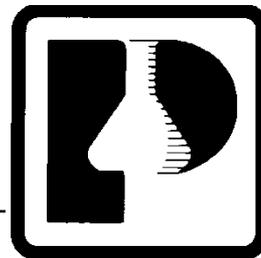


# Obesity

And its Associated Risk Factors

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# Obesity

## An Overview

- Overweight and obesity are both chronic conditions that are the result of an energy imbalance over a period of time.
- The cause of this energy imbalance can be due to a combination of several different factors and varies from one person to another.
- Individual behaviors, environmental factors, and genetics all contribute to the complexity of the obesity epidemic.



# Energy Imbalance

## What is it?



### *Weight Gain*

Calories Consumed  $\gt$  Calories Used

### *Weight Loss*

Calories Consumed  $\lt$  Calories Used

### *No Weight Change*

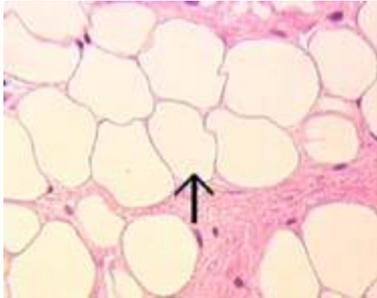
Calories Consumed  $=$  Calories Used

- *Energy balance* can be compared to a scale.
- An *energy imbalance* arises when the number of calories consumed is *not equal* to the number of calories used by the body.
- *Weight gain* usually involves the combination of consuming too many calories and not expending enough through physical activity.



# Energy Imbalance

## Effects in the Body



- Excess energy is stored in fat cells, which enlarge or multiply.

- Enlargement of fat cells is known as **hypertrophy**,  
whereas multiplication of fat cells is known as **hyperplasia**.

*in adult*

*in children*

سبب ماركبورا المشكلة كدهاي الخليا زي تزايد بالحجم يعني مشك بدون 2m تكبير / تكبير 8m

- With time, excesses in energy storage lead to obesity.

*شبعون  
sever obesity  
بدون عصبية*

*مع تزايد البلوغ عدد الخلايا تزايد  
مع بعد البلوغ عدد الخلايا يثبت وجمها يزيد*

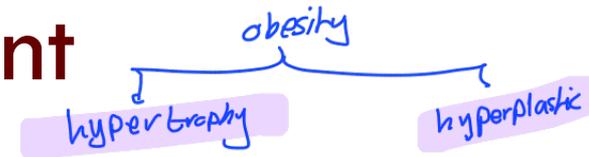


Fat cells



# Fat Cell Enlargement

## Hypertrophy



- Enlarged fat cells produce the clinical problems associated with obesity, due to the following:
  - The weight or mass of the extra fat
  - The increased secretion of free fatty acids and peptides from enlarged fat cells.

*Notes of cell increased.*



# Measurement of obesity

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- BMI *→ most common tool.*
- Waist hip ratio
- Skin fold thickness
- Air displacement Plethysmography
- Total body electrical conductivity



# Body mass index (BMI)

**Body Mass Index (BMI)** can be used to identify if an adult is a correct weight for height.

BMI can be calculated as follows:

$$\text{BMI} = \frac{\text{weight (kg)}}{(\text{height in m})^2}$$

## Recommended BMI range (adults)

Less than 18.5  
**18.5 to 25**  
**healthy**

Underweight  
**Desirable or**

**range**

25-30

Overweight

30-35

Obese (Class I)

35-40

Obese (Class II)

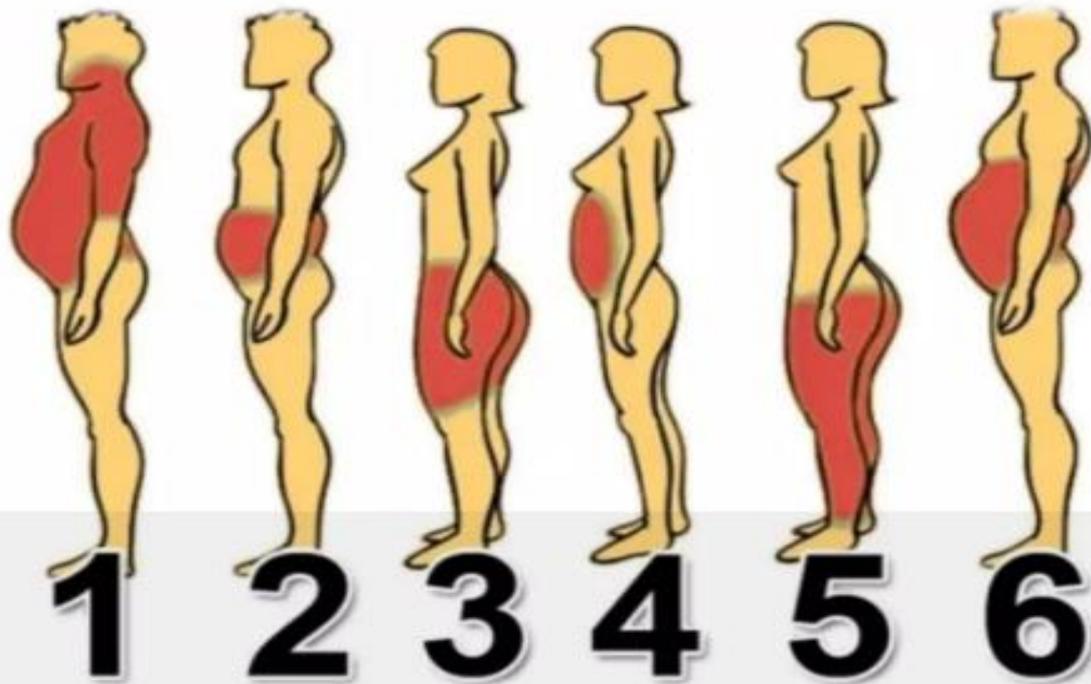
Over 40

Morbidly or severely  
obese (Class III)

*-moderate obesity*



# Types of obesity



# 1. Inactivity Obesity



- It is no secret that a lack of physical activity can cause you to become overweight. In this type of obesity, once-strong parts of the body quickly gain fat and become unhealthy.



## 2. Food Obesity

*trunk obesity / central*



- ▶ If you overeat, and particularly if you overindulge in unhealthy foods, you may suffer from food obesity.
- ▶ Excessive sugar intake can also cause food obesity, which may lead to accumulation of fat around the middle part of the body.



### 3. Anxiety Obesity



- ▶ Anxiety or depression can often lead to overeating and accumulation of fat in the body, since the body must constantly survive in fight-or-flight mode.
- ▶ To treat this type of obesity, you must control your anxiety.
- ▶ Common treatments include medication, a decrease in caffeine intake.



## 4. Venous Obesity



- ▶ Venous circulation is one obesity cause that is genetic in nature, rather than habitual in nature. if anyone in your family suffers from venous circulation, you run the risk of the same condition.
- ▶ This type of obesity is particularly common in pregnancy.
- ▶ Exercise is the best solution for this problem.

# 4

4

## 5. Gluten Obesity



- ▶ You are likely no stranger to the many health problems that gluten can cause. In fact, gluten can actually cause obesity.
- ▶ This type of weight gain is most common in women.
- ▶ It is often spotted during periods of hormonal change, like puberty, pregnancy, and menopause.

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## 6. Atherogenic Obesity

in alcoholism people



# 6

- ▶ People whose fat tends to accumulate in the stomach area often suffer from atherogenic obesity.
- ▶ This is a particularly dangerous condition since it can affect your other organs and lead to breathing problems.
- ▶ It is extremely important to avoid drinking alcohol if you have atherogenic obesity.



# Several factors are responsible for obesity

- Behavioral and lifestyle factors
- Diseases
- Mental illness
- Genetics



## Behavioral and lifestyle factors

- Unhealthy dietary patterns
- Less physical inactivity
- Medication use
- Easy availability of fast food
- Unfavorable physical activity environment
- Less education and skills
- Food marketing and promotion



# Behavioral and lifestyle factors

## 1. Diet

- ▶ **A diet high in simple carbohydrates.**

Carbohydrates increase blood glucose levels, which in turn stimulate insulin release by the pancreas, and insulin promotes the growth of fat tissue and can cause weight gain.



# Behavioral and lifestyle factors

## 1. Diet Cont.

- ▶ **Frequency of eating.** The relationship between frequency of eating (how often you eat) and weight is somewhat controversial



# Behavioral and lifestyle factors

## 2. Sedentary lifestyle

- ▶ **Physical inactivity.** Sedentary people burn fewer calories than people who are active. The National Health and Nutrition Examination Survey (NHANES) showed that physical inactivity was strongly correlated with weight gain in both sexes.



# Behavioral and lifestyle factors

## 3. Medications

- ▶ Medications associated with weight gain include certain **antidepressants**, **anticonvulsants**, some **diabetes medications**, certain **hormones** such as **oral contraceptives**, and most **corticosteroids**. *→ most common.*
- ▶ Weight gain may also be seen with some **high blood pressure medications** and **antihistamines**.

*insuline*



# Diseases

(Many diseases like)

- Cushing's disease
- Polycystic ovary syndrome
- Thyroid and other endocrine disorders



# Mental illnesses

- Depression
- Eating disorders



## Genetics

- ▶ A person is more likely to develop obesity if one or both parents are obese.
- ▶ Genetics also affect hormones involved in fat regulation.
- ▶ For example, one genetic cause of obesity is leptin deficiency.



هرمون مغذی که  
obesity



# Health consequences of obesity

According to CDC obesity affects almost all organ systems and creates adverse health effects.

1. Hypertension → because ↑ viscosity → fat تتراكم → atherosclerosis.
- \* 2. Dyslipidemia → disorder in fat in Blood (قيم الدهون الشحوية تزيد)
3. Type 2 diabetes → in central obesity → cause insensitivity cell
4. Coronary heart disease → angina. + MI
5. Stroke → cerebral infraction.



## Health consequences of obesity Cont.

6. Gallbladder disease → because the union of fat + Na → Bile stone.
7. Osteoarthritis
8. Sleep apnea<sup>کشیخیر</sup>, obesity related asthma
9. Endometrial, breast, colon, liver cancers
10. Low quality of life
11. Mental illness
12. Chronic pain



# Prevention

Risk factors context



## Primary Prevention

### Lifestyle Assessment Related to Obesity Risk

- Assess BMI at least annually, monitor for increasing BMI.
- Review dietary and physical activity habits in addition to sleep duration
- Review other obesity risk factors such as **medical co-morbidities, familial obesity, medication** use, and lack of **nutrition knowledge** and/or **skills for food preparation**.

11/30/2017



## Primary Prevention      Cont.

### Diet and Eating

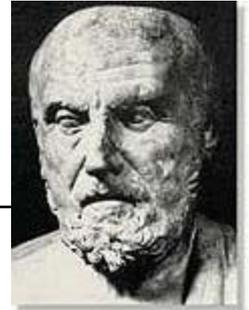
3. Encourage and support breastfeeding during infancy
4. Encourage families to create a healthful eating environment that is responsive to hunger and fullness cues



# *Mortality and Morbidity*

## Associated with Obesity

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- The effects of excess weight on mortality and morbidity have been recognized for more than 2,000 years. It was Hippocrates who recognized that “sudden death is more common in those who are naturally fat than in the lean.”
- Today, obesity is increasing rapidly. Research shows that many factors related to obesity influence mortality and morbidity.



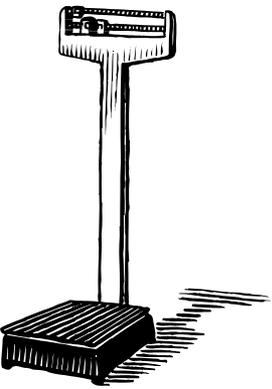
# Mortality

## Weight, Fat Distribution, and Activity



- The following factors have been shown to increase mortality in individuals:

- Excess body weight
- Regional fat distribution
- Weight gain patterns
- Sedentary Lifestyle



ADAM.



## Secondary Prevention

1. Annual assessment of BMI should be recorded and discussed with patients.
2. Annual assessment of BMI should be recorded and discussed with patients.
3. indicating increased risk for developing obesity.



## — Secondary Prevention Cont.

General goals of weight management in obese persons are:

1. Reduce body weight
2. Sustain weight loss by minimizing risk of weight gain
3. Prevent further weight gain.



Thank  
you

