

# Obesity

Done by:

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## Objectives:

- Define obesity and classify the degree of obesity “BMI, Waist circumference and Waist to Hip ratio”.
- Highlight the prevalence of obesity in Saudi Arabia.
- Discuss how to prevent obesity in the community.
- Discuss the common causes of obesity in the community.
- Morbidity “common health problems due to obesity”
- Discuss the evidence based approach to decrease weight “Exercise, Dieting, Drug treatment, and Bariatric Surgical Intervention”.
- Role of health team, medical students and school health in dealing with obesity in the community

## Definition of obesity:

- Obesity is defined as the abnormal or excessive fat accumulation that presents a risk to health.

## How to measure Obesity?

1. **BMI:** The best measure of obesity is body mass index (BMI).

$$\text{BMI} = \frac{(\text{weight in kilograms})}{\text{height in meters}^2}$$

“Class III = Morbid obesity (> 40 BMI)”

BMI classification	
Underweight	< 18.5
Normal range	18.5 - 24.9
Overweight	≥ 25.0
Preobese	25.0 - 29.9
Obese	≥ 30.0
Obese class I	30.0 - 34.9
Obese class II	35.0 - 39.9
Obese class III	≥ 40.0

## 2. Waist circumference:

- Used in addition to BMI to aid assessment of health risks.
- Waist circumference is measured Halfway between the superior iliac crest and the rib cage.
- For every 1cm increase in waist circumference, the RR of a CVD event increase by 72%.



### 3. Waist to hip ratio:

- This is calculated as the ratio of the circumference of the waist to that of the hip (WHR=Waist circumference/Hip circumference). (Hip circumference is measured at widest portion of the buttocks)

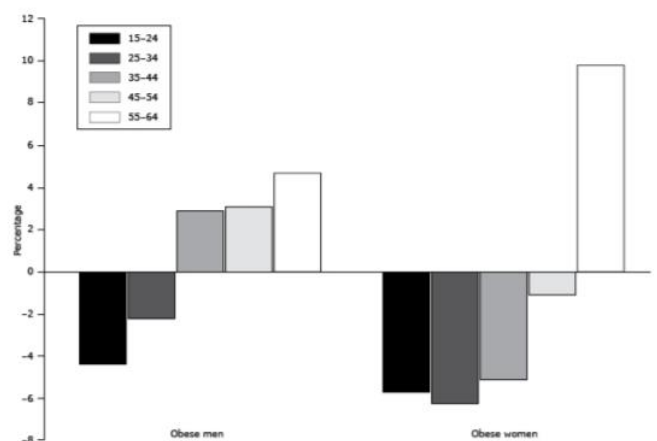
Table 8-11				
Waist-to-Hip Ratio (WHR) Norms				
Gender	Excellent	Good	Average	At Risk
Males	<0.85	0.85–0.89	0.90–0.95	>0.95
Females	<0.75	0.75–0.79	0.80–0.86	>0.86

### Cardiovascular disease mortality risk.

Out of the previous classifications of obesity, waist-hip ratio was found to have the strongest connection to total and cardiovascular disease mortality

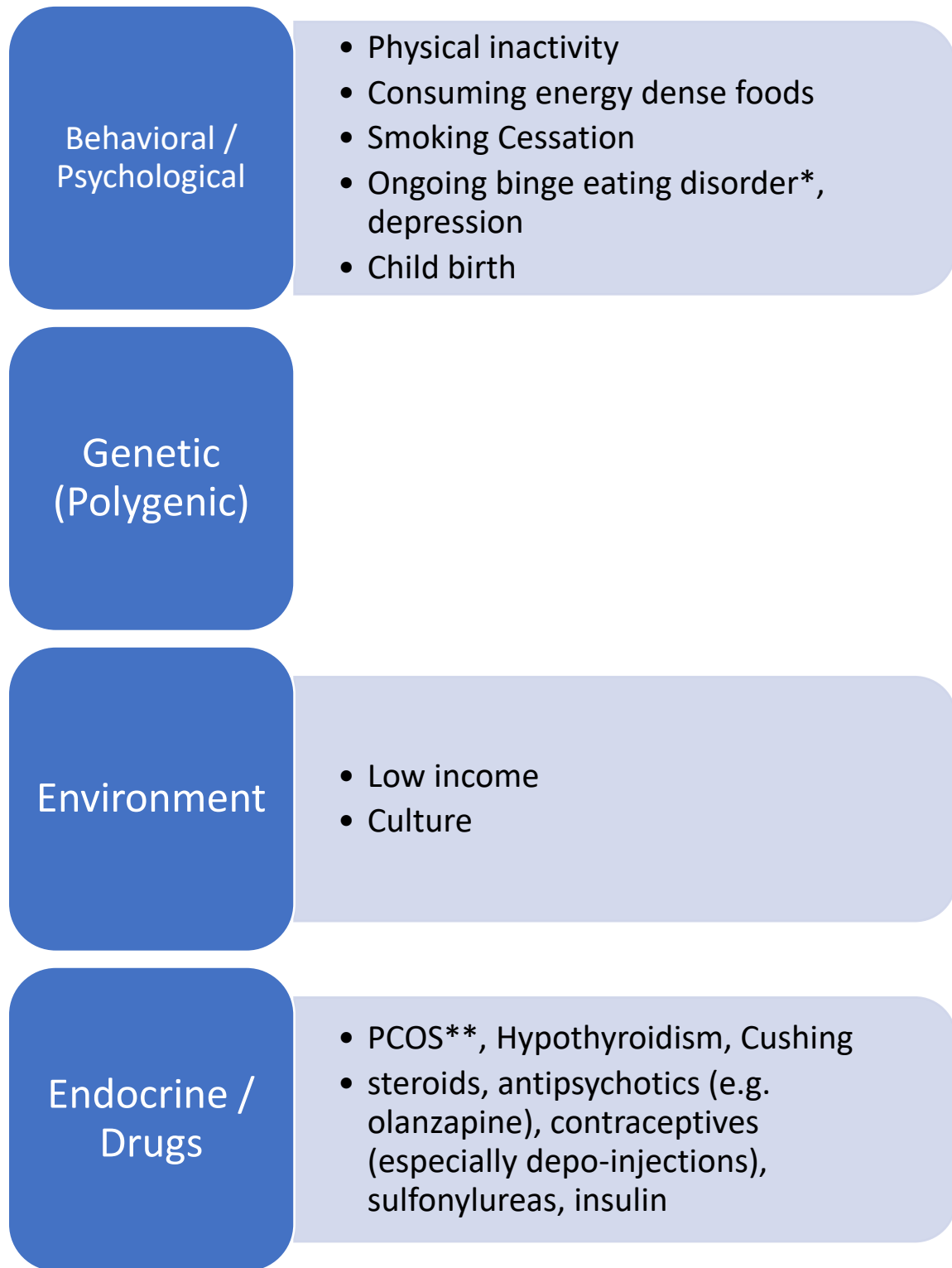
### The prevalence in KSA

- According to WHO, the prevalence in KSA is 24% in Males and 36% in Females.
- Another study was done in KSA at 2014 :
  - Male **24%**
  - Female **33.5%**



**Figure 3.** Percentage change in prevalence of obesity (body mass index [BMI]  $\geq 30.0$  kg/m<sup>2</sup>), by age group, for men and women, from 2005 through 2013, Kingdom of Saudi Arabia.

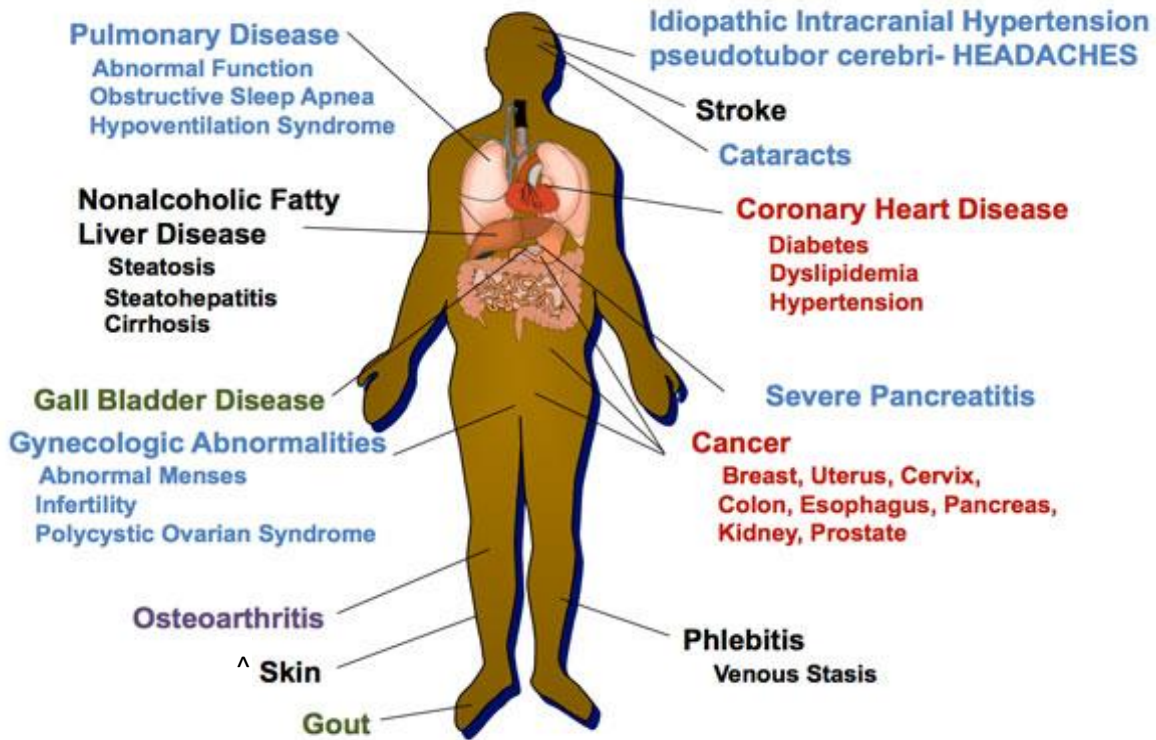
## Causes of obesity:



\* **Binge eating disorder** is a severe, life-threatening and treatable eating disorder characterized by recurrent episodes of eating large quantities of food (often very quickly and to the point of discomfort); a feeling of a loss of control during the binge; experiencing shame, distress or guilt afterwards

\*\* PCOS = Polycystic ovarian syndrome

# Health risks of obesity



**Table 8.4** Health risks of obesity

**Greatly increased risk** (RR >3)

Mortality (BMI >30)  
 Type 2 DM (BMI of 35 confers a 92x ↑ risk of DM)  
 Gall bladder disease  
 Dyslipidaemia  
 Insulin resistance  
 Breathlessness  
 Sleep apnoea

**Moderately increased risk** (RR 2–3)

CHD (5–6% deaths are due to obesity)  
 ↑ BP  
 OA (knees)  
 Hyperuricaemia/gout

**Slightly increased risk** (RR 1–2)

Cancer (breast in post-menopausal women, endometrial, oesophageal, colon)—14–20% of cancer deaths are due to obesity  
 Reproductive hormone abnormalities  
 PCOS  
 Impaired fertility  
 Low back pain  
 Stress incontinence  
 Anaesthetic and post-operative risk  
 Fetal defects associated with maternal obesity  
 Suicide  
 School/workplace prejudice

^ Skin changes:  
 3) Hirsutism

1) Stretch marks (striae)

2) Acanthosis nigricans.

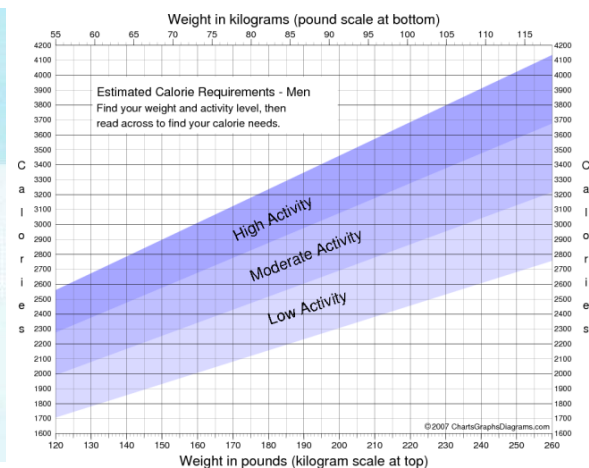
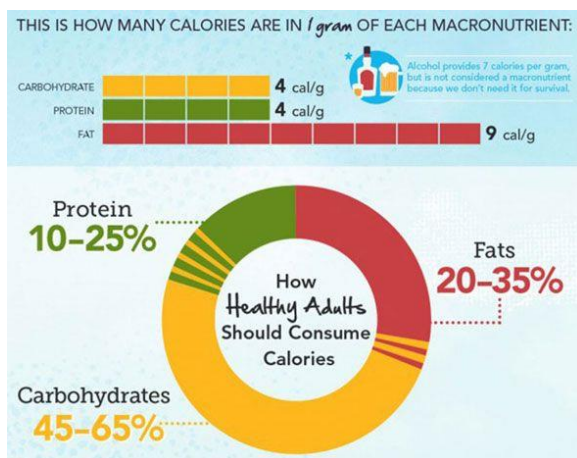
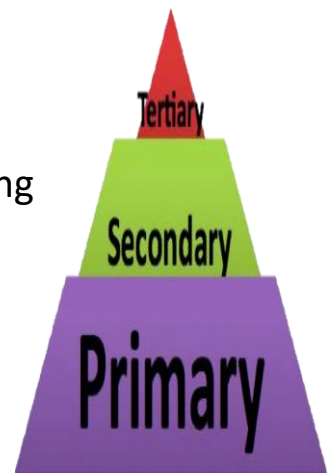
# Prevention

## 1. Primary Prevention: (Preventing the disease before it starts)

A) Maintaining a balanced **diet** and a healthy behavior (eating only when hungry, eating slowly).

Special consideration for children:

- Avoid using food as a reward.
- Encouragement of healthy food consumption.



B) Exercising and active life style:

- Walk and exercise for **30 minute or more, 5 days a week**.
- Reduce time spent in front of TV, computer, and mobiles.

C) Breast feeding:

- A recent systematic review however found only a 10 percent reduction of overweight children with long term breast feeding



## B) Secondary Prevention (Management):

### A) Exercise:

- Weight loss is greater in diet and exercise regimens
- Moderate physical exercise is introduced with 3 sessions per week, 30 minutes per session, then later increased, as tolerated.

### B) Diet:

- Low calorie diet: Aim for weight loss of 0.5–1 kg/week by reducing approx. 600 calories per day from their diet with a target BMI of 25.
- Very low calorie diets (<1,000 cal/day): **Not commonly used**—maintained for a **maximum of 12 weeks** for obese patients when weight loss has plateaued.

### C) Psychological/behavioral interventions:

- Counselling
- Advice should be given on the dangers of obesity and encouragement of healthy eating/physical exercise.
- It should be adjusted to circumstances of the individuals or their families.

### D) Drug Management:

#### - Indications for drug management:

- Failure of diet and exercise
- BMI > 30
- BMI > 27 and associated with medical problems related to obesity

- Drug Options:

- First options:

**Orlistat:** Gastrointestinal lipase inhibition.

Patients usually complain from steatorrhea and fecal incontinence.

(Orlistat has modest effectiveness [about 5% loss in body weight] when combined with diet and exercise)

- Second option:

Lorcaserin (Reduces appetite by blocking serotonin receptors)

- Third option:

Bupropion (not preferable).

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Adjunct ^ pharmacotherapy

Treatment recommended for SOME patients in selected patient group

Primary options

[orlistat](#): 120 mg orally three times daily with fat-containing meals for up to 4 years

Secondary options

[lorcaserin](#): 20 mg orally once daily

OR

[liraglutide](#): 0.6 mg subcutaneously once daily initially, increase dose according to response at weekly intervals, maximum 3 mg/day

OR

[naltrexone/bupropion hydrochloride](#): 8 mg (naltrexone)/90 mg (bupropion) orally (extended-release) once daily in the morning for 1 week, followed by 8/90 mg twice daily for 1 week, followed by 16/180 mg in the morning and 8/90 mg in the evening for 1 week, then 16/180 mg twice daily thereafter

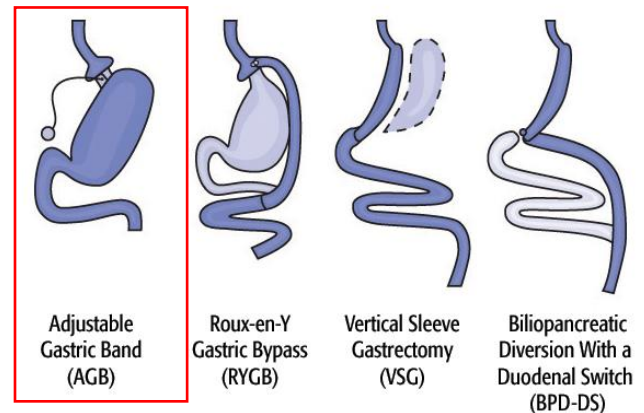


## E) Bariatric surgery:

### Indications for surgery:

1. Failure of conservative treatment
2. BMI > 40 (morbidly obese)
3. BMI  $\geq 35$  kg/m<sup>2</sup> with obesity-related comorbidity (e.g., hypertension, diabetes, sleep apnea, GORD) may be candidates for most bariatric procedures.

### Bariatric surgery options:



Adjustable Gastric Banding is the most commonly used surgery.

BMJ Best Practice

Search conditions, symptoms...

## Obesity in adults

Treatment algorithm

Please note that formulations and doses between drug nomenclatures may differ: [see disclaimer](#)

ONGOING	
BMI $\geq 30$ kg/m <sup>2</sup> ; or else BMI $\geq 27$ kg/m <sup>2</sup> with an obesity-related comorbidity	<a href="#">VIEW ALL</a> ▾
<b>1st line</b> ▾ dietary changes	
<b>Plus</b> ▾ increase in physical activity	
<b>Adjunct</b> ▾ psychological therapy	
<b>Adjunct</b> ▾ pharmacotherapy	
BMI $\geq 40$ kg/m <sup>2</sup> ; or else BMI $\geq 35$ kg/m <sup>2</sup> with significant comorbidities and dietary attempts at weight control have been ineffective	<a href="#">VIEW ALL</a> ▾
<b>1st line</b> ▾ surgical therapy	

## c) Tertiary prevention: (PREVENTION/TREATMENT OF COMPLICATIONS)

- Decreasing the progression to more severe obesity
- Reducing the likelihood of associated musculoskeletal, metabolic, or vascular disorders (e.g., osteoarthritis, diabetes, or cardiovascular disease).

## The role of health team, medical students, and schools.

### 1. Role of The Health Team and medical students

- Health professionals have an important role in promoting preventive measures and encouraging positive lifestyle Behaviors “awareness of the population” ..
- Also have a role in counseling patients about safe and effective weight loss and weight maintenance programs.

### 2. Role of schools:

- School can also help address obesity by providing:
  - Screening
  - Health information
  - Referrals to students
- The Role of Schools in Obesity Prevention :
  - More nutritious food
  - Physical activity
  - Health services.
  - Health education

## Take Home messages:

- The best measure of obesity is body mass index (BMI).
- The prevalence in KSA is high among both genders.
- Obesity is a multifactorial condition “ Genetic, environment and behavior”.
- Obesity is associated with comorbidities “ DM,HTN..etc”.
- The prevention and management start by diet and physical activity.
- The involvement of all of society sectors will be needed to reverse the epidemic.

## Quiz.

1. Which of the following is a cause of Obesity?
  - A) Unhealthy diet.
  - B) Genetics.
  - C) Low physical activity.
  - D) All of the above.
2. Which of the following body mass indexes is considered morbid obesity?
  - A) BMI of 26 kg/m<sup>2</sup>
  - B) BMI of 30 kg/m<sup>2</sup>
  - C) BMI of 40 kg/m<sup>2</sup>
  - D) BMI 38 kg/m<sup>2</sup>
3. Which of the following is the best to start with in managing Obesity?
  - A) Diet and exercise
  - B) Drugs
  - C) surgery
  - D) None of the above
4. Which of the following is considered primary prevention for obesity?
  - A) Orlistat
  - B) Bariatric surgery
  - C) Counseling
  - D) Breast feeding

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