

Obesity

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Original Content | **Titles** | **Additional Notes** | **Important**

Learning objectives

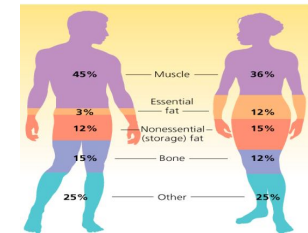
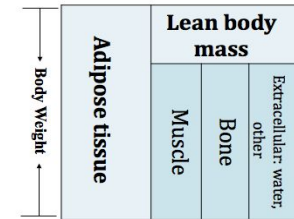
- By the end of the session the students should be able to define and understand :
 - Body composition
 - Defining obesity
 - Prevalence of obesity
 - Causes and consequences of obesity
 - Obesity prevention

Overweight and obesity:

- **Obesity:** a medical condition (not considered a disease -only a risk factor- because it doesn't have signs and symptoms) in which excess body fat has accumulated to the extent that it may have an adverse effect on health, leading to reduced life expectancy and/or increased health problems.
- Overweight and obesity are defined as abnormal or excessive fat accumulation that may impair health.
- Obesity is an abnormal accumulation of body fat, usually **20%** or more over an individual's ideal body weight. Broad definition. A more specific WHO definition will be mentioned later.
- Obesity is a multifactorial etiology condition, including lifestyle, genetic, environmental, metabolic and behavioural factors

Body compositions:

- Body composition includes:
 - Fat mass. Deposits of fat: Obesity is increased fat mass only for example, if a person has hypertrophic muscles their body weight would be increased but they won't be considered obese.
 - Adipose tissue
 - Subcutaneous fat
 - Around vital organs e.g. heart, kidney, liver
 - Fat-free or lean body mass (muscle, bone, fluids and organs)
 - Body compositions are different in males and females. In general males have a higher muscle mass and females have a higher fat mass (essential and non essential fat), bone mass is approximately the same sometimes slightly higher in males, other components are equally distributed between genders.



Measurements: BMI

- Body mass index (BMI):
 - Simple index of weight-for-height that is commonly used to classify overweight and obesity in adults. *Most commonly used measure.*
 - It is defined as a person's weight in kilograms divided by the square of his height in meters (kg/m²).
 - WHO BMI classifications: *Keep in mind that WHO defines obesity by BMI*
 - Underweight: <18.5
 - Normal range: 18.5-24.9
 - Overweight \geq 25-29.9
 - Obese \geq 30
 - Morbid obesity \geq 40

Anthropometric measurements for body size

- Height
 - Person has to be:
 - Barefoot
 - Relaxed shoulders and arms hanging freely
 - Male subjects remove their head covers
- Weight
 - Person has to be:
 - Wearing light clothing
 - Barefoot
 - Subject should remove all objects from their pockets



Anthropometric measurements for body size

- Waist circumference (WC)
 - Is measured in cm, using a flexible non-stretchable plastic tape
 - WC is measured in:
 - a standing relaxed position,
 - during expiration,
 - at the midline between the lower costal margins and the iliac crest parallel to the floor.
 - Used for the **diagnosis of abdominal obesity (AO)**
 - ≥ 88 cm in women
 - ≥ 102 cm in men
- Hip circumference
 - Taken around the widest portion of the buttocks
- Waist-Hip Ratio (WHR)
 - Used to measure the **fat distribution** in the body
 - Calculated by taking WC (in cm) and dividing by the HC (in cm),
 - $WHR \geq 0.85$ for women and ≥ 0.9 for men indicated AO



Skinfolds: thicknesses

- Measurement of **subcutaneous fat**. No reference limits, each device is different.
- Three-site Skinfold for Men
 - **Chest:** A diagonal skinfold taken midway between the anterior axillary line and the nipple
 - **Thigh:** A vertical skinfold taken on the anterior midline of the thigh between the inguinal crease and the proximal border of the patella
 - **Abdomen:** A vertical skinfold taken 2 cm to the right of the umbilicus



- Three-site Skinfold for Women
 - **Triceps:** A vertical fold on the posterior midline of the upper arm taken halfway between the acromion and olecranon processes
 - **Thigh:** A vertical skinfold taken on the anterior midline of the thigh between the inguinal crease & the proximal border of the patella
 - **Suprailiac:** A diagonal fold following the natural line of the iliac crest taken immediately superior to the crest of the ilium & in line with the anterior axillary line

Worldwide prevalence:

- In 2016 (Adults):
 - More than 1.9 billion adults aged 18 years and older were overweight. Of these over 650 million adults were obese.
 - Around 39% of adults aged 18 years and over (39% of men and 40% of women) were overweight.
 - Overall, about 13% of the world's adult population (11% of men and 15% of women) were obese.
 - The worldwide prevalence of obesity nearly **tripled** between 1975 and 2016.
- In 2016 (Children) The definition of obesity in children <18 doesn't depend on BMI. **It depends on growth chart (more than 2-3 standard deviations).**
 - Over 340 million children and adolescents aged 5-19 were overweight or obese
 - Once considered a high-income country problem overweight and obesity are now on the rise in low-and middle-income countries
 - Nearly half of the children under 5 who were overweight or obese lived in Asia.
 - The prevalence of overweight and obesity among children and adolescents aged 5-19 has raised
 - 1975 (4%) 2016 (over 18%).
 - The rise has occurred similarly among both boys and girls:
 - 18% of girls and 19% of boys were overweight.
 - 6% of girls and 8% of boys were obese

Prevalence in the gulf:

- WHO in its report indicates that gulf countries have highest rate of obesity.
- Kuwait, Bahrain, Saudi Arabia and United Arab Emirates are in the list of top ten countries worldwide in term of obesity.
 - Kuwait 42.8% obese population,
 - Saudi Arabia 35.2%
- The Saudi Health Information Survey (SHIS)
 - A national multistage survey of men and women aged 15 years or older, conducted in 2013
 - Findings:
 - 28.7% were obese (body mass index ≥ 30 kg/m²).
 - Prevalence of obesity was higher among women (33.5% vs 24.1%)

Table 1: Prevalence of obesity in Gulf Countries

Country	Male	Female
Kuwait	36%	48%
Saudi Arabia	28%	44%
UAE	25%	42%
Bahrain	21%	38%
Qatar	19%	32%
Lebanon	15%	27%
Oman	8%	17%

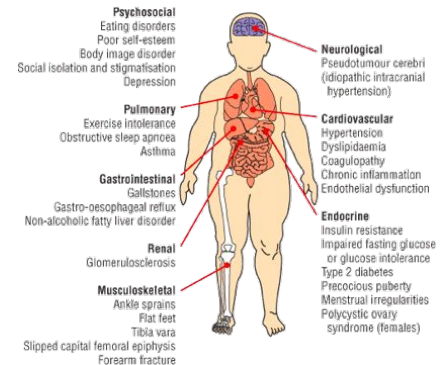
(WHO estimates 2010)

Causes of Obesity and Overweight:

- The fundamental cause of obesity and overweight is an energy imbalance between calories consumed and calories expended. Globally, there has been:
 - Increased intake of energy-dense foods that are high in fat
 - Increase in physical inactivity
 - Sedentary nature of many forms of work e.g. desk jobs
 - Changing modes of transportation
 - Increasing urbanization.
- Other contributing factors for obesity:
 - Genetic Factors There are no specific genes that lead to obesity.
 - individual factors such as behavior and genetics. Behaviors can include: dietary patterns, physical activity, inactivity, medication use, and other exposures.
 - Additional contributing factors in our society include the food and physical activity environment, education and skills, and food marketing and promotion.
- Other causes of obesity: consider these if sudden increase in weight not responsive to diet and increased physical activity
 - Some illnesses may lead to obesity or weight gain e.g. Cushing's disease, hypothyroidism and polycystic ovary syndrome.
 - Drugs e.g. steroids and some antidepressants may also cause weight gain.

Health Consequences:

- The risk for non-communicable diseases increases, with increases in BMI.
- Raised BMI is a major risk factor for non-communicable diseases such as:
 - Cardiovascular diseases (mainly heart disease and stroke), which were the leading cause of death in 2012
 - Diabetes
 - Musculoskeletal disorders (especially osteoarthritis – a highly disabling degenerative disease of the joints)
 - Some cancers (including endometrial, breast, ovarian, prostate, liver, gallbladder, kidney, and colon).
 - Childhood obesity is associated with:
 - higher chance of obesity, premature death and disability in adulthood
 - breathing difficulties
 - increased risk of fractures
 - hypertension
 - early markers of cardiovascular diseases
 - insulin resistance
 - psychological effects.



Economic and Societal Consequences:

- Medical costs associated with overweight and obesity may involve direct and indirect costs.
- **Direct medical costs**
 - Preventive, diagnostic, and treatment services related to obesity
- **Indirect costs**
 - Morbidity and mortality costs related to productivity
 - Productivity measures include
 - 'absenteeism' (costs due to employees being absent from work for obesity-related health reasons)
 - Presenteeism (decreased productivity of employees while at work)
 - Premature mortality and disability.

Strategies for Reducing the Burden of Overweight and Obesity

- Overweight and obesity are **largely preventable**
- Supportive environments and communities
- Overall, the most accessible, available and affordable methods for preventing overweight and obesity are healthier foods and regular physical activity most important
- At the individual level:
 - Limit energy intake from total fat and sugar
 - Increase consumption of fruit and vegetables, as well as whole grains and nuts
 - Engage in regular physical activity (60 minutes a day for children and 150 minutes spread through the week for adults).
- At the Social level:
 - Support individuals in following the healthy lifestyle through sustained implementation of evidence based and population based policies that make regular physical activity and healthier dietary choices available, affordable and easily accessible to everyone

Strategies for Reducing the Burden of Overweight and Obesity

- Role of the food industry:
 - Reducing the fat, sugar and salt content of processed foods
 - Ensuring that healthy and nutritious choices are available and affordable to all consumers
 - Restricting marketing of foods high in sugars, salt and fats, especially those foods aimed at children and teenagers
 - Ensuring the availability of healthy food choices and supporting regular physical activity practice in the workplace.
- WHO response:
 - The development of the "WHO Global Strategy on Diet, Physical Activity and Health"
 - Describes the actions needed to support healthy diets and regular physical activity.
 - The Strategy calls upon all stakeholders to take action at global, regional and local levels improve diets and physical activity patterns at the population level.
- Saudi Guideline for Prevention and Management of obesity (2016):
 - Primary Prevention of Obesity: for all age groups, assess diet, physical activity, and sedentary behaviors annually

Guidelines for Healthy Eating

- Birth to 5 years:
 - Recommend exclusive breastfeeding from birth up to the age of 6 months
 - Gradually introduce solid food starting at the age of 6 months
 - Carefully introduce -one at a time- foods which may cause allergies such as milk, eggs, wheat, seeds, nuts, fish, and shellfish
 - Provide three meals and two between-meal snacks for children 1 year old
 - Avoid high fiber foods and large volume of full-fat dairy products in below 2 years children
 - Introduce gradually, low-fat dairy product, for normally growing above 2 years old children
 - Adjust salt intake to the age of the child; (<1 g/day up to age 12 months; from 1 to 3 years no more than 2 g/day; and a maximum of 3 g/day for 4-6 year old)

Guidelines for Healthy Eating cont.

- Children above 5 years and adults:
 - Encourage children to eat regular meals including breakfast
 - Discourage availing easy access to foods not recommended for the child
 - Encourage intake of low salt foods and limit the intake of energy-dense foods and fast foods
 - Advise patients using medications associated with weight gain on weight management
 - Follow the 5-2-1-0 message every day:
 - 5 = Encourage intake of daily 5 rations of fruits and vegetables
 - 2 = Encourage eating with the child in a sociable atmosphere without distractions, separate eating from other activities and keep recreational screen time to <2 hour
 - 1 = Include at least 1 hour or more of active play every day (physical activity section below)
 - 0 = Skip sugar-sweetened beverages and drink more water every day.

Guidelines for Physical Activity

- Children and young people
 - Encourage children gradually to perform at least 60 minutes of moderate to vigorous exercise daily (continuous or accumulated in short bouts)
 - Encourage children to lead active daily life such as walking, cycling, skipping, and using the stairs and support them to practice regular physical activity appropriate to their age and ability such as football and swimming
 - Discourage sedentary behavior of more than 2 hour for children particularly of screen time (TV watching, computer use, and playing video games)
 - Encourage family approach to physical exercise (e.g., walking and cycling to school and shops, going to the park or swimming)

Guideline for Physical Activity

- Adults
 - Provide physical activity advice appropriate to specific individual situations. The focus should be on activities that can fit easily into their everyday life and are tailored to their individual preferences and circumstances. Attention should be given to pregnant women, postnatal weight retention, menopause or when stopping smoking
 - Inform the individuals about the benefits of physical activity on reducing the risk of cardiovascular disease (CVD) and type 2 diabetes, even without evident weight reduction
 - Encourage adults to do at least 30 minutes of moderate-intensity physical activity on 5 or more days a week. This should be built up over time; start by walking 10 minutes a day on a few days during the first couple of weeks then add more time and days gradually.

Summary

- Overweight and obesity are defined as abnormal or excessive fat accumulation that may impair health.
- Obesity is a multifactorial etiology condition, including lifestyle, genetic, environmental, metabolic and behavioural factors
- The risk for non-communicable diseases increases, with increases in BMI.