OBESITY IN CHILDHOOD

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Childhood Obesity Facts

- Childhood obesity is a serious medical condition that affects children and adolescent
- Childhood obesity has more than doubled in children and tripled in adolescents in the past 30 yrs. \(^1\-^2\)
- Nowadays more than one third of children and adolescents were overweight or obese \(^1\)
- Children and adolescents are considered overweight or obese if the Body Mass Index exceeds the 85\(^{th}\) or the 95\(^{th}\) percentiles on curves or exceeds 30kg/m\(^2\) at any age \(^3\)
- Overweight and obesity are the result of “caloric” imbalance”- too few calories expended for the amount of calories consumed – and are affected by various genetic, behavioral, and environmental factors \(^4\-^5\)

Introduction:

Childhood obesity is the most prevalent nutritional disorder among children and adolescents in the developed countries. \(^1\) It occurs when a child is well above the normal weight for his or her age and height \(^6\). Childhood obesity is a complex disorder because the extra kilos often start children on the path to health problems that were once confined to adults such as diabetes, high blood pressure, high cholesterol etc...\(^7\)
Childhood obesity can also lead to poor self-esteem and depression.
One of the best strategies to reduce childhood obesity is to improve the diet and exercise habits of the entire family. \(^8\)
Treating and preventing childhood obesity help protect the health of the child now and in the future. \(^9\)
Causes and risk factors

Causes
- Life style is the first cause of obesity with the profile of the various cycle of childhood obesity (Fig 1): kids eating too much and exercising too little.
- Far less common are genetic disease and hormonal disorders.

Risk factors

Diet. Regularly eating high-calorie foods, such as fast foods, baked goods and vending machine snacks, can easily cause gain weight. Loading up on soft drinks, candy and desserts also can cause weight gain. These foods and beverages are high in sugar, fat and calories.

Lack of exercise. Children who don't exercise much are more likely to gain weight. Inactive leisure activities, such as watching television or playing video games, contribute to the problem.

Family history. Children coming from a family of overweight people, are more likely to put on excess weight, especially in an environment where high-caloric food is always available and physical activity isn't encouraged.

Psychological factors. Some children overeat to cope with problems or to deal with emotions, such as stress, or to fight boredom. Their parents may have similar tendencies.

Family factors. Many groceries such as cookies, chips and other high-calorie items, can contribute to child's weight gain.

Socioeconomic factors. Foods that won't spoil quickly, such as frozen meals, crackers and cookies often contain a lot of salt and fats. These foods are often less expensive or an easier option than fresher, healthier foods.

Test and Diagnosis

Obesity is determined by a formula called Body Mass Index (BMI). BMI is calculated by dividing body weight (kg) by height squared (m²). The BMI is a continuous, although imperfect, measure of body fatness, that can be readily and reliably qualified in clinical settings.

The BMI correlates closely with total body fat (TBF), which is estimated using dual-energy X-ray absorptiometry (DEXA) scanning in children who are overweight and obese.

Normal values for BMI vary with age, sex, and pubertal status; and standard curves representing the 5th through the 95 percentiles for BMI in childhood and adolescence were generated using data from the 1988–1994 of the National Health and Nutrition Examination Survey (NHANES). Consensus committees have recommended that children and adolescents be considered overweight or obese if the BMI exceeds the 85th Percentiles on curves generated by NHANES, or exceeds 30kg/m² at any age. (chart 1 and chart 2)
The BMI has not been consistently used or validated in children younger than 2 years; because weight varies in a continuous rather than stepwise fashion; and the use of the arbitrary criteria is problematic and may be misleading. Nevertheless, children and adolescents defined as overweight or obese according to published criteria are highly likely to maintain their ponderal status as adults.

**Complications**

Childhood obesity has complications for the physical, social and emotional well-being of the child, with both immediate and long-term effects on health and well-being.

**Fig 2**

**I- Physical complications**

1 **Cardiovascular disease**

Obese youth are more likely to have risk factors for cardiovascular disease, such as high cholesterol or high blood pressure. In a population based sample of 5–to-17-year-olds, 70% of obese youth had at least one risk factor for cardiovascular disease.

McGavock et al demonstrated that low cardiorespiratory fitness and reductions in fitness over time are significantly associated with weight gain and the risk of being overweight in children aged 6-15 years. Analysis on a cohort of 902 schoolchildren showed higher waist circumference and disproportionate weight gain over a 12-month follow-up period in those children with low cardiorespiratory fitness. The 12-month risk of overweight classification was 3.5-fold higher in youth with low cardiorespiratory fitness, relative to fit peers. Reductions in cardiorespiratory fitness were significantly and independently associated with increasing BMI. Low levels of cardiorespiratory fitness have also been associated with elevated depressive symptoms in obese adolescents.

Data indicate that over a 5-year period an increase in BMI among overweight children 6 to 11 years of age is associated with increases in both systolic and diastolic blood pressure.

2 **Sleep disorders**:

One study suggests that a lack of adequate sleep time in young children is associated with increased BMI; this observation is independent of other confounding variables (e.g., physical activity). Sleep apnea, snoring, abnormal breathing when sleeping are complications of childhood obesity.
3 **Asthma and other breathing problems:**
Overweight and obesity can affect the development and the physiology of the lungs, leading to asthma and other breathing problems, with exercise intolerance.\(^{17}\)

4 **Metabolic problems:**
Obese adolescents are more likely to have prediabetes, high cholesterol \(^{18}\)

5 **Early puberty or menstruation**
Obesity can create hormonal imbalances leading to early puberty. There is evidence that American children are hitting puberty earlier than in decades past and childhood obesity has been suspected as a major cause.\(^{19}\)
The findings are based on 1,200 girls from three U.S. cities who were followed between 2004 and 2011. Black girls standard developing breasts around age 8, white and Asian girls typically started at age 9. Comparing to 1997 study: 21% of white girls has started developing breasts before age 9, versus 11% in the earlier study.\(^{19}\)

6 **Children and adolescents who are obese are likely to be obese adult** \(^{20-21}\)

II- **Social and emotional complications**

**Low self-esteem and bullying.** Children often tease or bully their overweight peers, who suffer a loss of self-esteem and an increased risk of depression.\(^{22}\)

**Behavior and learning problems.** Overweight children tend to have more anxiety and poorer social skills than normal-weight children have. At one extreme, these problems may lead overweight children to act out and disrupt their classrooms. At the other, they may cause overweight children to socially withdraw. Stress and anxiety also interfere with learning with declining academic performance.\(^{22}\)

**Depression.** Low self-esteem can create overwhelming feelings of hopelessness in some overweight children. A depressed child may lose interest in normal activities, sleep more than usual or cry a lot. Some depressed children hide their sadness and appear emotionally flat instead. Either way, depression is as serious in children as in adults.\(^{22}\)

**Combating childhood obesity**

Communities, schools, health care providers and parents can work together to help make the healthy choice for children, adolescents, and their families by: \(^{23}\)
- Supporting healthy school nutrition environments by providing a quality school meal program, and offering students only healthy and appealing food and beverages outside of the meal program. 8-9
- Developing Comprehensive School Physical Activity Programs that include quality physical education, classroom physical activity breaks, recess, joint-use agreements, and opportunities for physical activity before, during, and after school. 24
- Increasing access to free drinking water and limiting the sale of drinks with added sugars in schools by strengthening nutrition standards for all foods and beverages in schools. 5-2
- Creating and maintaining safe neighborhoods for physical activity and improving access to parks and playgrounds. 24

Results

School Meals: A Starting Point for countering childhood obesity

On Dec. 11, 2012, the New York Times devoted its front-page, several cities were reporting declines in the prevalence of childhood obesity. those cities that make healthy foods available in schools and communities and integrate physical activity into people’s daily lives.
Although the declines were small, 5% or less, they were hopeful signs of a possible reverse in the sharp increase in childhood obesity observed since the early 1980s. 25

Conclusion

- Healthy lifestyle habits, including healthy eating and physical activity, can lower the risk of becoming obese and developing related diseases.
- The dietary and physical activity behaviors of children and adolescents are influenced by many sectors of society, including families, communities, schools, child care settings, medical care providers, faith-based institutions, government agencies, the media, and the food and beverage industries and entertainment industries.
- Schools play a particularly critical role by establishing a safe and supportive environment with policies and practices that support healthy behaviors. Schools also provide opportunities for students to learn about and practice healthy eating and physical activity behaviors.
Advices

- Follow the advice of the American Academy of Pediatrics regarding age appropriate media time for kids whether at home, school, or child care. [AAP Recommendation on Television Time for Children and Adolescents](#).
- Visit your child care center to see if it serves healthful foods and drinks, encourage physical activity and limit screen time. Learn more at [National Association of Child Care Resource & Referral Agencies](#).
- Provide plenty of fruits and vegetables, limit foods high in solid fat and added sugars, and prepare healthier foods at family meals. Learn more at [2010 Dietary Guidelines for Americans](#) and [Healthy Recipes](#).
- Save money and calories by serving your family tap water instead of drinks with added sugars. Learn more at [Rethink Your Drink](#).
- Making sure your child gets physical activity each day. Learn [how much physical activity children need](#).

Figure 1
Chart 1

The Vicious Cycle of Childhood Obesity

Healthy Child

Obese Adult
- Asthma, Diabetes, & Musculoskeletal Disease
- Prevent Exercise and Bring On Depression & Low Esteem

Severely Obese Child
- Extra 20-50 lbs
- Exercise uncomfortable & painful
- The other kids make fun of me

Mildly Obese Child
- Extra 10 lbs
- Inhibits Movement

Moderately Obese Child
- All Study - No Action

High Fat Foods

Video Games

Television
Chart 2

Figure 2
COMPLICATIONS OF CHILDHOOD OBESITY

Psychosocial
- Poor self-esteem
- Depression
- Eating disorders

Neurological
- Pseudotumor cerebri

Pulmonary
- Sleep apnoea
- Asthma
- Exercise intolerance

Cardiovascular
- Dyslipidaemia
- Hypertension
- Coagulopathy
- Chronic inflammation
- Endothelial dysfunction

Gastrointestinal
- Gallstones
- Steatohepatitis

Renal
- Glomerulosclerosis

Endocrine
- Type 2 diabetes
- Precocious puberty
- Polycystic ovary syndrome (girls)
- Hypogonadism (boys)

Musculoskeletal
- Slipped capital femoral epiphysis
- Blount’s disease
- Forearm fracture
- Flat feet

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