

EPIDEMIOLOGY OF OBESITY



Contents:

- the terms overweight and obesity .
- methods to diagnose overweight and obesity .
- factors leading to obesity
- The magnitude of the problem and the distribution of obesity by gender , age ,in KSA and other countries .
- consequences of obesity.
- prevention and control of obesity

Please check out this link before viewing the file to know if there are any additions or changes: [medicine Editing](#)

Important:

This Work doesn't include the whole graphs,
the doctors said you don't have to memorize numbers..
Just the main concept and the main idea of the statistics results ...



Obesity and Overweight

▪ Obesity :

Excessive fat accumulation in adipose tissue to the extent that **it can affect health** .

▪ Overweight

- ❑ Has **more body fat than needed** for body functions
- ❑ When weight ranges are greater than what is generally considered healthy for a given height.
- ❑ Such ranges of weight increase the likelihood of certain diseases and health problems.

Measuring Obesity

1) Body Mass Index (BMI):

- o Calculated from a person's weight and height.
- o Reliable indicator of body fatness for most people.
- o Inexpensive & easy-to-perform screening for weight categories that may lead to health problems.

$$\text{BMI} = \frac{\text{weight (lb)} * 7}{\text{height}^2 (\text{in}^2)}$$

OR

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

o At the same BMI :

- Women tend to have more body fat than men
- Older people tend to have more body fat than younger adults.
- Highly trained athletes may have a high BMI because of increased muscularity rather than increased body fatness.

Increased body weight does not always equate to increased body fat.

So BMI Does not measure body fat directly, but correlates to direct measures of body fat like:

2) Underwater weighing.

3) Dual energy x-ray absorptiometry “DXA”:

(used primarily to evaluate bone mineral Density but can also be used to measure total body composition and fat content with a high degree of accuracy.)

Alternative for direct measures of body fat.



4) Skin fold thickness.:

Males: Upper Chest, Upper Abdomen
Female: Triceps, Lower Abdomen, Thighs

Due to differences in Fat Distribution!!
Men accumulate upper body fat.
Women can accumulate upper & lower body fat.

5) Waist Circumference:

While standing place a tape measure just above the hipbones; after breathing out.
Risk of heart disease and diabetes mellitus increases in

Males: > 40 inches (western Setting) > 35 inches (Asians)
Females: > 35 inches (Western Setting) > 31 inches (Asians)

Obesity classification according to BMI:



Ideal BMI for Asians is substantially lower than that for Caucasians

BMI >30 → morbidity and mortality increases

BMI >40 (class III) → :is the most extreme of the life expectancy is reduced by as much as 20 years in men and by about 5 years in women.

Obesity & Overweight in Children & Adolescents :

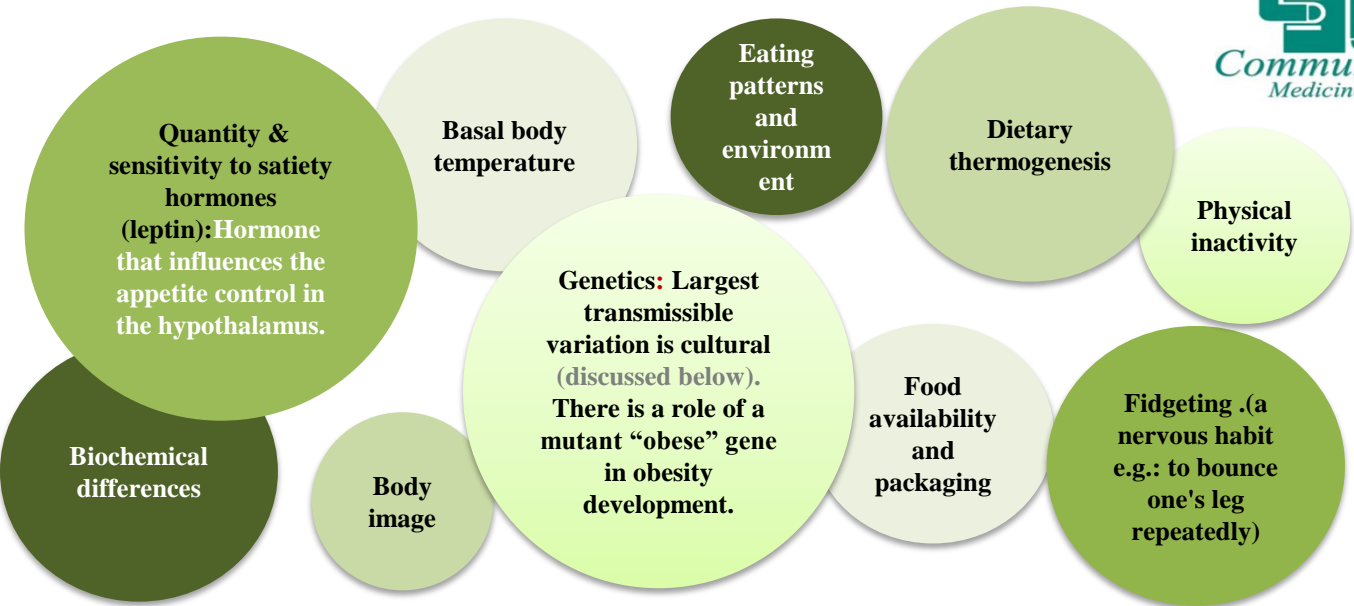
Overweight :BMI at or above the 85th percentile and lower than the 95th percentile for children of the same age and sex.

Obesity : BMI at or above the 95th percentile for children of the same age and sex.

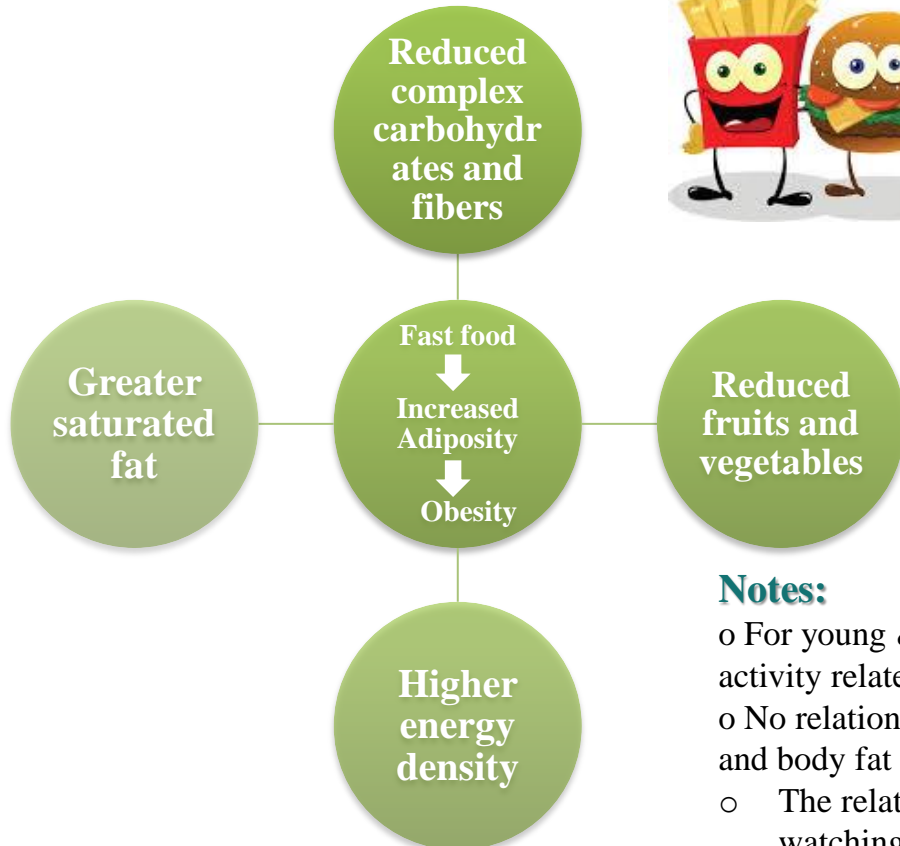
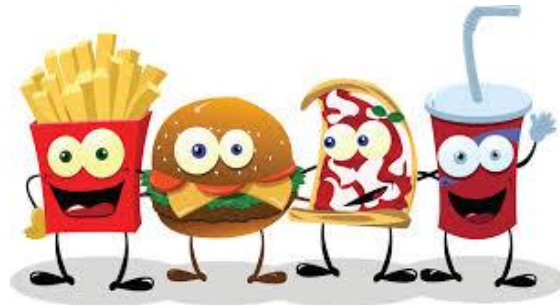
Children and particularly adolescents who are obese have a high probability of growing to be adults who are obese.

- Obesity frequently begins in childhood.
- Obese parents likely have overweight children.
- Regardless of final body weight as adults, overweight children exhibit more illnesses as adults than normal kids

Causes of Obesity: (Not necessarily overeating)



Fast food and obesity:



Notes:

- o For young & middle aged men, physical activity relates inversely to body fat levels.
- o No relationship between caloric intake and body fat levels.
- o The relation between Adolescents TV watching hours and increased obesity prevalence

Role of Genetics in obesity:

The gene inside the fat cell creates a hormone responsible for satiety

the satiety hormone moves from the fat cells and enters the bloodstream

the satiety hormone signals the hypothalamus to reduce or stop the drive to eat after the "set point" is reached for the body's total quantity of fat.

A defective ob gene causes inadequate leptin production. Thus, the brain receives an under assessment of body's adipose stores and urge to eat

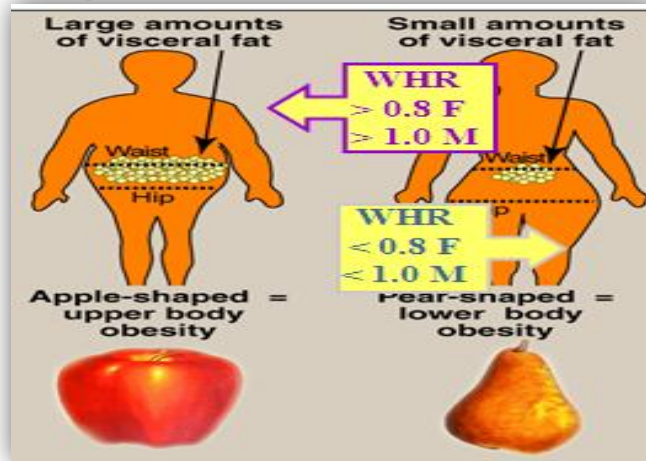
the possibility of defective receptor action (via a leptin receptor molecule on brain cells), which increases a person's resistance to satiety

Some Secondary Causes:

- Hypothyroidism
- Cushing's Syndrome
- Hypothalamic Obesity
- Polycystic Ovarian Syndrome
- Growth Hormone deficiency
- Oral Contraceptives
- Pregnancy related
- Medication Related
- Eating Disorder

Types of obesity:

**Central
(visceral)**



peripheral

Global Epidemic (prevalence):

Why is obesity accelerating in developing countries?

- o Increased consumption of energy dense, nutrient poor foods.
- o Reduced physical activity.

Prevalence of Obesity world wide :

- o 250 million people (~ 7% of the world) are obese.
- o Overweight rate is 2-3 times more of obesity
- o Socioeconomic status (SES) and prevalence of obesity are negatively correlated in developed countries ,And reversed in many undeveloped countries
- o Countries with Highest obesity percentages:

In men : Lebanon , Qatar ,Kuwait **Saudi Arabia the 7th**

In women :Qatar ,**Saudi Arabia** ,west bank and Gaza

Epidemiology of Obesity in USA :

- o 100 million adults in the United States are at least overweight or obese.
- o 35% of women and 31% of men older than 19 years are obese or overweight.
- women :has higher obesity percentage and less over weight percentage than men
- men : has higher over weight percentage and less obesity percentage than women
- And both has an increase over years in obesity

- o 20-25% of children are either overweight or obese,
- o Obesity management costs about \$100 billion / year, without the costs of various commercial dietary and weight-loss programs.

CONT..

Epidemiology of Obesity in Europe:

- 15% of men and 22% of women are obese

Epidemiology of Obesity Middle Eastern countries;

- show a disturbing trend, with alarming levels of obesity often exceeding 40% and particularly worse in women than in men.

Prevalence of Obesity in Saudi Arabia:

- Adult Males is 26.4 % of total population (7th rank in highest obesity rankings).
- Adult Females is 44.0 % of total population (2nd rank in highest obesity rankings)

Physical inactivity :

Men :43.3-93.3% (in different studies)

Women :84.7-98.1% (in different studies)

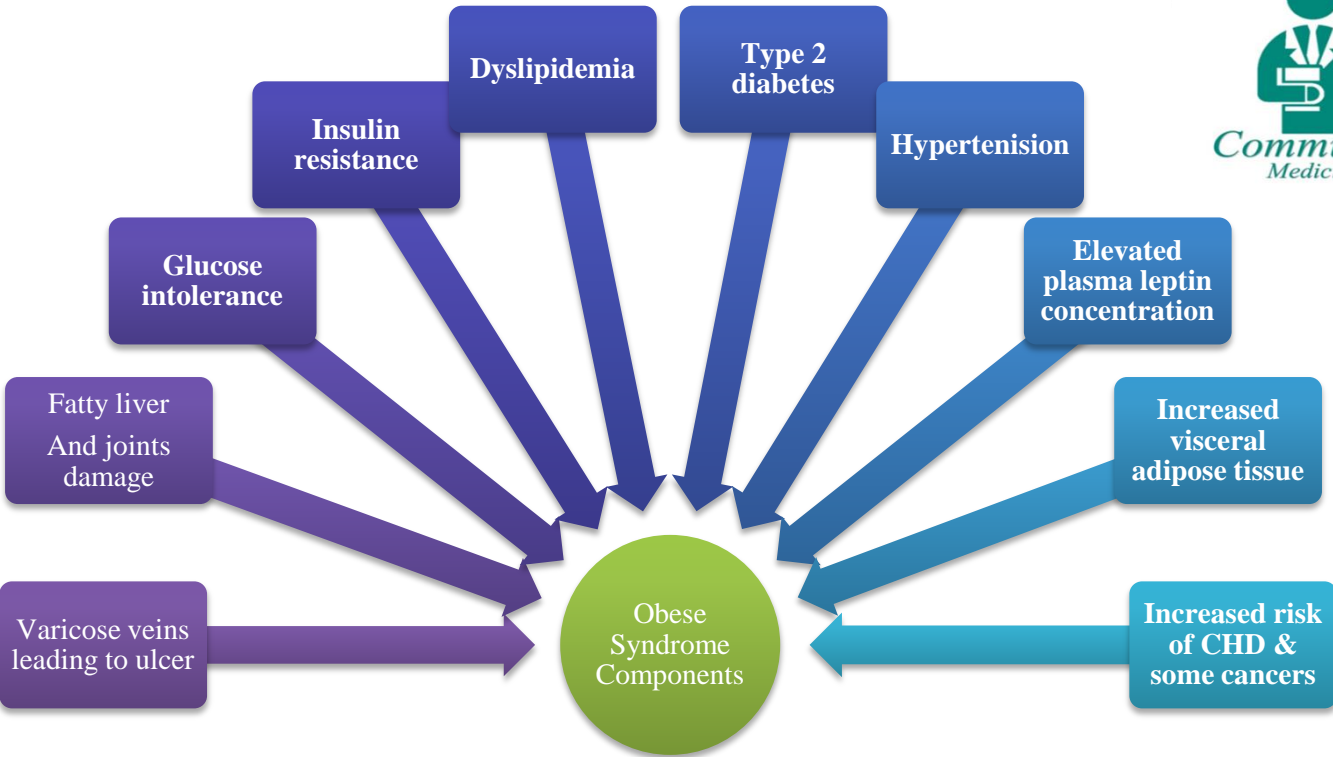
Also

women : has higher obesity percentage and lesser over weight percentage than men

men : has higher over weight percentage and lesser percentage than women

And both has an increase over years in obesity

	KSA	US
Age	Younger pepole doesn't have that high percentage of obesity as in middle age group	Less in age extramities
Race	More obesity in urban than rural due to life style changes and stress	Higher in black → Hispanic(people from Latin America) →whites →others
Education	Not that much different	higher in younger people (high school) and go down in graduate age and more in low education level community
Income	About the same with little increase in high income	Higher percentage in low income
Rgion	---	About the Same throughout the us but little more in south



Factors associated with obesity modulate morbidity and mortality:

- Age of onset of obesity
- Duration of obesity,
- Severity of obesity,
- Amount of central adiposity
- Gender
- Level of cardio-respiratory fitness.

Abdominal body fat
correlated with
increased risk of:

Cardiovascular disease
Type 2 diabetes
Premature death
Some types of malignancies (colorectal, liver , Brest cancers)

What happens with weight loss ?

10kg Weight Loss in 100kg Patient

20-25% fall in total mortality

30-40% fall in diabetes related deaths

40-50% fall in obesity related cancer deaths

Blood pressure fall of approximately **10mm/Hg** in both systolic and diastolic values

- Fall of **30-50%** of glucose.
- Fall of **15%** HbA1C

Reduces the risk of developing diabetes by **>50**

Lipids:

- Fall of **10%** in total cholesterol
- Fall of **15%** LDL
- Fall of **30%** triglycerides
- Increase of **8%** in HDL

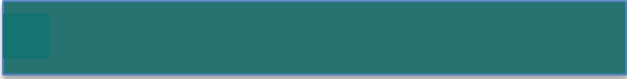
Weight Loss Therapy is Recommended for !!

- With BMI ≥ 23
- Waist measurement of: ≥ 90 cm for men and ≥ 80 cm for women
- Two or more risk factors

Approach to obesity

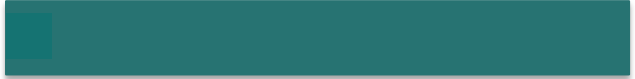


At Clinical level



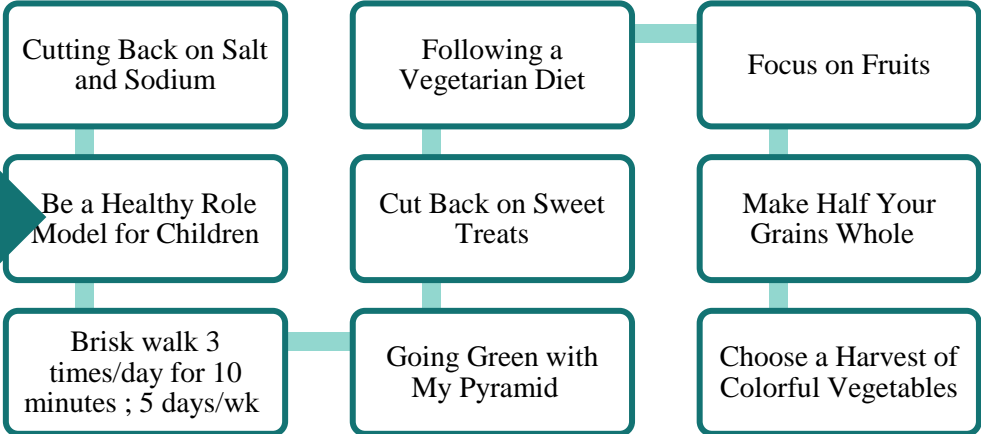
- A full history with a dietary inventory and an analysis of the subject's activity level.
- Screening questions to exclude depression
- Screening for eating disorders as 30% of patients suffer from them
- Determine any co-morbidities;
- Exclude the possible and rare secondary causes
- Requirements of treatment and belief to fulfill
- Behavior assessment for readiness (be sure the patient ready to lose Weight and can be assessed by some psychologist)
- Family support, time and financial considerations

At community level



- Empowering parents, and caregivers
- Healthy foods in schools & restaurants
- Access to healthy affordable food
- Avenues for physical activity (www.letsmove.gov)
- Safe neighborhoods; playgrounds, parks
- Physical education in schools/child care facilities
- Encourage breast feeding
- Farmers markets; local fruits and vegetables available
- Any barriers considered

Steps to follow at individual level





Summary ..

Obesity

is excessive fat accumulation in adipose tissue to the extent that it can affect health

BMI →• Calculated from a person's weight and height.

- < 18.5 =Underweight
- 18.5-24.9 =Healthy Weight
- 25.0-29.9 = Overweight
- ≥ 30 =Obese → Class I (mild) : 30.0-34.9 ,
Class II(moderate) : 35.0-39.9 ,
Class III (sever) : ≥ 40.0
- At the same BMI, women tend to have more body fat than men.
- At the same BMI, older people, on average, tend to have more body fat than younger adults.
- Highly trained athletes may have a high BMI because of increased muscularity rather than increased body fatness

Countries with Highest obesity percentages:

- In men : Lebanon , Qatar ,Kuwait Saudi Arabia the 7th
- In women :Qatar ,Saudi Arabia, west bank and Gaza

Prevalence of Obesity in Saudi Arabia

- Adult Females = (2nd rank in highest obesity rankings)..44 %
- Adult Males =(7th rank in highest obesity rankings). 26.4 %

Complications of Obesity

- Cardiovascular disease.
- Type 2 diabetes.
- Premature death. (**major complication**)
- Some types of malignancies.

Obese Syndrome Components :

1: Insulin resistance → Glucose intolerance → Dyslipidemia → Hypertension → Type 2 diabetes

2: Elevated plasma leptin

3: Increased visceral adipose tissue concentration → Increased risk of CHD & some types of malignancies

1- If the BMI is between 35 to 39.9, its considered as...

- A. Class II obesity
- B. Class III obesity
- C. Overweight
- D. Healthy Weight

2- When a person is "overweight", it means that:

- A. they have less body fat than they need for their body to function
- B. they have more body fat than they need for their body to function
- C. they have more muscularity than they need for their body to function

3-At the same BMI, women tend to have more body fat than men

- T
- F

4-At the same BMI, younger adults, on average, tend to have more body fat than older people.

- T
- F

5- Highly trained athletes may have a high BMI because of increased muscularity rather than increased body fatness

- T
- F

6- Which of the following is NOT characteristic of fast food linked to increased adiposity

- A. Higher energy density
- B. Greater saturated fat
- C. Increased complex carbohydrates & fiber
- D. Reduced fruits and vegetables

SAQs

1. Give 5 Factors that predispose a person to gain excessive weight:

Answer:

- 1. Eating patterns
- 2. Food packaging
- 3. Quantity & sensitivity to satiety hormones
- 4. Body image

2. List 3 risks correlated with abdominal fat accumulation:

Answer:

- 1. Cardiovascular disease
- 2. Type 2 diabetes
- 3. Premature death

3. define Obesity

Answer:

is excessive fat accumulation in adipose tissue to the extent that it can affect health.

4. Give 3 components of obese syndrome

Answer:

- 1. Dyslipidemia
- 2. Type 2 diabetes
- 3. Hypertension

Answer
key:

- 1.A
- 2.B
- 3.T
- 4.F
- 5.T
- 6.C

Thanks for checking our work

GOOD LUCK

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