

PHC

432 Handouts

#

Approach to obese patient



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Objectives

- 1) Define obesity and classify the degree of obesity (BMI, Waist circum. And Waist to Hip ratio)
- 2) Highlight the prevalence of obesity in Saudi Arabia
- 3) Discuss how to prevent obesity in the community
- 4) Discuss the common causes of obesity in the community
- 5) Morbidity “common health problems due to obesity”
- 6) Discuss the evidence based approach to decrease weight (Exercise, Dieting, Drug treatment, and Bariatric Surgical Intervention like gastric banding, Sleeve gastrectomy and gastric bypass.
- 7) Role of health team, medical students, and school health in dealing with obesity in the community

Obesity definition

-Obesity is a complex, multifactorial condition in which excess body fat may put a person at health risk.

-Excess body fat results from an imbalance of energy intake and energy expenditure.

Evaluation of an overweight or obese patient should include both clinical and laboratory studies; the combined information is used to characterize the type and severity of obesity, determine health risk, and provide a basis for selecting therapy.

Body Mass Index

The body mass index (BMI), also known as the Quetelet index, is used far more commonly than body fat percentage to define obesity

An individual's BMI is calculated as $\text{weight}/\text{height}^2$, with weight being in kilograms and height being in meters

Classification of Obesity according to BMI

Normal Weight
(BMI 19 to 24.9)



Overweight
(BMI 25 to 29.9)



Obese (Class I)
(BMI 30 to 34.9)



Obese (Class II)
(BMI 35 to 39.9)



Severely Obese
(BMI 40+)



Waist to hip ratio

BMI has traditionally been the chosen indicator by which to measure body size and composition, and to diagnose underweight and overweight

However, alternative measures that reflect abdominal adiposity, such as waist circumference and waist-hip ratio, have been suggested as being superior to BMI in predicting CVD risk.

Abdominal Obesity Measurement Guidelines

Organization	Measurement used	Definition of abdominal obesity
American Heart Association, National Heart, Lung and Blood Institute	Waist circumference	Women: > 88 cm (35 inches), Men: > 102 cm (40 inches)
World Health Organization	Waist-to-hip ratio	Women: > 0.85, Men: > 0.9

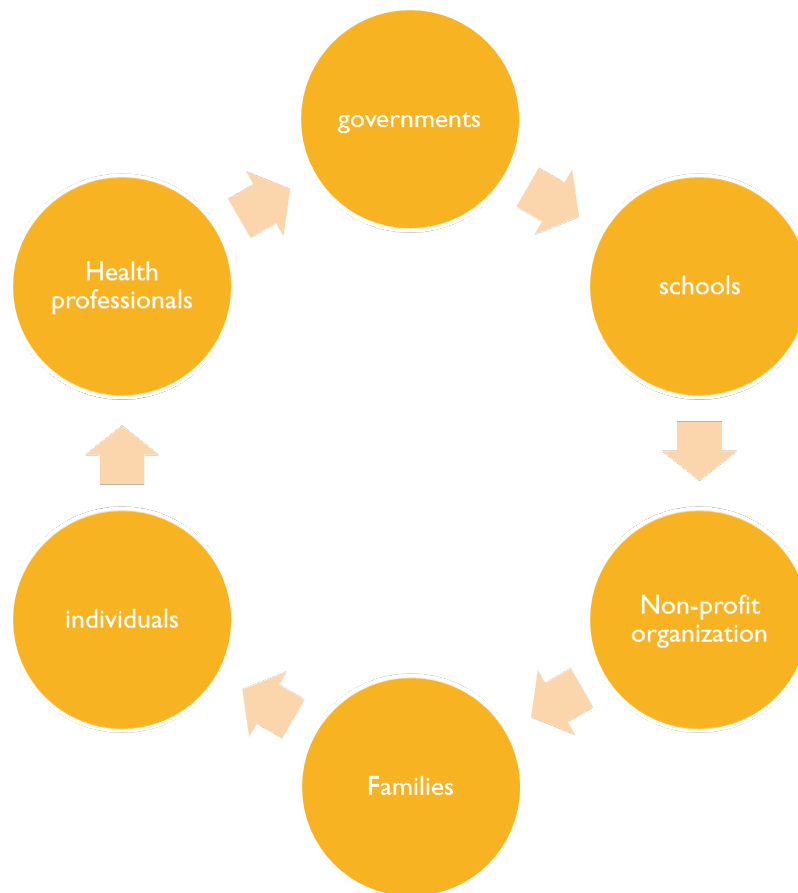
The prevalence of obesity in Saudi Arabia

To determine current rates of obesity and associated risk factors and chronic conditions, the the Saudi Ministry of Health, in collaboration with the Institute for Health Metrics and Evaluation, conducted a large household survey in 2013

- When comparing this survey with the 2005 survey. Obesity decreased by 4.4% for men and 10.7% for women between 2005 and 2013
- An increase of 7.8% for men and 9.0% for women in normal weight was observed during the same time period.
- Overall prevalence of obesity, 28.7%, or 3.6 million, Saudis aged 15 years or older were obese. This prevalence ranged from 24.1% among men to 33.5% among women. Both men and women consumed low amounts of fruits and vegetables and most were physically inactive (46.0% of men, and

75.1% of women practiced low to no physical activity at all).

Prevention:



Individuals:

1. Avoiding foods that have a lot of calories in a small amount of food
2. doing at least 30 minutes or more of moderate-intensity activity on most, or all days of the week .
3. Measuring the body weight regularly.

health professionals:

1. Interventions to increase physical activity should focus on activities that fit easily into people's everyday life should be tailored to people's individual preferences and circumstances.
2. Interventions to improve diet and to be tailored to the individual and provide ongoing support.
3. Interventions may include promotional, awareness-raising activities.
4. Health professionals should discuss weight, diet and activity with people at times when weight gain is more likely, such as during and after pregnancy, the menopause and while stopping smoking.
5. Families of children identified as being at high risk of obesity – such as children with at least one obese parent – should be offered ongoing support from an appropriately trained health professional.

Families:

1. Parents who eat healthy foods and are physically active set an example that increases the likelihood their children will do the same.
2. Gradually work to change family eating habits and activity levels rather than focusing on weight.
3. Reduce time in front of the TV and computer to less than two hours a day.
4. Encourage children to eat only when hungry, and to eat slowly.
5. Avoid using food as a reward or withholding food as a punishment.
6. Keep the refrigerator stocked with fat-free or low-fat milk and fresh fruit and vegetables instead of soft drinks and snacks high in sugar and fat.
7. Serve at least five servings of fruits and vegetables daily.

Schools:

1. educating students. Nutrition and physical activity lessons can be woven into the curriculum, physical education, and after-school programs—to teach skills that help students choose and maintain healthy lifestyles.
2. schools can include healthier food offerings in the cafeteria and eliminate marketing of unhealthy foods. To improve activity, schools can develop safe walking and biking routes to school.

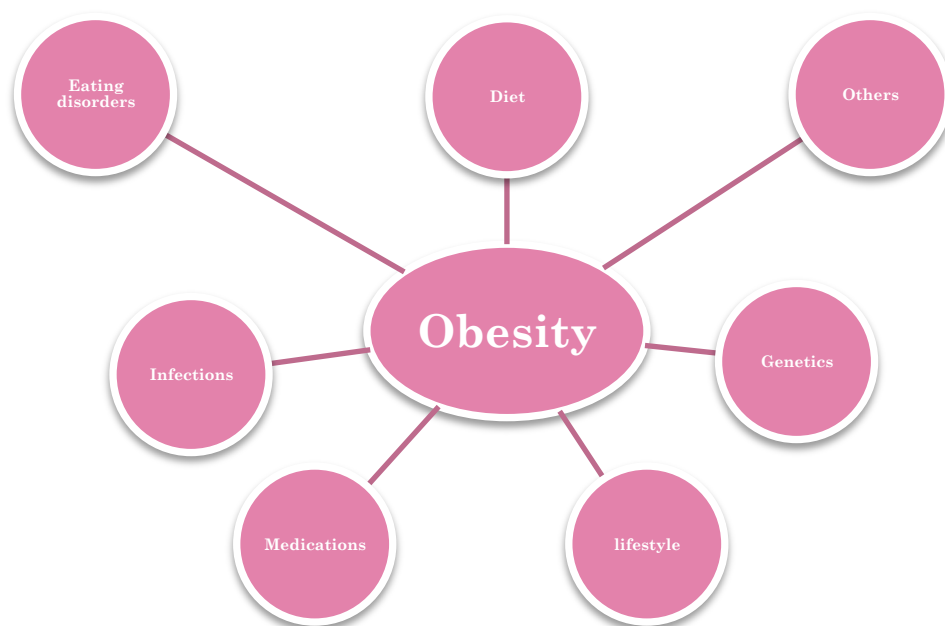
Healthy Food Environment:

1. Make healthy foods more available—and affordable—in public facilities and government buildings, and restrict the availability of less-healthy foods.
2. Limit or discourage access to sugar-sweetened beverages, especially in schools and childcare centers, worksites, government buildings, and public facilities.
3. Increase public access to water.

Healthy Activity Environment:

1. Building Places that Get People Moving (sidewalks, safe places to ride bikes, gyms nearby).

Causes of obesity:



Diet:

- **High caloric intake that is greater than needs**
- **Frequency of eating**
frequent small meals versus a few large meals could be the difference in insulin secretion associated with these meal sizes (eg, increased with large meals).
- **Dietary habits**
- **Fast food**
- **Sugar-sweetened beverages.**
Accumulating evidence suggests that consumption of sugar-sweetened beverages (including fruit juice) is an important contributor to the development of obesity in some individuals.

Lifestyle:

- ***Physical inactivity:***

A sedentary lifestyle lowers energy expenditure and promotes weight gain.

- **Television** -- In both children and adults, there is an association between television viewing time and **the risk of obesity**.
Several mechanisms have been proposed to explain this association:
 - **Displacement of physical activity**
 - **Depression of metabolic rate**
 - **Adverse effects on diet quality**
 - **Effects of television on sleep**
- **Video games** -- The use of electronic games also has been associated with obesity during childhood.
- **Sleep deprivation:**
Sleep restriction, when compared to sleep extension, was associated with a decrease in **serum leptin** , an increase in serum **ghrelin** and increased hunger and appetite.
Inadequate sleep could result in excessive eating, obesity, and altered response to dietary therapy.
- **Cessation of smoking :**
This is thought to be mediated at least in part by nicotine withdrawal.
Weight gain of 1 to 2 kg in the first two weeks is often followed by an additional 2 to 3 kg weight gain over the next four to five months.

Genetic factors:

- There is strong evidence that genetic factors play a permissive role and interact with environmental factors to produce obesity.
- **Polymorphisms** in various genes controlling **appetite and metabolism** predispose to obesity when sufficient food energy present.
- People with two copies of the **FTO gene** (fat mass and obesity associated gene) has been found on average to weigh 3–4 kg more and have a 1.67-fold greater risk of obesity compared to normal people.
- Single-gene cause of obesity: **Leptin and leptin gene deficiency**

Prader-Willi syndrome

- low muscle tone, short stature, incomplete sexual development, cognitive disabilities, problem behaviors, and a **chronic feeling of hunger** that can lead to excessive eating and
- Prader-Willi syndrome patients have **high ghrelin** levels. life-threatening obesity.

Bardet-Biedl syndrome

- Obesity is another characteristic feature of Bardet-Biedl syndrome. Abnormal weight gain typically begins in early childhood and continues to be an issue throughout life. Complications of obesity can include type 2 diabetes, high blood pressure (hypertension), and abnormally high cholesterol levels (hypercholesterolemia).

Medications:

- ***Antipsychotics:***
 - Conventional (first generation) antipsychotics, like thioridazine.
 - Atypical (second generation) antipsychotics, clozapine and olanzapine.
- ***Antidepressants:***
 - Tricyclic antidepressants, in particular, amitriptyline, clomipramine, doxepin, and imipramine are associated with significant weight gain.
- ***Antiepileptic drugs:***
 - The antiepileptic drugs valproate (valproic acid) and carbamazepine, which are commonly used in the management of bipolar disorder, are associated with weight gain.

- **Diabetes drugs:**
- Insulin stimulates weight gain, possibly through hypoglycemia, and the sulfonylureas that increase insulin release also increase weight.
- pioglitazone and rosiglitazone, are also associated with weight gain

Infections:

Human studies, including a small study in twins, have shown an association between **adenovirus 36 antibodies** and **obesity** status in adults.

Eating disorders:

Binge-eating disorder

- Binge-eating disorder is a psychiatric illness characterized by Recurrent uncontrolled episodes of eating that usually occur in the evening.
- Eating much more rapidly than normal.
- Eating until feeling uncomfortably full.
- Eating large amount of food when not feeling physically hungry.
- Eating alone because of feeling embarrassed by how much one is eating.
- Feeling disgusted with oneself, depressed, or very guilty afterward.

Night-eating syndrome

- Night-eating syndrome is defined as consumption of at least 25 percent (and usually more than 50 percent) of energy between the evening meal and the next morning.
- Component of sleep apnea, in which daytime somnolence and nocturnal wakefulness are common.

OTHERS:

- ***Endocrine disorders:***

Hypothyroidism, Cushing's syndrome, growth hormone deficiency and polycystic ovarian syndrome (PCOS)

- ***Emotional Factors:***

Some people eat more than usual when they're bored, angry, or stressed. Over time, overeating will lead to weight gain and may cause overweight or obesity.

- ***Pregnancy***

Weight gain during pregnancy, and the effect of pregnancy on subsequent weight gain, are important events in the weight gain history of women.

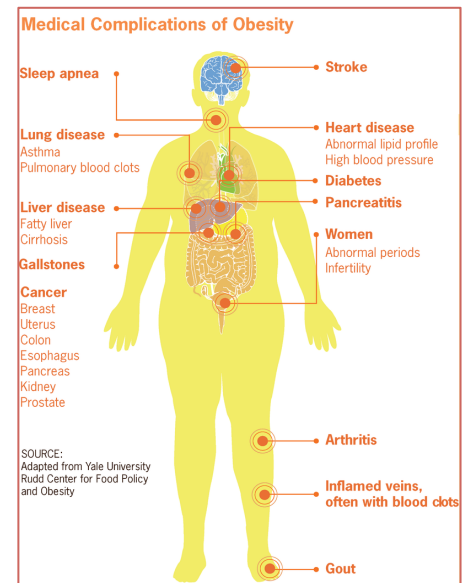
- ***Menopause***

Weight gain and changes in fat distribution often occur in the early postmenopausal years, both aging in general and ovarian aging contribute to the increase in weight and changes in body composition noted during the menopause.

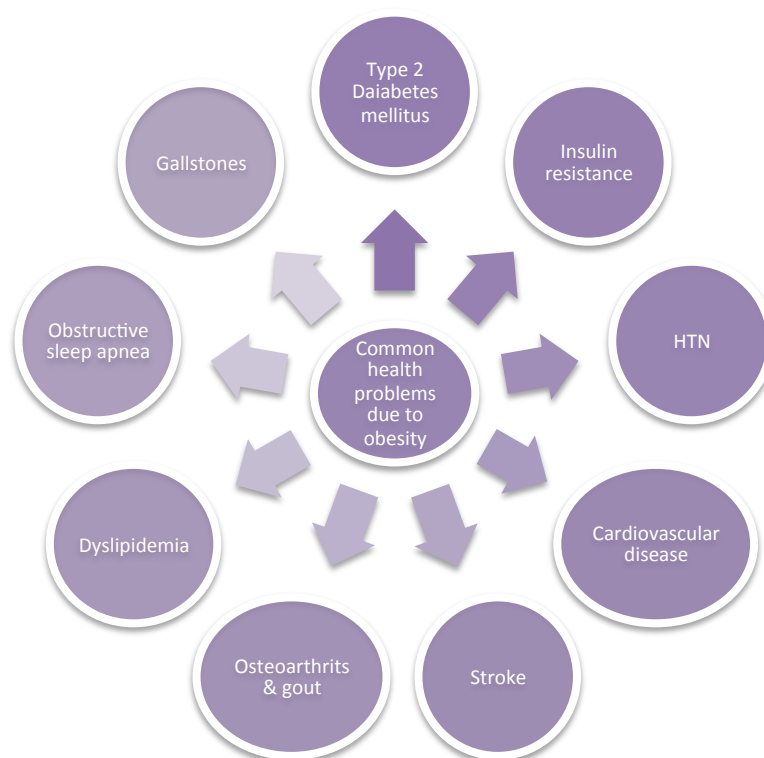
A study showed that Estrogen therapy does not prevent weight gain in postmenopausal women.

Obesity-associated morbidity

- Obesity and increased central fat are associated with increased morbidity in addition to mortality
- In a survey of adults in the United States, overweight and obese individuals had a higher relative risk of hypertension, hypercholesterolemia, and diabetes mellitus compared with normal weight individuals



- common health problems due to obesity:



1. Diabetes Mellitus

- Type 2 diabetes mellitus is strongly associated with obesity in all ethnic groups. More than 80 percent of cases of type 2 diabetes can be attributed to obesity.
- Weight loss is associated with a decreased risk of type 2 diabetes

2. Insulin resistance

Insulin resistance with hyperinsulinemia is characteristic of obesity and is present before the onset of hyperglycemia.

3. Hypertension

4. Dyslipidemia

Characterized as:

- High serum concentrations of :
 - Cholesterol
 - Low-density-lipoprotein (LDL) cholesterol
 - Very-low-density-lipoprotein (VLDL) cholesterol
 - Triglycerides
- Reduction in serum high-density-lipoprotein (HDL)

5. cardiovascular disease

- Obesity is associated with increased risks of coronary disease, heart failure, high plasma fibrinogen concentrations and other prothrombotic factors
- Obesity has been associated with an increased risk of deep vein thrombosis and pulmonary embolus

6. Stroke

7. Obstructive sleep apnea

Sleep apnea is the most important respiratory problem associated with obesity and diabetes

8. Osteoarthritis & gout

9. Hepatobiliary disease

Obesity affects the hepatobiliary system, primarily by causing cholelithiasis

Management options

- Life style
- Drug Therapy
- Surgical treatment

Life style

- A comprehensive lifestyle intervention (combined diet, exercise, and behavioral treatment) and it is the most important strategy for weight management.
- Clinicians should counsel all obese patients (defined as those with a $BMI \geq 30 \text{ kg/m}^2$)
- **Exercise**
- Exercise only modestly improves weight loss. However it has many other benefits (decreases abdominal fat , maintains weight loss, lowers LDL level, lowers blood pressure help insulin sensitivity)
- **behavior therapy**
- behavior therapy is one cornerstone in the treatment for obesity.
- The goal of behavioral therapy is to help patients make long-term changes in their eating behavior by modifying and monitoring their food intake, modifying their physical activity, and controlling cues and stimuli in the environment that trigger eating.
- Behavioral Strategies
 - Self-monitoring (keeping food diaries and activity records)
 - Controlling or modifying the stimuli that activate eating
 - Slowing down the eating process
 - Social support

Drug therapy

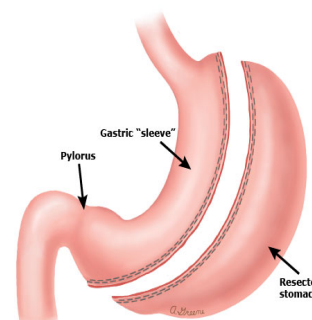
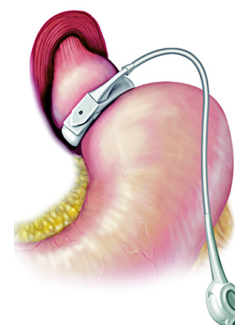
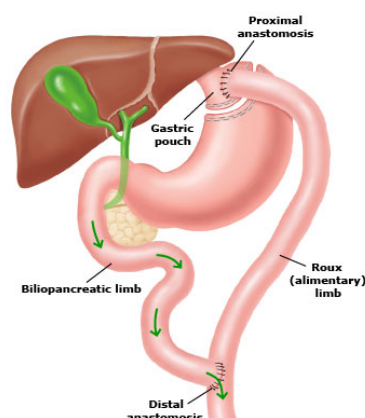
- Drugs can be useful adjuncts to diet and exercise for adults with a BMI greater than 30 kg/m^2 , who have failed to achieve weight loss goals through diet and exercise alone.
- **Orlistat**
- Acts by altering fat digestion by inhibiting pancreatic lipases. Has beneficial effects on serum total and low-density lipoprotein (LDL) cholesterol

concentrations.

Bariatric Surgery

Surgery should be considered as a treatment option for patients with a BMI of 40 kg/m² or greater who instituted but failed an adequate exercise and diet program (with or without adjunctive drug therapy) and who present with obesity-related comorbid conditions

- **Roux-en-Y gastric bypass**
Roux-en-Y gastric bypass (RYGB) remains the most commonly performed bariatric procedure. RYGB involves the creation of a small gastric pouch, thereby restricting food and limiting caloric absorption.
- **Laparoscopic gastric banding**
Laparoscopic gastric banding is a purely restrictive procedure that compartmentalizes the upper stomach by placing a tight prosthetic band around the entrance to the stomach.
- **Sleeve gastrectomy**
In a SG the majority of the greater curvature of the stomach is removed and a tubular stomach is created. SG was initially offered to patients with super severe obesity (BMI >60 kg/m²) as the first stage in surgical management.



Role of health team, medical students, and school health in dealing with obesity in the community

- Role of health team: family physicians should recognize the problem from the beginning
 1. Obese child
 2. A family with bad eating habits (educate, Opportunistic health problems promotion: Stott and Davis)
 3. A patient that gained a lot of weight during in a short period of time (pathological)

- The role of medical students
 1. Research

- Role of schools in dealing with obesity
 1. Educational programs to both children and families
 2. Gum classes
 3. Role of a school doctor is very important: identifying the obese children and adolescents, try to counsel them and their families

Questions

- 1) Which of the following is not a secondary cause of obesity?
 - a. Cushing syndrome
 - b. Insulinoma
 - c. Hypothyroidism
 - d. DM

- 2) What obesity measurement is best in its predictive value of CVD?
 - a. BMI
 - b. Hip circumference
 - c. Waist to hip ratio
 - d. Chest to waist ratio

- 3) You are working with an obese patient to help him lose weight. You are considering the use of orlistat to help the patient with weight reduction. Which of the following is the mechanism of action for this medication?
 - a. It is an appetite suppressant.
 - b. It blocks the uptake of both serotonin and norepinephrine in the central nervous system.
 - c. It is a selective cannabinoid-1 receptor antagonist.
 - d. It reduces fat absorption in the GI tract.

- 4) You are caring for an obese 30-year-old woman who would like to consider pharmacotherapy for the treatment of her obesity. Which of the following medications, if any, demonstrates maintenance of weight loss once off the medication?
 - a. Orlistat (Xenical)
 - b. Phentermine
 - c. Sibutramine (Meridia)
 - d. None of the medications lead to maintenance of weight loss once off the medication

- 5) Which one of the following dyslipidemia findings carries a greater relative risk of coronary heart disease (CHD)?
 - a. High serum Low-density-lipoprotein (LDL) cholesterol
 - b. High serum Very-low-density-lipoprotein (VLDL) cholesterol
 - c. High serum Triglycerides
 - d. Reduction in serum high-density-lipoprotein (HDL) cholesterol

Answers:

- 1st Question: D
- 2nd Question: C
- 3rd Question: D
- 4th Question: D
- 5th Question: D