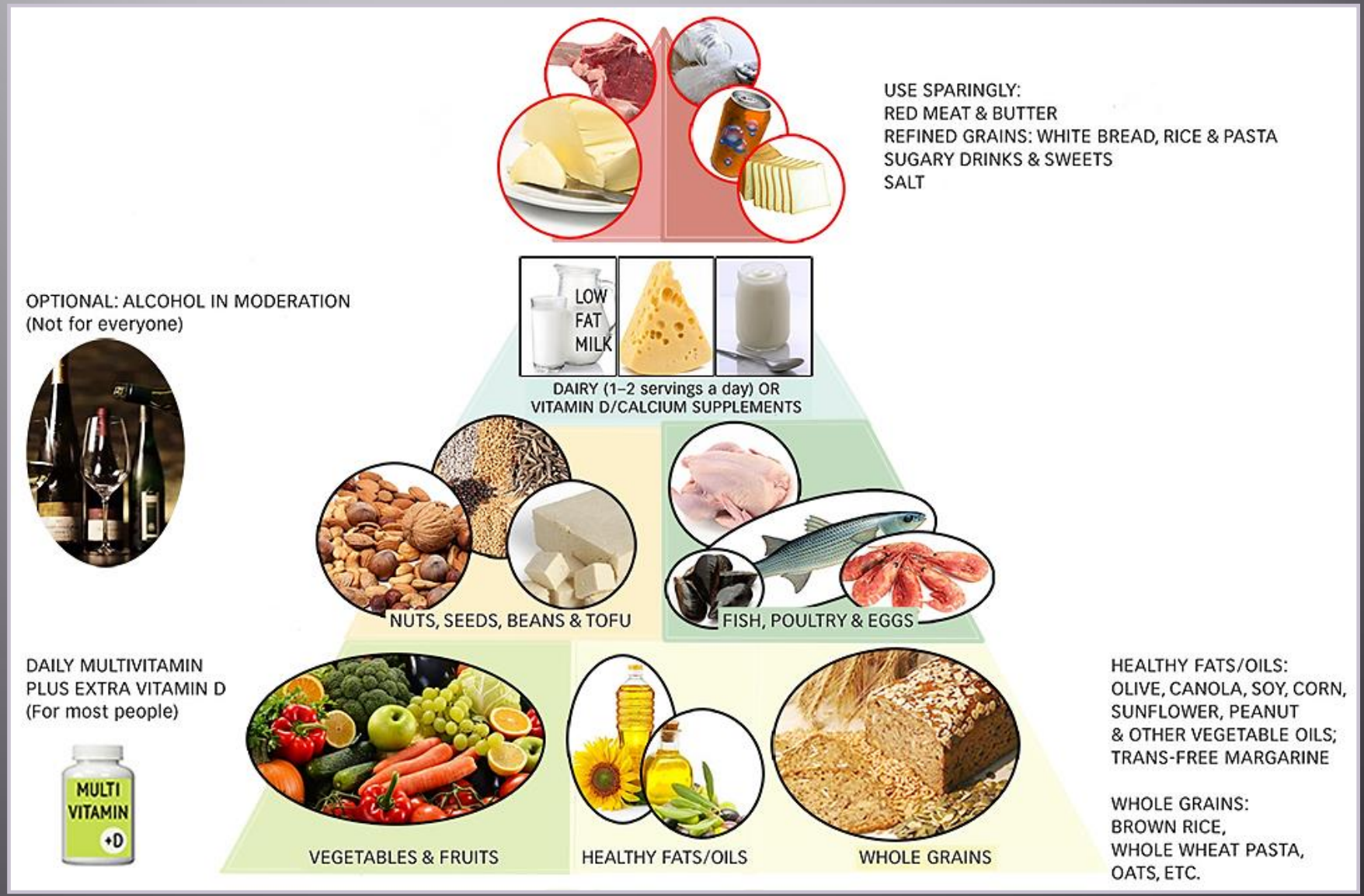
Management strategies

European Guidelines for Obesity Management in Adults, 2015

Nutrition
Reduce energy intake by 500–1,000 kcal/day
Physical activity
Initially at least 150 min/week moderate aerobic exercise combined with 1–3 sessions/week resistance exercise
Cognitive behaviour therapy
Pharmacotherapy
BMI ≥ 30 kg/m^2 or BMI ≥ 27 kg/m^2 with co-morbidities
Adjunct to lifestyle modification
Bariatric/metabolic surgery
BMI≥40 kg/m^2 or BMI between 35.0–39.9 kg/m^2 + co-morbidities or BMI between 30.0-34.9 kg/m^2 with type 2 diabetes on individual basis. Consider if other weight loss attempts fail; requires lifelong medical monitoring
Prevention and treatment of co-morbidities

The healthy eating pyramid

Department of Nurtition, Harward School of Public Health



https://upload.wikimedia.org/wikipedia/commons/d/de/Eating_pyramid_large.jpg

Management

The 3 major phases of any successful weight-loss program are as follows:

1. **Preinclusion screening phase** it is a comprehensive history, physical examination and laboratory assessment relevant to the patient's obesity
2. **Weight-loss phase**
3. **Maintenance phase** - this phase can conceivably last for the rest of the patient's life but ideally lasts for at least 1 year after the weight-loss program has been completed

Drug therapy in obesity

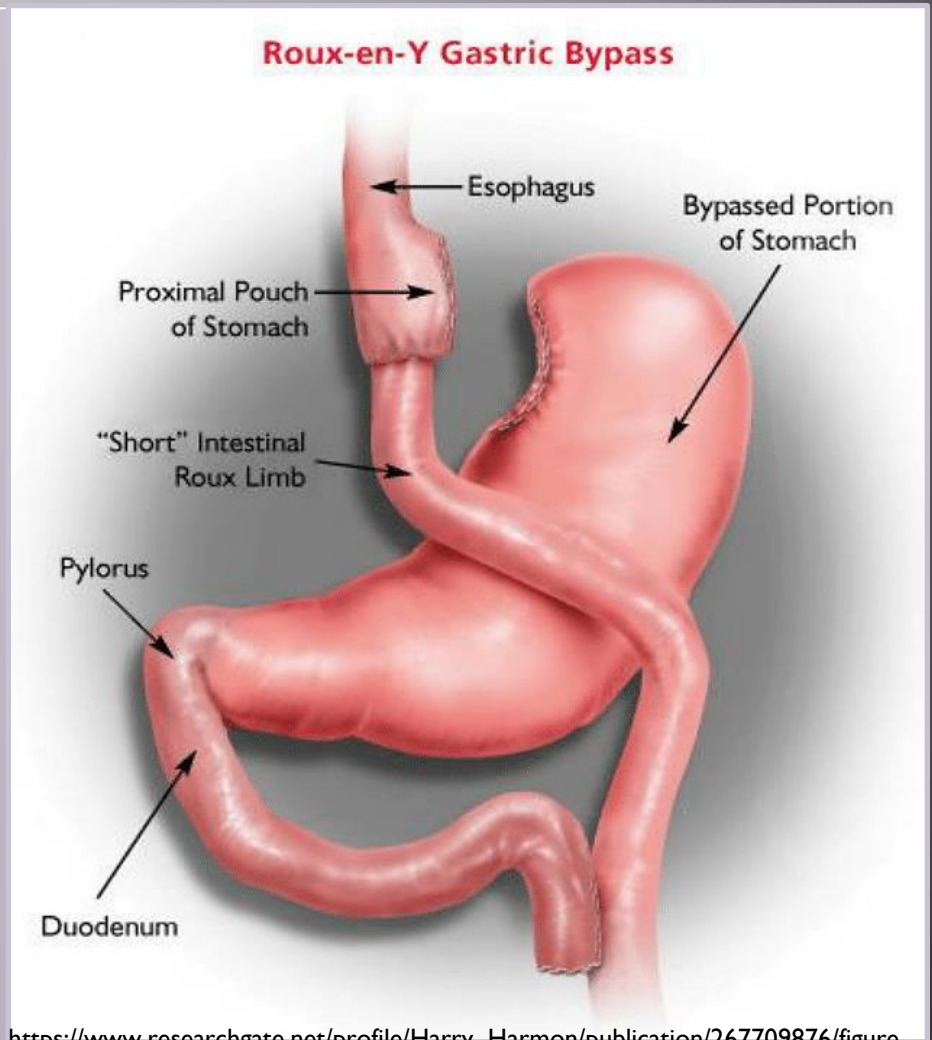
Currently, the **3 major groups of drugs** used to manage obesity are as follows:

- Centrally acting medications that impair dietary intake (Phentermine)
- Medications that act peripherally to impair dietary absorption (orlistat)
- Medications that increase energy expenditure (meratol)

Surgical therapy in obesity

It includes:

- Roux-en-Y gastric bypass;
- Adjustable gastric banding;
- Gastric sleeve surgery;
- Vertical sleeve gastrectomy;
- Horizontal gastroplasty;
- Vertical-banded gastroplasty;
- Duodenal-switch procedures;
- Biliopancreatic bypass;
- Biliopancreatic diversion.



https://www.researchgate.net/profile/Harry_Harmon/publication/267709876/figure/fig1/AS:295656993378317@1447501528678/Roux-en-Y-Gastric-Bypass-Illustration.png

Management and prevention recommendations

- Management of obesity in Primary Care by a motivated well-informed multi-disciplinary team could achieve and maintain weight loss by promoting sustainable changes in lifestyle.
- Education programmes for all, advertising to promote healthy lifestyles and highlight the risks associated with obesity.
- Parents of overweight children should be helped to take responsibility and encourage healthy eating and physical activity.
- Government programmes for improving access to sport facilities by making the streets safe for walking or cycling.

Run against social dislikes

- People who experience fat-shaming are more likely to overeat and binge-eat and less likely to exercise.
- Being fat-shamed has been linked to higher blood pressure, higher levels of stress hormones like cortisol.
- Patients with obesity should be consulted with the team of professionals (endocrinologist, cardiologist, dietologist, physical therapist), supported and guided on their path of norlmalizing their weight and forming healthy lifestyle habits

https://www.psychologytoday.com/ca/blog/the-truth-about-your-health/201508/fat-fit-and-the-cover

Fat to Fit

https://www.google.com/url?sa=i&source=images&cd=&cad=rja&uact=8&ved=2ahUKEwj5jM6f9LPmAhVOwcQBHbdhAEkQjhx6BAgBEAI&url=https%3A%2F%2Fwww.mirror.co.uk%2Flifestyle%2Fdieting%2Fsuccess-stories%2Fjoanne-richards-barry-ricketts-lose-2954315&psig=AOvVaw2SDnuxIlrYTw-IgkIVUWJV&ust=1576370389270205

https://www.google.com/url?sa=i&source=images&cd=&cad=rja&uact=8&ved=2ahUKEwi72K3x87PmAhXywcQBHYo7AYMQjhx6BAgBEAI&url=https%3A%2F%2Fwww.youtube.com%2Fwatch%3Fv%3DOAoZouJ97HA&psig=AOvVaw2SDnuxIlrYTw-IgkIVUWJV&ust=1576370389270205

References

- https://www.ncbi.nlm.nih.gov/books/NBK279167/
- https://emedicine.medscape.com/article/123702-overview#showall
- https://www.who.int/topics/obesity/en/
- https://www.who.int/gho/ncd/risk_factors/overweight/en/
- European Guidelines for Obesity Management in Adults, 2015.

Thank you for your attention!
Any questions?

https://images.medicaldaily.com/sites/medicaldaily.com/files/styles/headline/public/2014/07/28/exercise-and-avoiding-couch-greatly-decreases-obesity-risk.jpg