Approach to Obese Patient

What is obesity?

Overweight and obesity are defined as abnormal or excessive fat accumulation that presents a risk to health.

WHO defines obesity as follows:

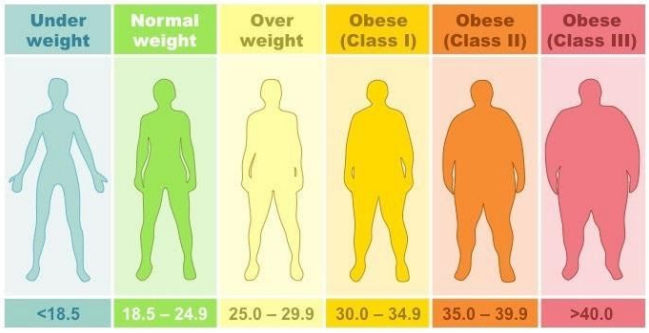
- **For adults:**
  obesity is a BMI greater than or equal to 30.

- **For children aged between 5–19 years:**
  obesity is BMI-for-age greater than 2 standard deviations above the WHO Growth Reference median.

- **For children under 5 years of age:**
  obesity is weight-for-height greater than 3 standard deviations above the WHO Child Growth Standards median.

We can classify the degree of obesity based on:

→ BMI $= \frac{\text{Weight(kg)}}{\text{Height}^2\text{(m)}}$



→ Waist circumference :

- Men: >102 cm (>40 in.)
- Women: >88 cm (>35 in.)

→ Waist-hip-ratio:

- Men: >= 0.9 cm.
- Women: >= o.85 cm.

(waist circumference and waist hip ratio measures are better than BMI as predictors of CVD risk).

Causes of obesity:

- Cultural

-Saudi cuisine.
-Junk food
-Ceremonies

- Behavioral

-Unhealthy diet (high caloric intake).
-Low physical activity.
-Sedentary lifestyle.
-Smoking cessation.carbs craving.

- Drugs

-Steroids
-Sulphonylureas
-Insulin.only 1-2 kgs per months
-Oral contraceptives
Also SSRI

- Genetic
- Childbirth.hormones and less sleep
- Other

-Hypothyroidism
-Cushing's syndrome
-PCOS
-Insulinoma

Health Problems Associated With Obesity

Not everyone who is obese has these problems.
The risk rises if you have a family history of one of these conditions.

1. **Cardiovascular Disease:** Pro-inflammatory cytokines produced by the adipose tissue can induce cardiac dysfunction and promote the formation of atherosclerotic plaques.
    a. Heart Failure
    b. Coronary Heart Disease
2. **High Blood Pressure:** through the activation of RAAS.
3. **Diabetes**
4. **Cancer**: Endometrial, esophageal, colorectal, breast, prostate and renal.
5. **Gallbladder disease**:

Obese individuals have excess hepatic secretion of cholesterol → subsequent supersaturation of bile → significantly increased gallbladder volume → blunted gallbladder contractility

all of which are mechanisms involved in the pathogenesis of gallbladder disease.

6. **Osteoarthritis**:

Due to mechanical factors, including increased forces about the joint, decreased muscle strength and altered biomechanics during everyday activities, and metabolic factors, as being obese also increases the risk of OA in non weight-bearing joints such as the hands.

7. **Gout**
8. **Breathing Problems:**

Obesity is strongly linked with respiratory symptoms and diseases, including:

A. Exertional dyspnea
B. Obstructive sleep apnea syndrome (OSAS)
C. Obesity hypoventilation syndrome (OHS)
D. Chronic obstructive pulmonary disease (COPD)
E. Asthma
F. Pulmonary embolism
G. Aspiration pneumonia.

Methods to prevent obesity in the community:

- Primary prevention (education) Maintaining a balanced diet and a healthy behavior (Special consideration for children)before obesity.

Food:
-Encouragement of healthy food consumption(fruit,vegetables).
-avoid sugar sweetened beverages.
-drinking water.
-eating in suitable atmosphere.
-Avoid using food as a reward.
-breastfeeding.good for mothers and infants.
Exercise:
-Walk and exercise for 30 minute or more, 5 days a week.
-Reduce time spent in front of TV, computer, and mobiles.
-include 1 hr or more daily of active playing(child).

- Secondary Prevention:
    1. Diet
    2. Exercise
    3. Drug Management
    4. Bariatric surgery
- Tertiary Prevention:management of complication
  Decreasing the progression to more severe obesity:
  Reducing the likelihood of associated musculoskeletal, metabolic, or vascular disorders (e.g., osteoarthritis, diabetes, or cardiovascular disease).

Management of obesity:

SORT: KEY RECOMMENDATIONS FOR PRACTICE

Clinical recommendation	*Evidence rating*	*References*
BMI should be calculated for all patients 18 years and older, and those with obesity should be referred for intensive, multicomponent behavioral interventions.	B	2
Increased physical activity should be recommended for weight loss in combination with diet and behavioral modifications.	B	20
Physicians should consider medications for weight loss in patients with a BMI of 30 kg per m^2 or greater, or 27 kg per m^2 or greater who also have comorbidities and have unsuccessfully tried diet and lifestyle modification first.	C	26
Patients with a BMI of 40 kg per m^2 or greater and those with a BMI greater than 35 kg per m^2 who also have obesity-related comorbidities should be referred for consideration of bariatric surgery. Patients with a BMI greater than 30 kg per m^2 who also have obesity-related comorbidities may be candidates for adjustable gastric banding.	B	36

BMI = body mass index.

A = consistent, good-quality patient-oriented evidence; B = inconsistent or limited-quality patient-oriented evidence; C = consensus, disease-oriented evidence, usual practice, expert opinion, or case series. For information about the SORT evidence rating system, go to http://www.aafp.org/afpsort.

Question in the exam will come as scenario of patient information of BMI and lifestyle and choose the best approach(lifestyle modification, medication or surgery)
Part of management is screen for secondary causes of obesity by ordering investigation (TFT, FSH, LH, estrogen and endocrine profile) and digging deep in history asking about medications that may cause weight gain

- Behavioural intervention

-The USPSTF recommends that patients who are obese be referred to intensive, multicomponent behavioral interventions with 12 to 26 sessions per year.
-Interventions that have been proven effective include motivational interviewing, worksite interventions, and exercise.
-Motivational interviewing involves assessing a patient's motives for change and acting as a supportive partner to empower them in the process.
-Multiple studies have shown that motivational interviewing can modestly enhance the effects of a weight-loss program
-Worksite intervention include encouragement of patient participation by:
1)Worksite incentive programs (education programs):
2)Worksite nutrition
3) Physical activity programs
*It has showed modest improvement in weight loss.

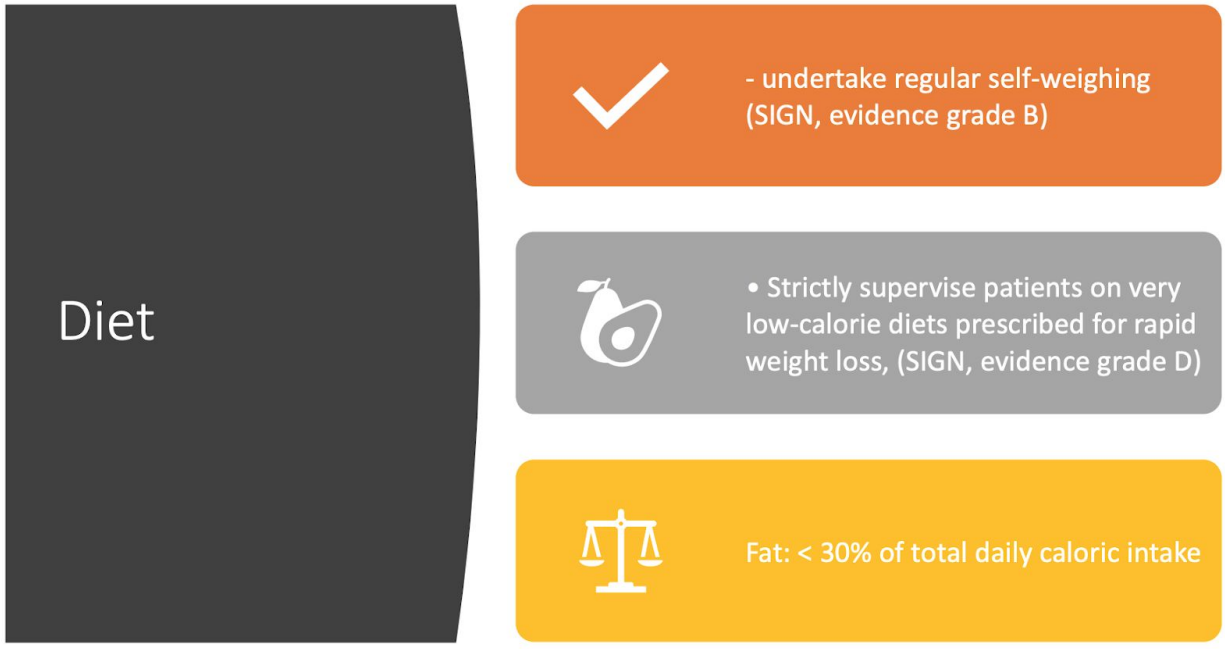
- Lifestyle modification

1- wieght management:
-For adults with BMI 25 -35 kg/m2 the target is to lose 5 -10% of body weight
-For adults with BMI>35 kg/m2 and obesity - related comorbidities the target is to lose a greater than 15 -20% of body weight.
-Lifestyle modification should target at reducing energy intake, increasing energy expenditure and assisting in behavioral change (NHMRC, evidence grade A)
-Optimal dietary plan for achieving healthy body weight should be developed with a qualified and experienced health professional team together with the individual and family.

- Diet

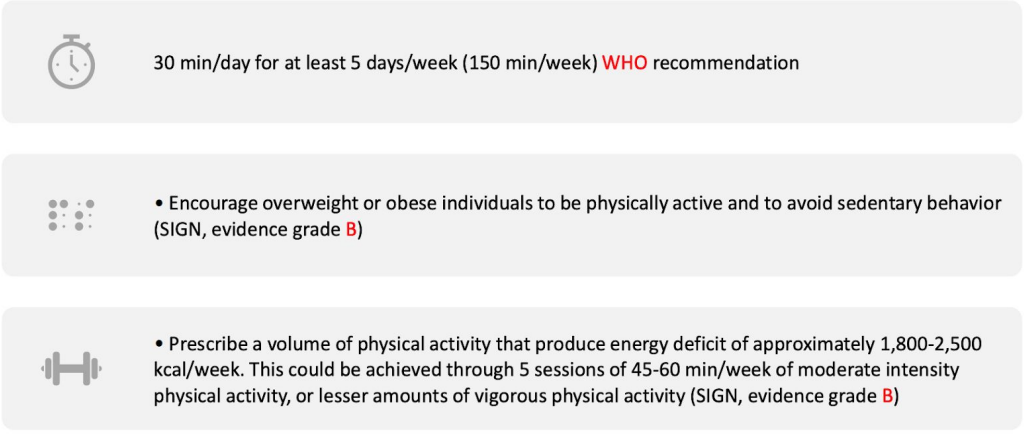
Keto diet has a large debate on in but not proved to be a healthy long term lifestyle, it thought that the role in weight reduction is due to loss of appetite
There is no long term studies yet about keto diet or diet in general because the effect in life expectancy is hard to be measured due to lots of confounders

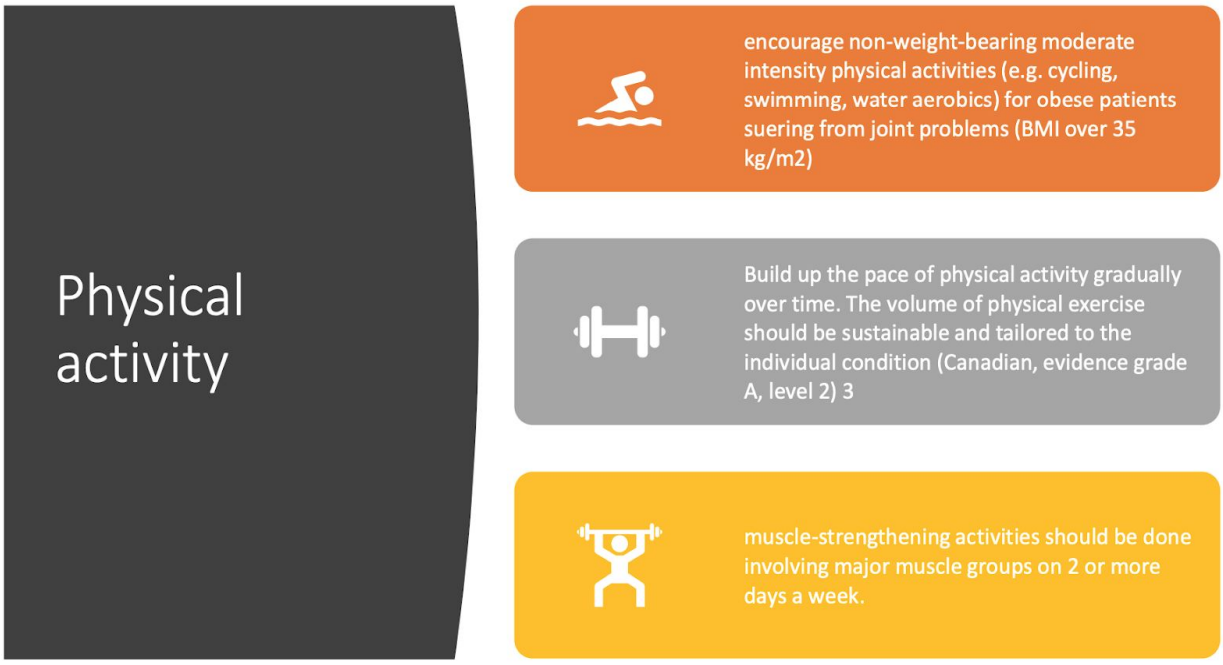
-Target energy deficit of 500-1000 kilo-calorie per day (3,500 kcal/week)((NHMRC, evidence grade A)
Provide advice on dietary modification
Choose low energy-dense foods (e.g. whole grains, cereals, fruits, vegetables, and salads)
Reduce intake of energy-dense foods (e.g. animal fats, sugary drinks (SIGN, evidence grade B)



- Physical activity

Exercise will help in maintaining the weight however diet play significant role in weight reduction





Physical activity should be at least moderate intensity exercise such as brisk walking

-Benefits of exercise:

1. Reduce your risk of heart diseases.
2. Management of blood sugar and insulin levels.
3. Improve your sleep.
4. Help you quit smoking and reduce your risk of some cancers
5. Improve your sexual health.
6. Improve your mental health and mood.
7. Strengthen your bones and muscles so,it reducs your risk of falls

- Diet or exercise?

A. Diet only: short term effects unless maintained.
B. Exercise only: help in preventing weight gain but not in significant weight loss.
C. Therefore, both of them are required as lifestyle modifications for obesity.

- Medications

-Who should we consider medication for?Medications should be consideredonly for patients who have not achieved weight loss goals with diet and lifestyle changes, and after an extensive discussion of the risks and benefits.

-Duration of use? Despite their indication for long-term therapy, the optimal duration of treatment is unclear

Medication	Mechanism of action	Weight loss relative	Adverse effects	Contraindications

		to placebo		
Liraglutide(Saxenda)	Glucagon-like peptide-1 inhibitor	1.2 mg: 2.1 kg 1.8 mg: 2.8 kg 2.4 mg: 3.5 kg 3 mg: 5.9 kg	Abdominal pain, constipation, decreased appetite, diarrhea, dizziness, fatigue, headache, hypoglycemia, increased lipase levels, N/V	Hx medullary thyroid cancer or MEN type 2
Lorcaserin(Belviq)	5-HT2C receptor agonist	3.2 kg	Back pain, constipation, cough, dizziness, dry mouth, fatigue, headache, hypoglycemia	Use of SSRI

Medication	Mechanism of action	Weight loss relative to placebo	Adverse effects	Contraindications

Naltrexone/ bupropion (Contrave)	Opioid antagonist/ aminoketone antidepressant	16 mg: 3.5 kg 32 mg: 4.9 kg	Constipation, diarrhea, dizziness, dry mouth, headache, insomnia, N/V	seizure disorder; uncontrolled hypertension
Orlistat (Xenical)	Lipase inhibitor	60 mg: 2.5 kg 120 mg: 3.4 kg	Fecal incontinence, fecal urgency, flatus, increased defecation, oily stool	Cholestasis, chronic malabsorption syndrome
Phentermine/ topiramate(Qsymia)	Sympathomimetic/ antiepileptic	7.5/46 mg: 6.7 kg 15/92 mg: 8.9 kg	Constipation, dizziness, dry mouth, dysgeusia, insomnia, paresthesia,	Glaucoma, hyperthyroidism and pregnancy

-Bupropion is medication can be used in smoking cessation, side effects of this drug are suicidal thoughts , depression, nightmare so it thought to be causing weight reduction by side effects. Checking the contraindication and side effects prior to the initiation is very important

-Any medication used to treat obesity should under go trial of 3 month otherwise stop the medication if there is no result to avoid side effect. Also consider the cost-benefits as confounder

-Weight reduction is not achieved by medications alone, diet and exercises should be initiated along with it

-Topiramate'sside effects are memory deficit and language difficulties so think twice ??

-Orlistat with fatyfood causes fecal incontenince. It prevents fat absorption so patient is expected to have vitD,K,A,E,K deficiencies

-Choosing appropriate medication depends on patient situation, ex: patient is diabetic and has weight issues I choose medication that is weight reducing or neutral same applied to antidepressant, if I didn't get the effect of the weight reduction at least there is an effect on the main condition

-Before starting meds treat the underlying cause whether obesity secondary to medication use,

medical condition or depression and psychological problem

- Surgery

- when to consider it? BMI ≥ 40 kg/m2 or BMI ≥35 kg/m2 with obesity-related comorbidity (e.g., hypertension, diabetes, sleep apnoea, GERD) or When non-surgical methods have failed.

-an extensive preoperative assessment of comorbidities and surgical risk, as well as a willingness to comply with the long- term management and follow-up requirements

-Reduces food intake by altering hunger and satiety.

-Techniques: (Laparoscopic vs open)
Sleeve gastrectomy (USA, KSA)
Gastric bypass
Adjustable gastric banding (UK)
-Dumping syndrome:
a group of symptoms, including weakness, abdominal discomfort, and sometimes abnormally rapid bowel evacuation, occurring after meals in some patients who have undergone gastric surgery.

-Bariatric long term risks:

1. Dumping syndrome
2. Low blood sugar
3. Malnutrition
4. Cholilithiasis
5. Marginal Ulcers
6. Bowel obstruction
7. Hernias

-What to do after surgery
1. Diet
Immediate
Full liquid diet for 2-3 weeks.
Gradually changed to soft, solid food
In the 1st year
Healthy diet
No meals skipping
Regular dietician visits.

2. Weight measuring
Weekly in the 1st 4-6 months (Rapid weight loss phase), Then at 8, 10 and 12 months, Then annually.

3. Labs: CBC, Electrolytes, Glucose and Glucose Tolerance test, Complete lipid profil, Complete iron studies, Vitamin B12, Folate(B9) and thiamine (B1), 25-hydroxyvitamin, LFT, Total protein and Albumin

4. When to refer back to Bariatric Surgery

Immediate Direct to the emergency or trauma center	Urgent Appointment timeframe within 30 days	Routine Appointment (depending on clinical need)
• Severe abdominal pain or intolerance of fluids after bariatric surgery • Fever or shortness of breath after bariatric surgery	Vomiting or severe reflux following bariatric surgery	Assessment for bariatric surgery

-reducing bariatric surgery risks by:
Decreasing your Body Mass Index, Increasing your amount of exercise and Stop smoking

If the patient planned for surgery what are the action would do do maintain better outcomes:
Stop smoking at least 1 month before surgeryand the lower BMI the fastest and better recovery
Activity before surgery outcome would be better
Risk such as post-operative wound infection, DVT, PE and perforation
Also better outcome would achieve the goal of weight reduction

- maintenance : Once weight loss is achieved, the patient should be followed up to maintain his/her body weight.

Role of health team, medical students, and school health professionals in addressing the problems of obesity in the community

- **School health professionals**
  -tracking and monitoring BMI of students
  -supporting healthy eating and active living throughout the school day
  -Ensure that the available food and beverage options are healthy

-Increase the amount of time that students are being moderately to vigorously physically active during physical education classes.
-advocating for policy change within the school
-counseling and guiding individual students

- **Health care team**
  -Counseling Patients about Obesity
  -Reducing stigmatisation of obese patients
  -Advocate at the practice, professional organization, local and national administrations for policy changes to promote health .
- **Medical students**
  -Volunteer work to raise awareness in the Community about obesity
  -advocating for healthy eating and physical activity within close society
  -model healthy eating and active lifestyles