

## Obesity: What We Can Do to Reduce this Global Public Health Problem?

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### Abstract

Childhood and youth obesity has increased significantly in recent decades. Since 1998, it has been considered a global public health problem by the World Health Organization (WHO). Around 30% of children between 7 - 11 years of age will have obesity or overweight and later metabolic syndrome in adulthood. It is a standardized and globally accepted measure of excess weight in children aged 2 years or older using body mass index (BMI) = weight (Kg)/height<sup>2</sup> (m)). Weight Categories adopted between 2 - 20 Years (International Obesity Task Force) are: Underweight/Thinness = BMI < 5<sup>th</sup> percentile for age and gender. Normal weight = BMI between 5<sup>th</sup> and 85<sup>th</sup> percentile for age and gender. Overweight = BMI between 85<sup>th</sup> and 95<sup>th</sup> percentile for age and gender. Obesity = BMI greater than the 95<sup>th</sup> percentile for age and gender.

Obesity can be classified as: Endogenous (less than 5% of cases) secondary to genetic or endocrine alteration and exogenous or nutritional (95% of cases). Environmental, genetics, endocrine pathology and metabolic predisposition are the main etiologies.

Nowadays, we give importance to lack of hours of sleep as a risk for obesity. Children who fall asleep earlier have a lower risk of becoming obese in adolescence. The habit of sleeping after 9 pm increases the risk of obesity to 23%. The reason why this happened is because cortisol and other hormones decreased the level of leptin and as consequence increase the level of ghrelin, leading to a stage that we start to fill hungry and need to eat a great amount of carbohydrates, causing overweight and obesity later.

The main measures to reduce the risk of obesity are: breast feeding, decrease food intake, eat correct amounts of proteins, carbohydrates and lipids and other mineral salts, drink water and avoid other caloric drinks rich in sugar, sleep well and not after 9 pm and finally practice regular exercise. The better way to avoid obesity is prevention!

**Keywords:** *Obesity; Diet; Exercise; Sleep*

### Introduction

Childhood and youth obesity has increased significantly in recent decades. Since 1998, it has been considered a global public health problem by the World Health Organization (WHO). There is a prevalence of more than 30% of obesity (O) and overweight (OW) in children between 7 and 11 years old. They will be obese adults in the future.

The prevalence of other diseases associated with overweight/obesity has also increased, with the appearance of metabolic syndrome: obesity, hyperglycemia, hypertension and dyslipidemia [1].

### Definition

It is a standardized and globally accepted measure for measuring excess weight in children aged 2 years or older in body mass index (BMI) = weight (Kg)/height<sup>2</sup> (m).

Weight categories adopted between 2 - 20 Years (International Obesity Task Force) are: Underweight/Thinness = BMI < 5<sup>th</sup> percentile for age and gender. Normal weight = BMI between 5<sup>th</sup> and 85<sup>th</sup> percentile for age and gender. Overweight = BMI between 85<sup>th</sup> and 95<sup>th</sup> percentile for age and gender. Obesity = BMI greater than the 95<sup>th</sup> percentile for age and gender [2-5].

### What about the abdominal perimeter measurement?

The presence of central adiposity translated by an abdominal perimeter above the 75<sup>th</sup> percentile is a good indicator of greater metabolic risk [3-5].

### Etiology

Obesity can be classified as: Endogenous (less than 5% of cases) secondary to genetic or endocrine alteration and exogenous or nutritional (95% of cases).

It is a disorder with multifactorial etiology in which factors intervene:

1. Environmental: a. Sedentary lifestyle (calorie intake exceeding needs/energy expenditure). Television (decreased physical activity and increased consumption of foods with a high glycemic index and sugary drinks). b. Video games/Computer/Cell phones. c. Fewer hours of sleep. d. Easy accessibility to foods with high caloric value.
2. Genetics: Play a permissive role and interact with environmental factors in the development of obesity. There are syndromes and genetic defects associated with obesity, however, they represent less than 5% of obese people found (example: Prader-Willi, Beckwith-Wiedemann).
3. Endocrine pathology: Causes obesity in less than 5% of cases. These children often have short stature (5<sup>th</sup> percentile) and/or hypogonadism, which leads to changes in bone maturation. (Example: Cushing disease, Hypothyroidism).
4. Metabolic "predisposition":
  - a. Nutrition during pregnancy (higher risk for children with intrauterine growth retardation (IUGR), macrosomia and children of mothers with diabetes).
  - b. Nutrition during the 1<sup>st</sup> year of life (children with rapid weight gain in the 1<sup>st</sup> months of life). One more time, taking breast milk instead of formula milk is preventive of child obesity [2,6,7].

### What do we evaluate in the clinical history?

- a. Onset of obesity.
- b. Eating habits (where you eat, who takes care of your diet, time and content of each meal, assessment of intake of high-calorie products and sugary drinks).
- c. Physical activity (practice of physical exercise guided by a professional, frequency, type of modality, time spent playing, time spent watching TV and using video games/computer/mobile phones).
- d. Hours of sleep. The negative influence of television and excessive hours on mobile, computer and videogames in children's sleep quality has been demonstrated in recent studies.

The American Association of Pediatrics recommends a maximum of 1 to 2 hours of TV per day for children > 2 years old.

For WHO until 2 years of age, is not allow any exposition to screen (mobile, tablet).

From 2 to 4 years old, the exposition is only 1 hour per day.

Children who fall asleep earlier have a lower risk of becoming obese in adolescence.

The habit of sleeping after 9 pm increases the risk of obesity.

In a study, data from 977 children were evaluated. The group was divided into three categories based on bedtime: those who went to bed at 8pm or earlier, between 8 pm and 9 pm and after 9 pm. Age range was between 4.5 - 15 years. The children who slept earlier, only one in ten became an obese teenager. Between 8 pm and 9 pm, 16% were overweight in adulthood. After 9 pm: 23% became obese adults.

Sleep releases melatonin, a hormone that regulates the body. It causes the body to 'switch off' and have a deep rest. When we don't sleep, there is greater production of cortisol, a hormone that facilitates the formation of fat.

The use of cell phones, computers, television, can interfere with sleep, inhibiting the production of melatonin. Bad sleep increases appetite by 24%. These people especially look for foods rich in fats and sugars.

Leptin, a hormone capable of controlling the feeling of satiety, is also secreted during sleep. People who stay up very late produce lower amounts of leptin.

As a consequence, our body feels the need to ingest greater amounts of carbohydrates due to the increase in ghrelin.

Family history is important in quantifying cardiovascular risk (history of obesity, dyslipidemia, diabetes, hypertension, vascular and ischemic accidents) and in identifying environmental (dietary habits and physical activity) and genetic risk factors [1-5,8-10].

### What is important in the objective examination?

Assessment of general appearance (1 - dysmorphic: think about genetic causes, 2 - short stature: think about endocrine/genetic causes).

Anthropometric assessment: measurement of weight, height and abdominal perimeter.

BMI calculation with interpretation in percentile tables.

Blood pressure measurement with interpretation in percentile tables.

Assessment of pubertal stage and growth speed (accelerated growth and maturation in exogenous obesity).

Search for physical signs of comorbidities: cervical and axillary acanthosis nigricans, stretch marks, vasculitis, hepatomegaly, goiter, hirsutism and orthopedic changes [2-4].

### What tests should we order?

At the time of diagnosis, all children/adolescents with obesity must at least do these tests after 12 hours of fasting:

- a. Glucose and Insulin.
- b. Lipid profile (total cholesterol, LDL, HDL, triglycerides), TGP (alanine aminotransferase).

- c. Leptin and ghrelin.
- d. Abdominal ultrasound to check for hepatic steatosis [3,4,5].

### Adolescent food intake

Childhood and adolescence are stages of promoting and consolidating eating habits.

Nutritional needs vary with the speed of growth and organic maturation.

An inadequate standard influences the growth of young adolescents, affects school performance and cognitive functions and predisposes to the development of diseases such as obesity, diabetes, dyslipidemia, neoplasms and heart disease [2-5].

### Nutritional needs

The importance of a balanced meals intake will reduce significantly the risk of obesity and increase weight.

The total of Energy per day should be 40 - 55 kcal/kg/day, distributed in: 50 - 60% of Carbohydrates (not > 10 - 12% simple carbohydrates such as fruits, milk and vegetables); 10 - 15% of Proteins and 30 - 35% of Lipids (< 10% Saturated Fats; 10 - 20% Monounsaturated FA; 7 - 10% Polyunsaturated Fats; Cholesterol < 300 mg/day).

Proteins: 0.8 - 1 g/kg/day; Calcium: 1300 mg/day; Iron, Zinc: 10 - 15 mg/day.

### Dietary recommendations

The daily dietary distribution is: 25% breakfast; 30% lunch; 15 - 20% snack and 25 - 30% dinner.

We need to remember always to avoid omitting meals and snacking between meals.

### Water intake

The recommendation of water intake should be 1 litres(L)/day for children with 2.3 years of age and 1.3 L/day for children between 4 - 8 years of age, 1.6 L /day for boys 9 - 13 years and 1.4 L/day for girls with the same age. Boys with 14 - 18 years should drink 1.9 L/day and girls 1.6 L/day [2-7].

### Exercise

Exercise should be planned according to the age and gender. Need to be frequent each day of the week. The intensity should be 55 - 90% of maximum heart rate. The duration is between 30 - 80 minutes, but gradually, with beginning of 10 minutes of walking, 3-5 days/week [11,12].

### Prevention

Breast feeding is still important for prevention of obesity. If possible, every baby should breast feeding at least until 6 months of age. The rule of 5-2-1-0, can help to avoid or control the obesity: 5 or more vegetables of fruit, sitting in front of TV/computer/tablet and inactivity for less than 2 hours; 1 hour of physical activity and 0 sugary drinks.

Exercise burns calories (2000 steps/day = 100 calories). Daily exercise is recommended to lose weight [13].

### Conclusion

The main measures to reduce the risk of obesity are: breast feeding, decrease food intake, eat correct amounts of proteins, carbohydrates and lipids and other mineral salts, drink water and avoid other caloric drinks rich in sugar, sleep well and not after 9 pm and finally practice regular exercise. The better way to avoid obesity is prevention!

### Bibliography

1. Gunaratne N and Deplewski D. "Metabolic consequences of pediatric obesity: a review of pathophysiology, screening, and treatment". *Pediatric Annals* 52.2 (2023): e62-e67.
2. August GP, *et al.* "Prevention and treatment of pediatric obesity: an endocrine society clinical practice guideline based on expert opinion". *Journal of Clinical Endocrinology and Metabolism* 93.12 (2008): 4576-4599.
3. Yi DY, *et al.* "Clinical practice guideline for the diagnosis and treatment of pediatric obesity: recommendations from the Committee on Pediatric Obesity of the Korean Society of Pediatric Gastroenterology Hepatology and Nutrition". *Korean Journal of Pediatrics* 62.1 (2019): 3-21.
4. Styne DM, *et al.* "Pediatric obesity-assessment, treatment, and prevention: an endocrine society clinical practice guideline". *Journal of Clinical Endocrinology and Metabolism* 102.3 (2017): 709-757.
5. Jebeile H, *et al.* "Obesity in children and adolescents: epidemiology, causes, assessment, and management". *Lancet Diabetes and Endocrinology* 10.5 (2022): 351-365.
6. Whitlock E, *et al.* "Effectiveness of weight management programs in children and adolescents". *Evidence Report/Technology Assessment* 170 (2008): 1-308.
7. Danielsson P, *et al.* "Response of severely obese children and adolescents to behavioral treatment". *Archives of Pediatrics and Adolescent Medicine* 166.12 (2012): 1103-1108.
8. Befort CA, *et al.* "Weight-related perceptions among patients and physicians: how well do physicians judge patients' motivation to lose weight?" *Journal of General Internal Medicine* 21.10 (2006): 1086-1090.
9. Murtagh J, *et al.* "A qualitative investigation into the levers and barriers to weight loss in children: opinions of obese children". *Archives of Disease in Childhood* 91.11 (2006): 920-923.
10. Chen H, *et al.* "Association between sleep duration, sleep quality and weight status in Chinese children and adolescents". *BMC Public Health* 22.1 (2022): 1136.
11. Bulbul S. "Exercise in the treatment of childhood obesity". *Turkish Archives of Pediatrics* 55.1 (2020): 2-10.
12. Taşkın G and Şahin Özdemir FN. "The importance of exercise on children". *Gazi Journal of Physical Education and Sport Sciences* 23 (2018): 131-141.
13. Amed S, *et al.* "Wayfinding the live 5-2-1-0 initiative-at the intersection between systems thinking and community-based childhood obesity prevention". *International Journal of Environmental Research and Public Health* 13.6 (2016): 614.

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