

OBESITY – THE CHRONIC DISEASE OF THE 21ST CENTURY

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ABSTRACT. Obesity is the scourge of humanity. Even if we aspire to a standard of living increasingly higher and more comfortable, this implies a risk to humanity, risking that through ignorance, to lead the human race from destruction. More than half the world's population is overweight and the rate increases from year to year. The number of deaths in one year amounts to 3.4 million people. Those who remain with disabilities rises to 3.9%. Recovery costs are huge. The work aims to present how danger is the obesity and ways to prevent it. Attaining those objectives is a close collaboration between medical sciences, sport sciences, sociology, chemistry sciences. Even if exercise cannot always solve stopping and controlling obesity, it is still the least expensive of known treatments.

Keywords: obesity, disease control, genetic factors, sport, children, health.

REZUMAT. *Obezitatea – boala cronică a secolului XXI.* Obezitatea reprezintă flagelul omenirii. Chiar dacă tindem spre un nivel de viață din ce în ce mai ridicat și mai confortabil, aceasta presupune un risc pentru umanitate, riscând ca prin ignoranță, să ducem rasa umană la distrugere. Mai bine de jumătate din populația lumii este supraponderală, iar rata crește de la an la an. Numărul deceselor într-un singur an se ridică la 3,4 milioane de oameni. Cei care rămân cu handicap se ridică la 3,9%. Costurile recuperării sunt uriașe. Lucrarea dorește să prezinte pericol ce îl reprezintă obezitatea și mijloacele de prevenire a acesteia. Atingerea obiectivelor este o colaborare strânsă între științele medicinei, științele sportului, ale sociologiei, ale științelor chimiei. Chiar dacă nu întotdeauna exercițiul fizic poate rezolva stoparea și ținerea sub control a obezității, este, totuși, cea mai puțin costisitoare dintre tratamentele cunoscute.

Cuvinte-cheie: obezitate, controlul bolii, factori genetici, sport, copii, sănătate.

Introduction

The presence of obesity is not necessarily a scourge of our century. It always exists at all levels of society. Even our ancestors, from the primitive period were faced with the worst disease of mankind, obesity.

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The presence of obese people is known since the Neolithic Period (beginning about 10,200 BC and ended 2,000 BC.) In the cave paintings, but also in the statuettes and figurines discovered in many regions of the world, shows us that obesity was present even in those times. The women are presented with large breasts, wide basin, in apple or pear-shaped, with faces fatty, all demonstrating the presence of obesity.

The archaeologists named these statuette "Venus", named after the goddess of love, beauty, sexuality in the ancient Romans. Many of these statuettes presented the image of a woman who suffered from obesity by varying degrees, but even *morbidly obese*, one of the most dangerous forms of obesity (Osterdahl M, Kocturk T, Koochek A, Wandell PE: p. 682-685).

The best known of these is called the "*Venus from Willendorf*", discovered in 1908, which presented all the elements of morbid obesity, although we talk about dating for over 25,000 years (Antle-Weiser, Walpurga, 2012).

Discovered in 1908, the statuettes, which shows all the elements of morbid obesity, although we talk about dating for over 25.000 years (Antle-Weiser, Walpurga, 2012).

Besides this famous statue, across Europe were discovered and other female statuettes, which had the same forms: Venus from Schelkingen discovered in Germany, dating from 40.000 BCE, Venus from Lespugue with 26.000-24.000 years old or Venus from Moravani with an age of 80.000 years (Fagan, Beck, 1996).

The ancient period continue to gather data demonstrating that obesity is present in society. The philosopher Galen (born 130- died 210) is one of the first ancient philosophers who showing obesity as a form of illness (Potter, Mattingly, 1999). Hippocrates from Cos, the father of medicine (c. 460 BC- d. 370 BC) says about overweight: "Obesity is not only a disease itself, but is a risk factor for other diseases" (Hippocrate, Grimm, Prausnitz, Glogau, 1837)

The despite the fact that life in ancient Rome was at a high level and in some regions outside the Empire, food was varied, there were numerous cases of obesity. Neither India is safe. Indian *physician Sushruta* (ca. 600 BCE) tells us about those who are overweight, and recommends practical exercise that can help slimming (Dwivedi, Girish, Dwivedi, Shridhar, 2007).

The medieval period, despite numerous food crises, presence in the very rich societies, obesity is a form of pride and virtue. The great historical figures have suffered from this terrible disease: Henry VIIIth (1491-1547) dies from complications of diabetes of the second degree. Obesity was so advanced that it was his move was made with a special crane (Erickson, 2004).

The industrialization period has seen a decrease in the rate of obesity, but food revolution from the 90s of the XXth century makes the worldwide to increase more alarming among all social classes. While in the past only a certain social category was reached, obesity now has no preference. Children, youth and adults, all can be affected by this scourge.

The definition of obesity

Obesity is derived from the Latin term "obesus" which means "fat robus, fattening" (Lewis Charlton Thomas, 1915, p. 7)

There is not a modern term, it exists from time immemorial. The term "*diet*" is used as a means of counteracting obesity. It has been used since Roman antiquity as a form of therapy and later become synonymous with "dietary" (Garland, 2009).

If you were to define obesity, we could say that is an excess of body fat, stored in different sections or levels of the body, which can have serious consequences for the health of the individual (Revista "Whoo 2000", p. 6).

The obesity can be defined as: a Body Mass Index (BMI / BMI) with a value over 30 / m². Calculation of BMI is made by by dividing weight by height squared (kg / m²). The values can be tracked into table 1.

Table 1. BMI classification

BMI	Classification
< 18.5	underweight
18.5–24.9	normal weight
25.0–29.9	overweight
30.0–34.9	obesity class I (severe)
35.0–39.9	class II obesity (morbid)
≥ 40.0	class III obesity (superobezitate)

Garabed, 2008, pg. 47-51.

The rate of obesity worldwide

In June 2014 the first report appears really worrying about the health of the world’s population. The report, drafted by the Organisation for Economic Co-operation and Development (OECD), signals the fact that worldwide obesity rate is rising to the entire population (male / female) with a very high percentage of the young adult population. According to Table in Appendix 2, USA (the country

with the highest number of obese in 2014) 35% of the adult population over the age of 20 years suffer from obesity. Over 39.9% are adults of both sexes aged over 60 years According to the report presented by the Center for Disease Control and Prevention, NCHS Data Brief no. shown in 141, January 2014). (Tala H.I. Fakhouri, Ph.D., M.P.H.; and co, January 2014. *Physical Activity in U.S. Youth Aged 12–15 Years, 2012.*)

In December 2015, the Medical Center "Mexico Bariatric Center" presents a report showing that obesity rates report 2013, respectively 2014, increased. If USA occupied in 2014 the first place to obesity, this time the report is as follows: Saudi Arabia 71%, USA 66%, Turkey 65%, Australia 62%, UK 62%, Spain 58%, Germany 57%, Russia 57%, Brazil 56%, Canada 56%, Italy 50%, France 49%, China 28%, Japan 23%, India 20% (Figure 1.)

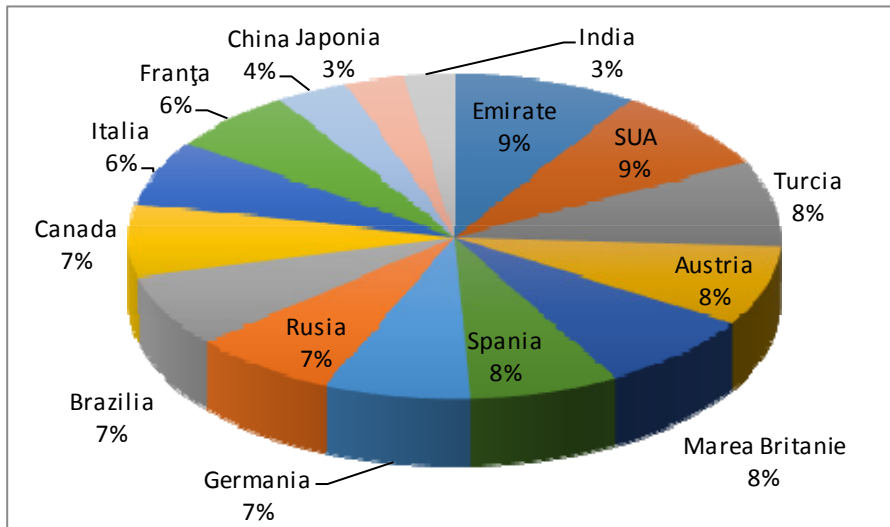


Figure 1. Obesity rates in the world in 2013-2014
www.mexicobariatriccenter.com

The situation is really alarming that 1 from 3 people in the world is obese. Half of the world's obese population (50%) lives in the USA, India, Pakistan, Mexico, Brazil, Egypt, Russia, Germany and Indonesia (www.healthdata.org). In 2010, the death rate caused by obesity had risen in the world to 3.4 million people and 3.9% of the world was left with a disability of varying degrees (Marie, Fleming, 2014).

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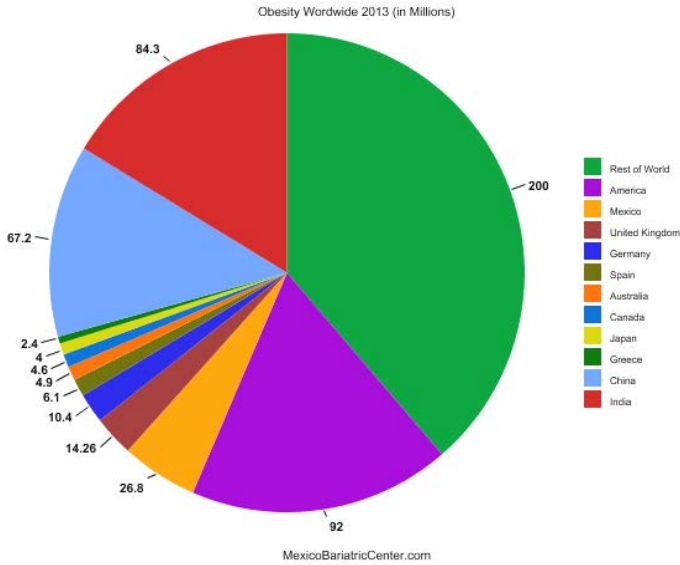


Figure 2. Obesity Worldwide 2013
www.MexicoBariatricCenter.com

According to data presented by the World Health Organization, Obesity increases the level of children dizzying pace. Studies show that only at European Union level, obesity affects about 30% of children. Research has shown that in 18 years, obesity rates in children increased by 60% during 1990-2008) (Figures 3 and 4).

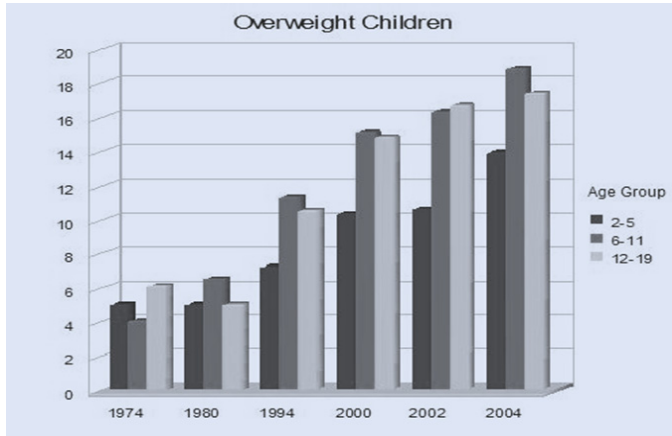


Figure 3. National Health Examination Surveys II (ages 6-11) and III (ages 12-17), National Health and Nutrition Examination Surveys I, II, III and 1999-2004, NCHS, CDC.

The obesity rate in Romania is alarming. More than half of the population is obese (58.1%). Of whom 62.1% are men and 54.5% are women. 21.3% of the population, over 18 suffer from some form of obesity (*www.vizhub.healthdata.org*).

Epidemiological Study (ORC) shows that 9.9% of adults up to 39 years are a form of obesity. And values are worrying if we see that those between 40 and 50 years old, the rate is almost 30 times higher, 30.1%. While at over 60 years old, the rate is 41.6%. In as allocations under by region, Moldova ranks first both in the obesity degree both in the obesity degree, and in patients with Grade II obesity. So 23.8% are affected by obesity grade I, while 33.4% are affected by obesity grade II. Transylvania and Banat, respectively Crisana, obesity rate is 18%. (WHO Global Health Observatory Data Geneva, World Health Organization, 2013)

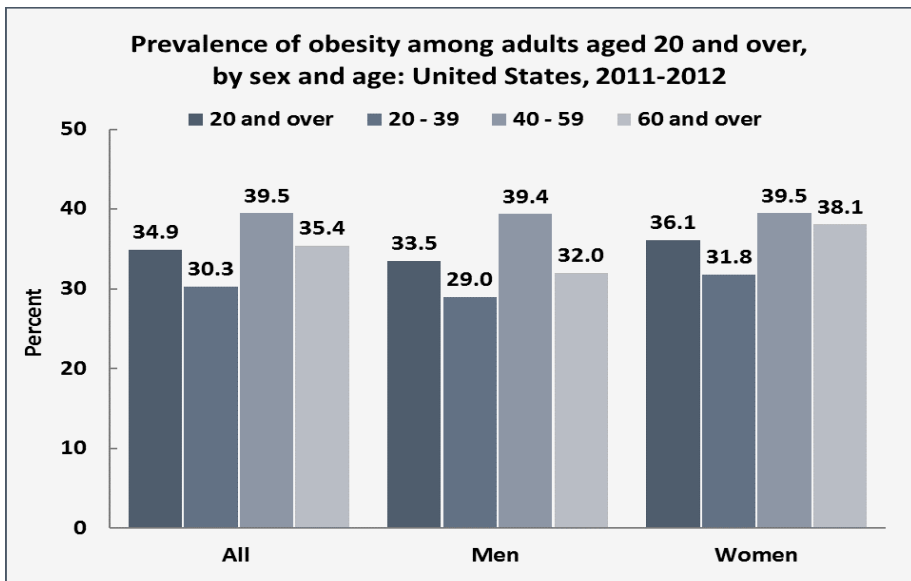


Figure 5. Prevalence of obesity among adults aged 20 and over, by sex and age: US 2011-2012 (Cynthia L. Ogden, and co., 2014)

Causes

The causes of this disease may be different. We cannot say that only wrong nutrition leads to deposition of fat mass. Among the major causes of obesity include:

1. *Sedentary activity*. A life without the presence of physical exercise, movement generally lead to accumulation of fat in the body. Among the diseases that can cause lack of movement include: anxiety, cardiovascular disease, diabetes, osteoporosis, herniated disc, and even colon cancer (Lopez, Mathers, Ezzati, Jamison, Murray, 2006).

2. *Genetic factors*. Although there are many cases, however, some genes can produce obesity, independent of a person's will. This fact is based genetic disorder of the central nervous system. (Willer, Speliotes, Loos, et al., 2009). Among serious genetic diseases include: Prader-Willi Syndrome, affecting chromosome 15; Cohen syndrome, a consequence of a mutation (chromosome 8); Momo syndrome (caused by a genetic mutation).

3. *Hypothyroidism*, thyroid hormone deficiencies.

4. *Social factors* – the obesity today are affected by all classes, but no matter which of these we speak, we see that where food is abundant and chaotic consumption, appear different forms of obesity.

5. *Infectious agents* - especially those from the intestinal flora. Some micro-specific pathogens, bacteria found in the intestines can cause different forms of obesity.

6. *Physiopathology* - leptin and grelina are one of the factors responsible that regulates appetite in relation to the nervous system.

7. *Geographic factors* - nutrition varies from one region to another and from one community to another. Religious education has an important role in terms of weight control. Communities are that prohibit dairy mixture with the meat, while others neglects this aspect.

8. *Eating habits* - more than three meals a day, all rich in quantity.

Complications of obesity

Ignorance and delaying the treatment of obesity can cause devastating effects in the human body. The treatment later being of tens and hundreds of times more expensive. The occurrence of serious diseases begin with very simple symptoms: loss of endurance, low immunity, fatigue, and especially increased weight.

Absence of any movement, moving more and more by vehicles, the avoidance of minimal effort, bring the body to the brink of collapse.

Among the diseases that appear we include (Ministry of Health, World Health Organization, 2010):

- High blood pressure;
- Breathing disorders, including sleep apnea, a potentially serious sleep disorder in which breathing repeatedly stops and starts;
- High triglycerides and low high-density lipoprotein (HDL) cholesterol;

- Metabolic syndrome — a combination of high blood sugar, high blood pressure, high triglycerides and low HDL cholesterol;
- Stroke - with many complications if survival.
- Gallbladder disease;
- Osteoarthritis;
- Gynaecological problems, such as infertility and irregular periods;
- Cancer, including cancer of the pancreas, kidney, uterus, ovaries, breast, colon, rectum, oesophagus, liver and other.
- Depression;
- Disability.

Means of combating

Over time many recipes were offered to fight body fat excess. Before moving on to a series of effective measures, it is necessary to determine the exact cause of obesity. An endocrine disorder or a genetic problem makes it difficult to tackle a number of exercise effective and long term.

Once the detected cause treatment can begin. Where permitted to intervene exercise we will introduce a series of exercises adapted to each subject separately. We do not recommend a general program what should be work since the response effort differs from individual to individual, especially those who are not accustomed to exercise.

It will categorically avoid starvation diets, which can lead to serious health problems. Also cure of herbal teas and medications herbal teas and medications directed to weight loss, can cause severe dehydration of the body, endangering life. For results to be truly effective, especially long term, we recommend an individual program adapted the subject and only in close connection with the endocrinologist or the one who recommended medical treatment.

As forms of obesity prevention recommend:

1. Stretching exercises in the morning and/or during breaks from work (5-10 minutes).
2. The practice of the mass sports (tennis, volleyball, athletics, football, swimming, etc.) at least 50 minutes with medium effort.
3. Consumption of natural foods, dairy products, fruits, oils, etc.
4. An active life in an environment as natural (walking to work, trips, etc.)
5. Assuring a good nutrition, for adult's no more than four meals a day and no consumption of sweets or snack between meals.

The World Health Organization confirmed in 2010 that the practice of physical exercise reduces the risk of ischemic heart disease and approximately 30% and diabetes by 27%. Also the risk of colon cancer and breast cancer, a cause of obesity, is reduced by 21-25%, if practiced regularly exercise (European Commission, Directorate General Health and Consumers, Directorate C “Health and Risk Assessment”, 2010).

Conclusion

The obesity can be considered one of the worst diseases of humankind. The danger is all the greater as anyone can be touched by it. The ignorance, postpone and inaction against physical exercise, can lead to loss of life or disability. Disability caused by the effects of body fat leads to extremely high financial costs, most often unbearable for the families of those affected.

REFERENCES

- Antl-Weiser, Walpurga (2012) – *The anthropomorphic figurines from Willendorf*. Niederösterreichischen Landesmuseum. Retrived from:
(http://www.zobodat.at/pdf/WM_19_0019-0030.pdf)
- Cynthia L. Ogden, PhD; Margaret D. Carroll, MSPH; Brian K. Kit, MD, MPH; et al. (2014). Prevalence of Childhood and Adult Obesity in the United States, 2011-2012. *AMA*. 2014; 311(8):806-814. doi:10.1001/jama.2014.732
- European Commission, Directorate General Health and Consumers, Directorate C “Health and Risk Assessment” (2010 July). *Physical Activity and Health*. Annual Report, Brussels, Belgium, website:
http://ec.europa.eu/health/sites/health/files/nutrition_physical_activity/docs/evaluation_frep_en.pdf
- Erickson, C. 2004, *Viața extravagantă a lui Henric al VIII-lea*, București: Editura Lider.
- Dwivedi, Girish, Dwivedi, Shridhar (2007) – *History of Medicine: Sushruta- The Clinician-Teacher par Excellence*. Department of Medicine/Preventive Cardiology, University College of Medical Sciences and GTB Hospital, Shahdara.
- Garabed, E. (2008). AdolpheQuetelet (1796–1874) - The Average Man and Indices of Obesity. *Nephrology Dialysis Transplantation* 23: 47-51,
doi: 10.1093./ndt/gfm517
- Fagan, B. M., Beck, Ch., (1996) - "Venus Figurines", *The Oxford Companion to Archaeology*, Oxford University Press.
- Garland, R. (2009). *Daily life of the ancient Greeks*, Greenwood Press, 88 Post Road West, Westport.

- Hippocrate; Grimm, JFC; Lilienhain, L (1837) *Hippokrates Werke*. Aus dem Griechischen übersetzt und mit Erläuterungen. Glogau, H. Prausnitz, 1837-1838.
- Charlton Thomas Lewis (1915). *An Elementary Latin Dictionary*. Edited by Hugh MacMaster Kingery. American Book Company. pp. 7 .
- Lopez, A.D., Mathers, C.D., Ezzati, M., Jamison, D.T., Murray, C.J. (2006). Global and regional burden of disease and risk factors, 2001: systematic analysis of population health data. *Lancet*, 367(9524), 1747-57, doi: 10.1016/S0140-6736(06)68770-9
- Marie, Ng, Fleming T., Robinson, M., Thomson, B., Graetz, N., Gagikou, E. (2014). Global, regional and national prevalence of overweight and obesity in children and adults 1980-2013: A systematic analysis. *Europe PMC*, 384 (9945), 766-781, doi: 10.1016/S0140-6736(14)60460-8
- Revista "Whoo 2000" - ISBN 92 4 156198 X (NLM Classification: WA 540.1) ISSN 1020-3311, p 6.
- Ministry of Health, World Health Organization (2010 June). *Malawi National STEPS Survey for Chronic Non-Communicable Diseases and their Risk Factors*. Final Report. Retrieved from: http://www.who.int/chp/steps/Malawi_2009_STEPS_Report.pdf
- Osterdahl M, Koçturk T, Koochek A, Wandell PE: (2008). *Effects of a short-term intervention with a Paleolithic diet in healthy volunteers*. *Eur J Clin Nutr* 2008, 62(5):682-685.
- Potter S.D., Mattingly D.J, (1999), *Life, death and entertainment in the Roman Empire*. Michigan: University of Michigan Press.
- Jeffery P. Hughes, M.P.H.; Vicki L. Burt, Sc. M., R.N.; MinKyoung Song, Ph.D., R.N.; Janet E. Fulton, Ph.D.; and Cynthia L. Ogden Ph.D., M.R.P. (January 2014). *Physical Activity in U.S. Youth Aged 12–15 Years, 2012*. No. NCHS Data Brief. No. 141.
- Willer CJ, Speliotes EK, Loos RJ, et.al. (2009). Six new loci associated with body mass index highlight a neuronal influence on body weight regulation. *Nat. Genet.*, 41 (1), 25-34, doi: 10.1038/ng.287
- WHO Global Health Observatory Data Geneva, World Health Organization, 2013
www.mexicobariatriccenter.com
www.healthdata.org
www.vizhub.healthdata.org
www.apps.who.int/gho.