Pediatric obesity

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Pediatric

Objectives

- Definition.
- BMI.
- Epidemiology.
- Causes.
- Complication.
- Management.
- Prevention.

Definition& BMI

Definition

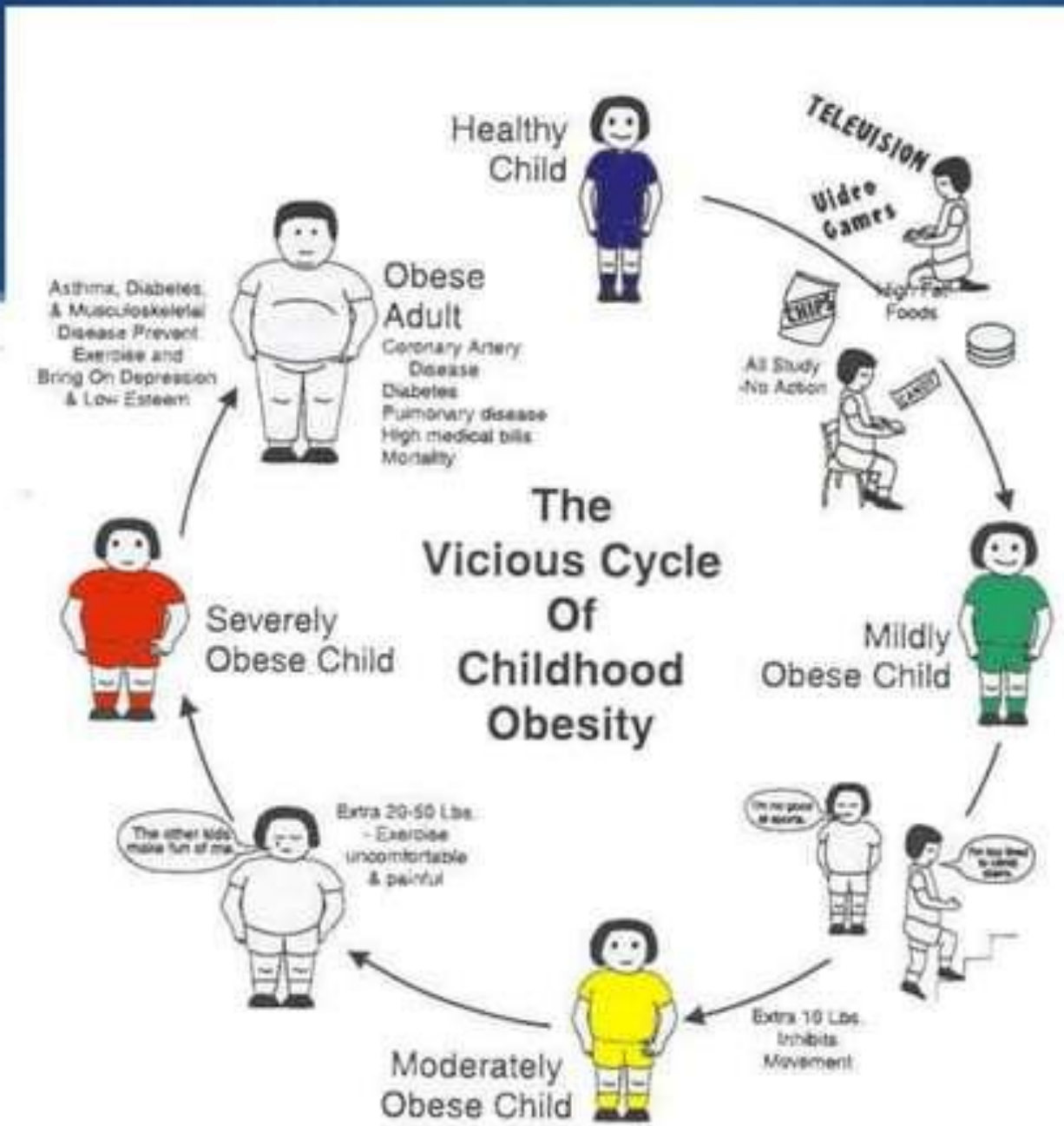
A condition where excess body fat negatively affects a child's health .

The diagnosis of *obesity* is based on **BMI**.

- Obesity is the most common nutritional disorder affecting children and adolescents in the developed world.
- obese children tend to become obese adults.

Definition

- Some doctors have used the terms overweight, obese and morbidity obese to refer to children and adolescent whose weight exceeds those expected for height .
- The weight varies in continuous rather than stepwise fashion , so it's difficult to find fixed criteria to determining obesity .


Healthy Child
TELEVISION
Video Games
High-Fat Foods
CHIPS
All Study -No Action
Mildly Obese Child
Extra 10 Lbs. Inhibits Movement
Moderately Obese Child
Extra 20-50 Lbs. - Exercise uncomfortable & painful
The other kids make fun of me.
Severely Obese Child
Asthma, Diabetes, & Musculoskeletal Disease Prevent Exercise and Bring On Depression & Low Esteem
Obese Adult
Coronary Artery Disease
Diabetes
Pulmonary disease
High medical bills
Mortality
The Vicious Cycle Of Childhood Obesity

BMI

- Is the best single index of obesity.
- BMI = weight in kg/height in metres2
- is expressed as a BMI centile in relation to age and sex-matched population.

For clinical use:

- overweight is a BMI >91st centile.
- Obese is a BMI >98th centile.

BMI

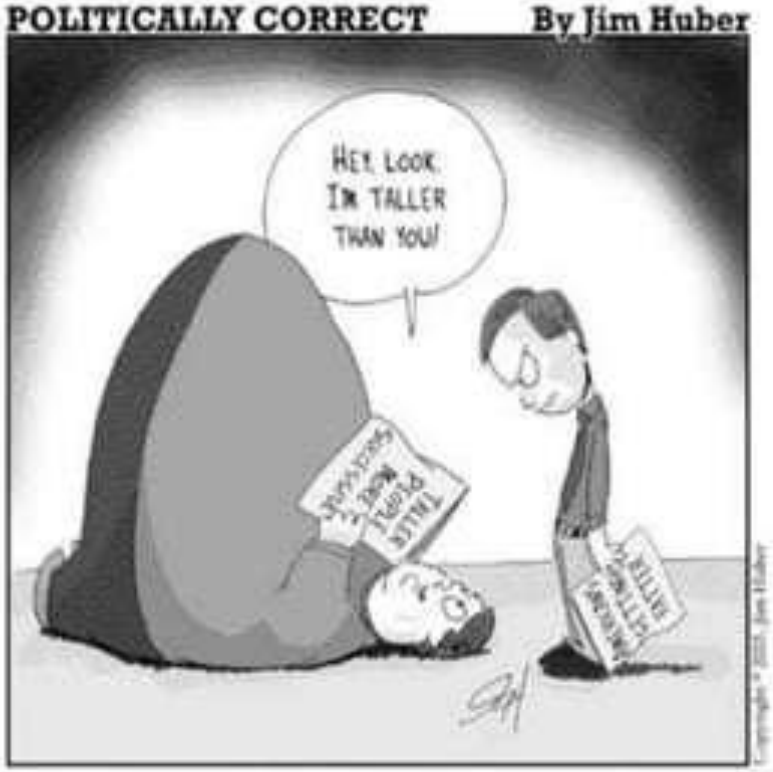
- Very severe obesity is >3.5 standard deviations above the mean.
- extreme obesity >4 standard deviations.

<u>For children over 12 years old:</u>

- overweight is BMI ≥25 kg/m2.
- obese ≥30 kg/m2.
- very severe obesity BMI ≥35 kg/m2.
- extreme obesity BMI ≥40 kg/m2.

NOTE

- Most obese children are also above the 50th centile for height . This will make difference from hypothyroidism or Cushing syndrome easier as these conditions are associated with short stature from decline in growth velocity .



BMI for Children and Teens

- Age- and sex-specific
- Plot BMI on growth chart to find percentile
- Weight status determined by percentile

Weight Status Category	*Percentile Range*
Obese	**≥ 95th percentile**
Overweight	**85th to < 95th percentile**
Normal	**5th to < 85th percentile**
Underweight	**< 5th percentile**

CDC Growth Charts

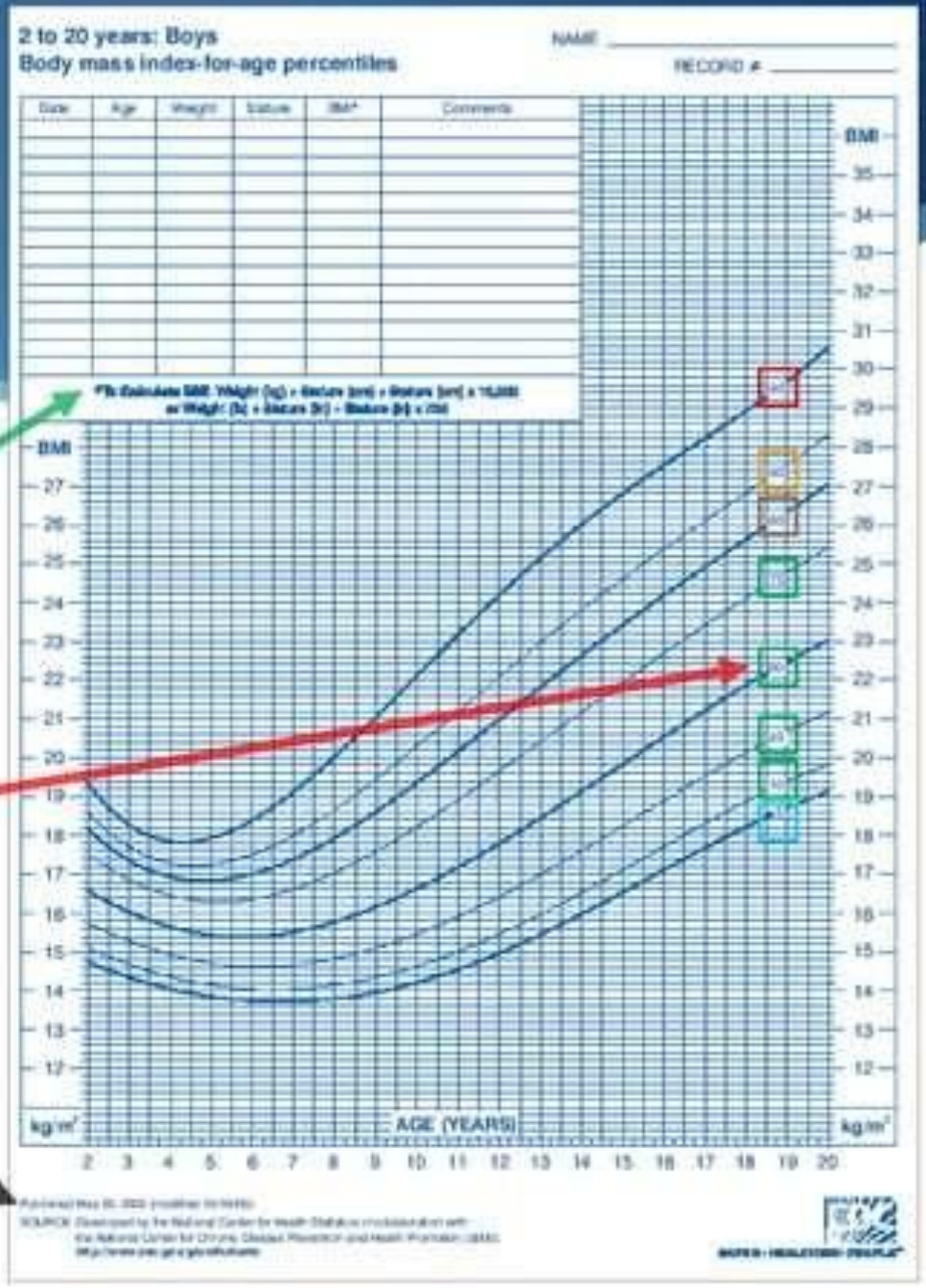
Tip: Download and print from
www.cdc.gov/growthcharts/

Formula to calculate BMI

Percentile lines
5th - 10th - 25th - 50th
75th - 85th - 90th - 95th

Published May 30, 2000

(modified 2000-2001)

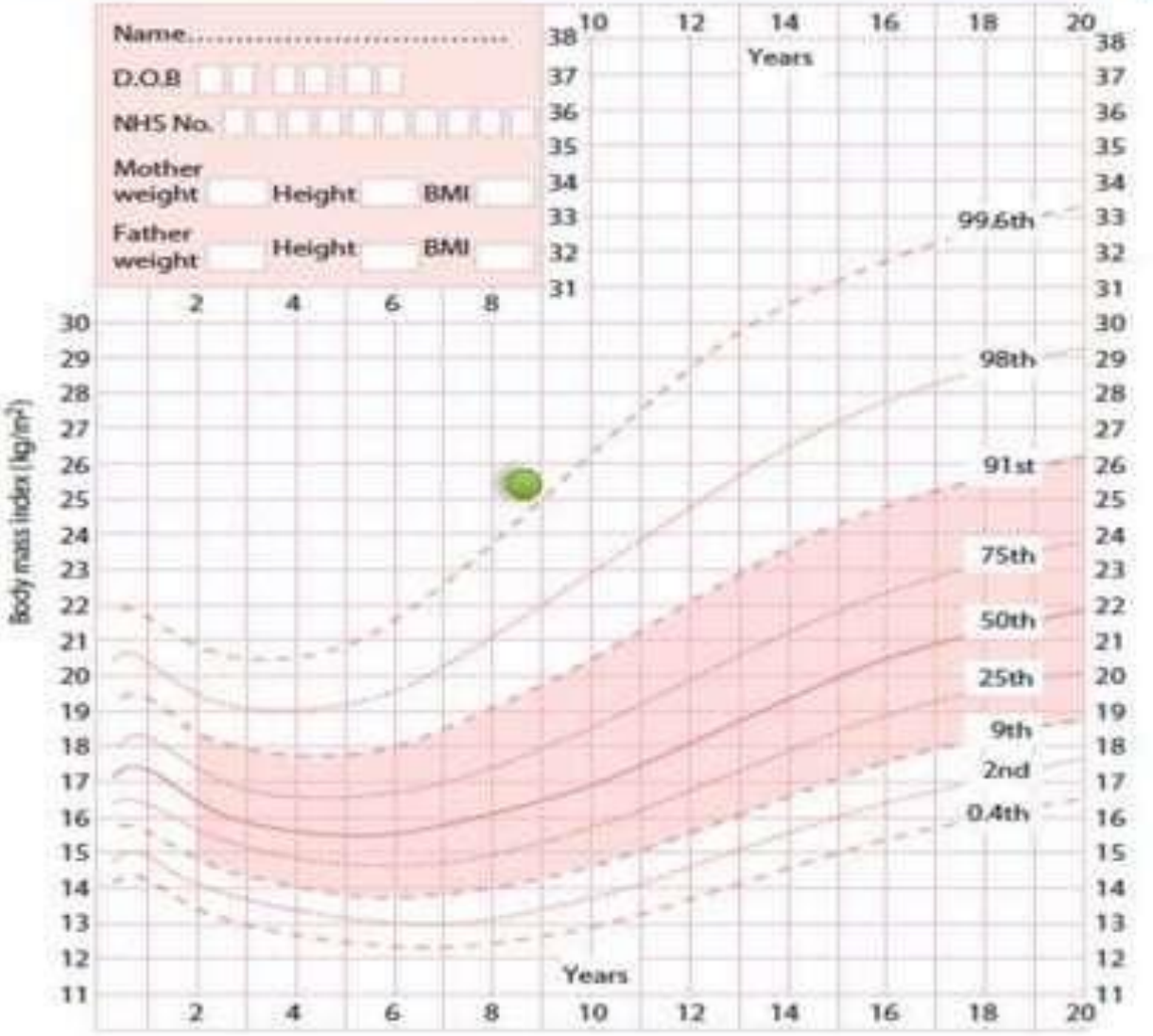


CBD

- Omar , a 9 years old Saudi boy .
- His weigh is 40 kg and his Height is 133 cm.
- Calculate the BMI ?
- Is he obese ?

BMI = wt(kg)/ht(m2)
=40\1.33*1.33
=23.66 kg/m2

So he is above 98th percentile = obesity



Main messages about obesity

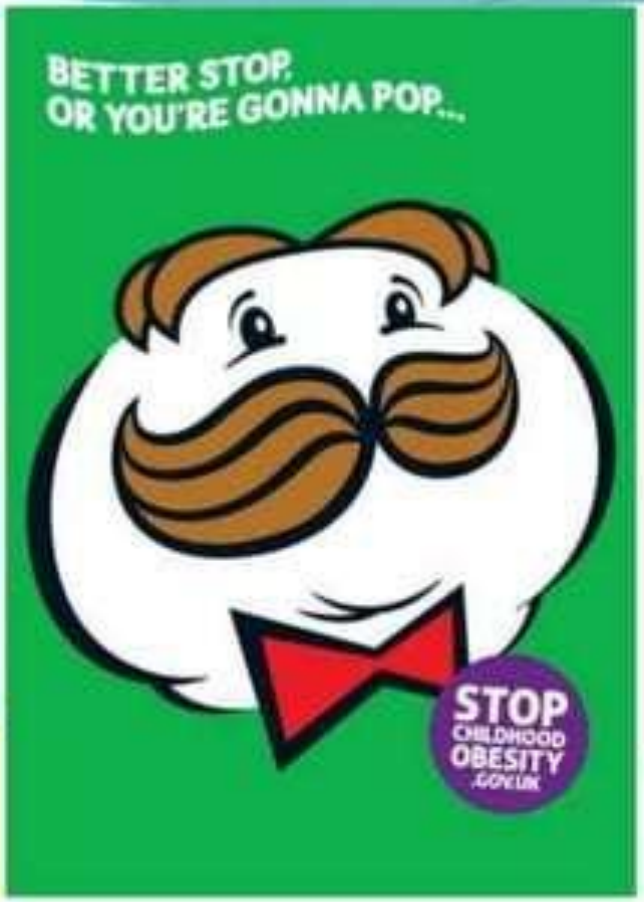
- Incidence of obesity in children is increasing
- Obesity is a health concern in itself and also increases the risk of other serious health problems, such as high blood pressure, diabetes and psychological distress
- An obese child tends to become an obese adult
- Obesity in children may be prevented and treated by increasing physical activity/ decreasing physical inactivity (e.g. small screen time) and encouraging a well-balanced and healthy diet
- Lifestyle changes involve making small gradual changes to behaviour

- Family support is necessary for treatment to succeed
- Generally, the aim of treatment is to help children maintain their weight (so that they can 'grow into it')
- Most children are not obese because of an underlying medical problem but as a result of their lifestyle.

Adapted from Scottish Intercollegiate Guidelines Network, SIGN.

STOP


THE UNHAPPY
WORLD OF HARIBO
STOP
CHILDHOOD
OBESITY
.GOV.UK


BETTER STOP,
OR YOU'RE GONNA POP...
STOP
CHILDHOOD
OBESITY
.GOV.UK


Little Freakin'Good
STOP
CHILDHOOD
OBESITY
.GOV.UK

Epidemiology & Causes

Epidemiology

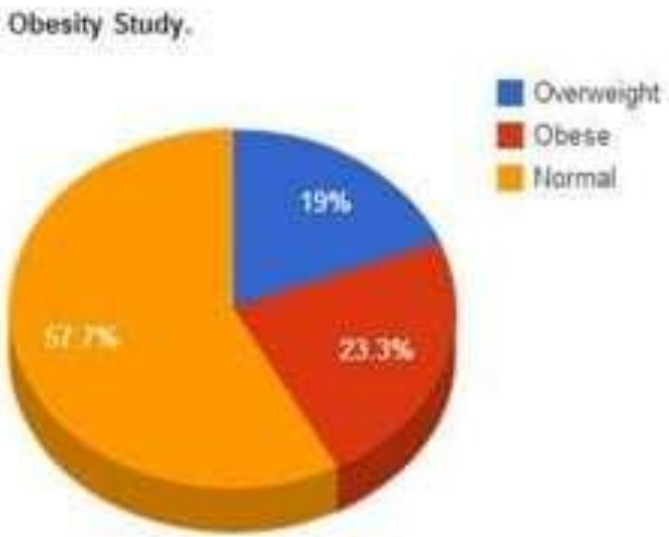
- Globally, in 2010 the number of overweight children under the age of five, is estimated to be over 42 million. Close to 35 million of these are living in developing countries.

- Over 60% of children who are overweight before puberty will be overweight in early adulthood.

Epidemiology

- Cross sectional study in 2006 to determine the prevalence of overweight and obesity in children in the Eastern province of KSA.
- Number of Children : 7056.
- Ages : 2-18 years old.
- Selected from Schools and outpatient department of a hospital.
- Data collected : Age , sex , nationality , weight & height.

Results…



Causes

- Childhood obesity is the result of eating too many calories and not getting enough physical activity.
- Obesogenic Environment.

Environment factors that promote overeating

- Availability of fast food & snacks
- Easy accessibility .
- Low Cost .
- Good taste .

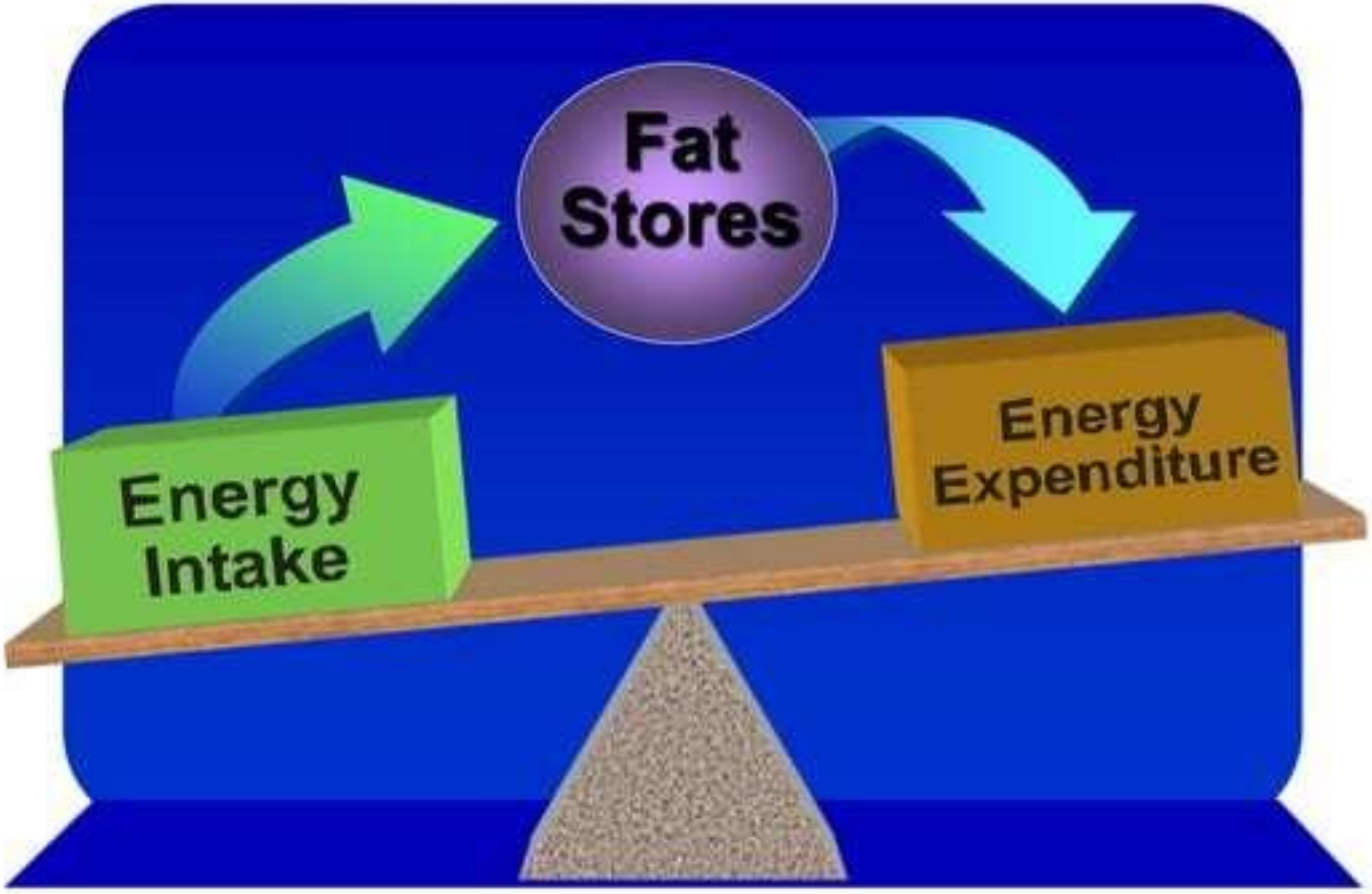
Environment factors that promote overeating

- High caloric-density food.
- Supersized portions.
- Eating out.
- Working parents.
- Advertising.

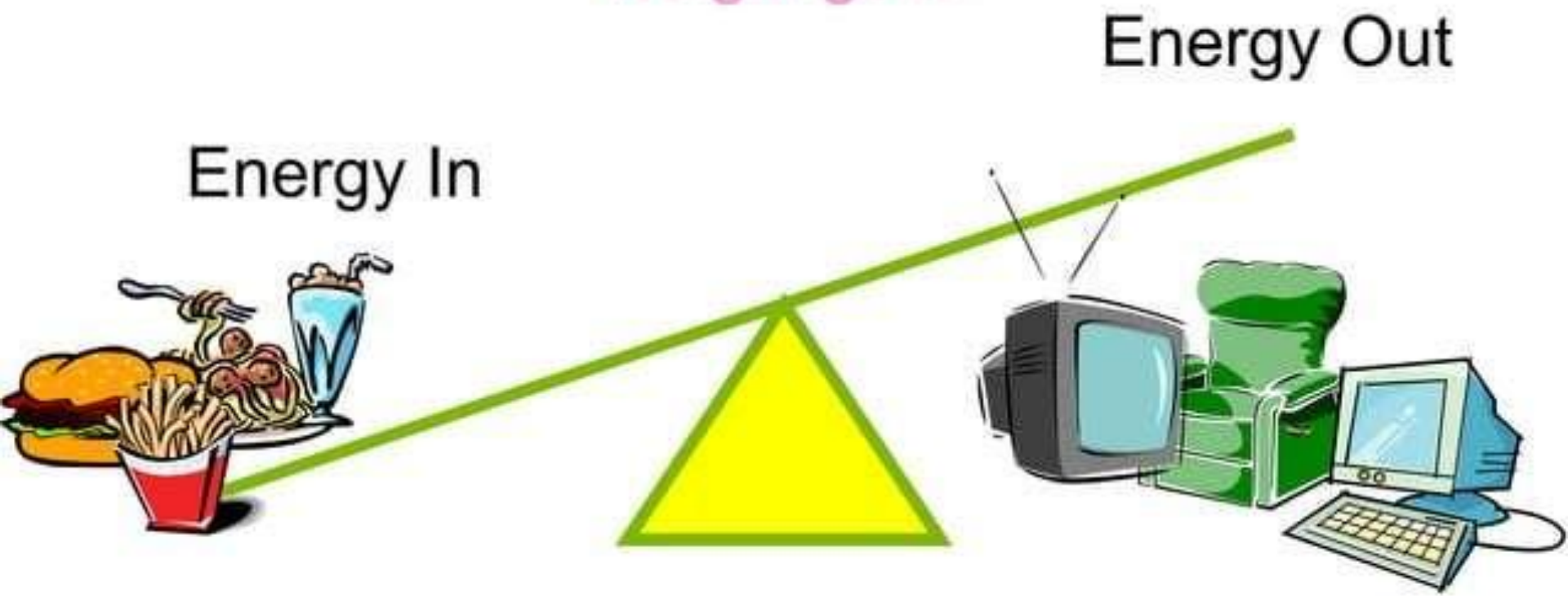
Factors that promote decreased physical activity.

- TV & Computers
- Transportation
- Inadequate safe areas for physical activity
- Sedentary Lifestyle

Obesity Is Caused by Long-Term Positive Energy Balance



Weight gain:



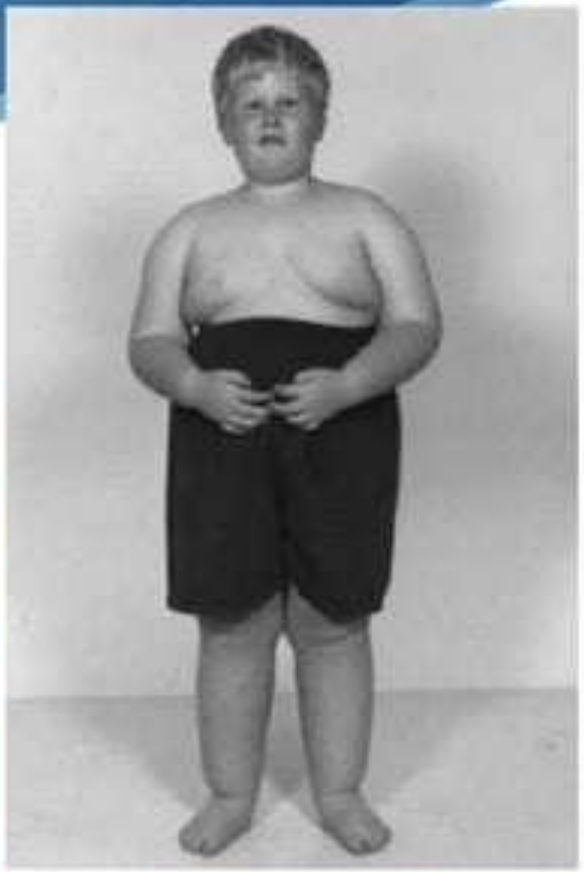
Genetics

- Overweight family and child may be genetically predisposed to gain excess weight
  - Environment of high-calorie foods.
  - Physical activity may not be encouraged.

- **≈ 80%**
  of children with two overweight parents will become overweight
- **≈ 40%**
  of children with one overweight parent will become overweight
- **≈ 7–9%**
  of children with no overweight parents will become overweight

More than 50 Obesity Associated Genetic Syndromes

Spina bifida



Bardet-Biedl

Down Syndrome

Prader Willi

Lack of public information

- Some people can not judge which products are high in fat and by how much.

- Food manufacturers display macronutrients in grams, when the correct way would be to express their contribution in energy.

Complication, treatment & prevention

Complications of obesity

Complications of obesity in children and adolescents can affect virtually every major organ system.

Medical complications usually are related to the degree of obesity and usually decrease in severity or resolve with weight reduction.

Complications of Obesity

Complication	Effects
Psychosocial	Peer discrimination, teasing, reduced college acceptance, isolation, reduced job promotion*
Growth	Advance bone age, increased height, early menarche
Central nervous system	Pseudotumor cerebri
Respiratory	Sleep apnea, pickwickian syndrome
Cardiovascular	Hypertension, cardiac hypertrophy, ischemic heart disease,* sudden death*
Orthopedic	Slipped capital femoral epiphysis, Blount disease
Metabolic	Insulin resistance, type 2 diabetes mellitus, hypertriglyceridemia, hypercholesterolemia, gout,* hepatic steatosis, polycystic ovary disease, cholelithiasis

*Complications unusual until adulthood.

Treatment

The primary goal for all children with uncomplicated overweight is to achieve **healthy eating and activity patterns**.

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Treatment

Childhood and adolescent obesity treatment programs can lead to sustained weight loss and decreases in BMI when treatment focuses on behavioral changes and is family-centered.

Concurrent changes in dietary and physical activity patterns are most likely to provide success.

Treatment

Treatment recommendations by an Expert Committee include 4 stages of treatment depending of degree of obesity and patient responsiveness to previous stages.

The most aggressive therapy is considered only for those who have not responded to other interventions.

Stages of Treatment

1. **Prevention plus** : The goal is improved BMI status. Problem areas identified by dietary and physical activity history should be provided and emphasis should be placed on healthy eating and physical activity patterns. This is especially appropriate for preventing further weight gain and for overweight and mildly obese children. This stage of treatment can take place in the office setting.

Stages of treatment

2. **Structured weight management**: The approach may include planned diet, structured daily meals, and planned snacks; additional reduction in screen (computer/videogame/television/tablet) time; planned, supervised activity; self-monitoring of behaviors, including logs; and planned reinforcement for achievement of targeted behavior change. This may be done in the primary care setting but generally requires a registered dietitian or a clinician who has specialized training. Monthly follow-up visits are recommended.

Stages of treatment

3. **Comprehensive multidisciplinary intervention**: This level of treatment increases the intensity of behavior change, frequency of visits, and the specialists involved. Programs at this level are presumed to be beyond the capacity of most primary care office settings. Typical components of a program include structured behavior modification, food monitoring, diet and physical activity goal setting, and contingency management. A multidisciplinary team with expertise in childhood obesity typically includes a behavior counselor, registered dietitian, exercise specialist, and primary care provider to monitor ongoing medical issues. Frequency of visits is typically weekly for 8 to 10 weeks, with subsequent monthly visits.

Stages of treatment

4. Tertiary care intervention: This more intensive approach should be considered for severely obese children. Approaches include medications, very low calorie diets, and weight control surgery, in addition to the attainment of behavior changes to improve diet and activity patterns. This level of intervention also includes a multidisciplinary team with expertise in obesity and its comorbidities and takes place in a pediatric weight management center.

Prevention

Prevention begins with the promotion of breastfeeding .

Age-appropriate portion sizes for meals and snacks should be encouraged.

Children should never be forced to eat when they are not willing.

Prevention

The importance of physical activity should be emphasized.

Time spent in sedentary behavior, such as television viewing and video/computer games, should be limited.

Summary

Summary

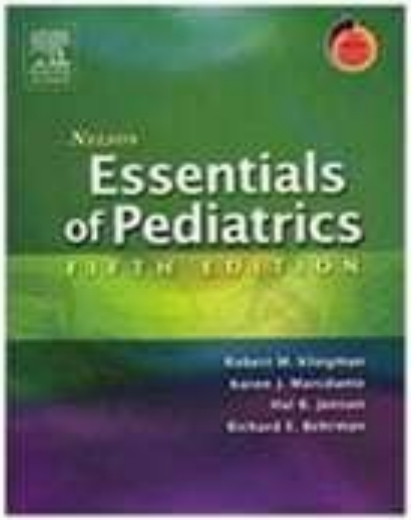
Obesity

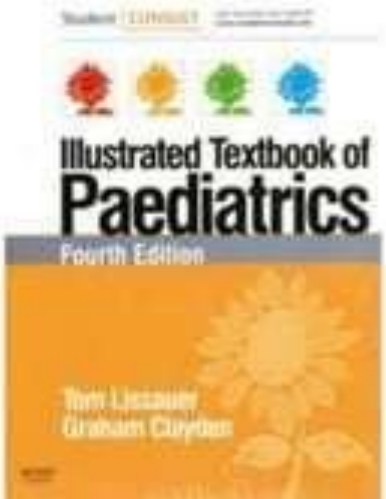
- An increasing major health issue for children, predisposing them to a wide range of medical and psychological problems in childhood and adult life, especially type 2 diabetes mellitus and cardiovascular disease
- Defined as a BMI >98th centile of the UK 1990 reference chart for age and sex; overweight is BMI >91st centile
- Exogenous causes (hypothyroidism and Cushing syndrome) of obesity are rare, and more likely in a child who is also short with falling height velocity; there are also some rare genetic syndromes
- Successful management requires sustained changes in lifestyle, with healthier eating, increased physical activity and reduction in physical inactivity
- Drug treatment and surgical intervention are only appropriate in a small number of children
- Lifestyle changes are difficult to achieve and even harder to maintain
- A cultural change in our society should be considered, e.g. removal of 'tuck shops' and vending machines with unhealthy food and drinks from schools.

References

- WHO & CDC.
- **Obesity in Saudi children: a dangerous reality. S.S. Al-Dossary,1 P.E. Sarkis,1 A. Hassan,2 M. Ezz El Regal3 and A.E. Fouda3.**

http://www.surgeongeneral.gov/topics/obesity/calltoaction/fact_adolescents.htm





Questions

Merci
beaucoup !