

# Diets for Weight Management

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# Obesity

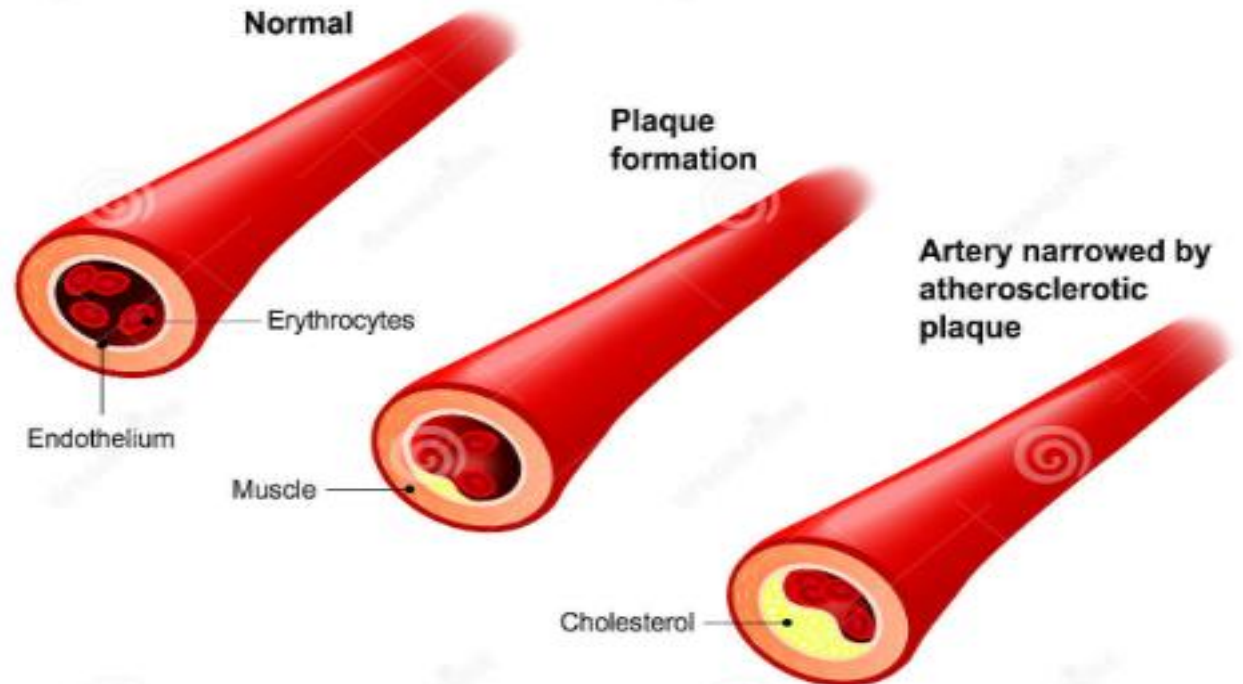
- In 2016, more than 1.9 billion adults aged 18 years and older were overweight and obese.
- In 2019, an estimated 38.2 million children under the age of 5 years were overweight or obese.
- Obesity is the second preventable cause of death in the United States, It Costs \$117 billion annually.
- The fundamental cause of obesity and overweight is an energy imbalance between **calories consumed and calories expended**

# Obesity

- Is a **Multifactorial** disease; biological, psychological, socioeconomic and environmental.
- Overweight and obesity increase the risk of type 2 diabetes, CVD, gallbladder disease, sleep apnea and some types of cancer.
- Obesity is associated with hyperlipidemia and pregnancy complications.

# Obesity and CVDs

- **Aetiology:** It usually occurs due to impaired blood flow in the blood arteries due to development of a **plaque**.
- Accumulation of fatty deposits, smooth muscle cells and fibrous connective tissue in the artery walls), preventing the supply of oxygen and nutrients to the heart.
- **Atherosclerosis.**
  - Begins to develop in childhood
  - LDL < 100 mg/dl.
  - HDL > 60 mg/dl.
  - Cholesterol < 200 mg/dl.



# Obesity and Diabetes

- Excess body fat causes insulin resistance, thus type 2 diabetes (diabesity).
- Adipose tissue encourages insulin resistance in a number of ways; it decreases the secretion of **adiponectin**, a hormone that reduces insulin resistance.
- Excess adipose tissue also secretes additional pro-inflammatory molecules (cytokines), which increase insulin resistance.
- **Excess intra-abdominal fat** is a feature among 4 out of 5 patients with type 2 diabetes

# Obesity and Other Health Implications

- **Fatty liver disease:** conditions in which fat builds up in your liver, lead to severe liver damage, cirrhosis, or even liver failure.
- **Gallbladder disease:** Imbalances in substances that make up bile cause gallstones. Gallstones may form if bile contains too much cholesterol.
- **Osteoarthritis:** pain, swelling, and reduced motion in your joints, Putting extra pressure on your joints and cartilage

# Obesity and other health implications

- **Pregnancy complications:**

- 1- developing gestational diabetes.

- 2- Pre-Eclampsia.

- 3- cesarean section or C-section.

# Weight Management Diet

- Similar to General Diet, expect, the quantities based on patient needs and weight management goals.
- Weight management includes: nutrition therapy, physical activity and behavior therapy.
- Medical nutrition therapy may last at least for 6 months, or until the individuals reach their goal.



# Weight Management Diet

- **Weight loss** by reducing calorie needs by 500 to 1000 calories /day.
- **Weight Maintenance** by providing adequate calories based on energy expenditure once weight loss goal achieved.
- Serum lipid levels ( cholesterol, LDL, HDL and TAG).
- Preventing long-term complications such as hypertension, cardiovascular disease, and diabetes.
- Improving overall health as well as behavior change.

# Weight Management Diet

- **Adequacy**

- Very low calorie diets should only be taken under **medical supervision**.
- Calorie levels less than 1200 kcal for women and 1500 for men should not be recommended.
- They don't meet DRIs and low in vitamins and minerals.
- **The diet should be based on the individual nutritional needs**

# Weight Management Diet

- **Diet Principles**

- 1- Maintain a healthy weight either by weight loss or weight maintenance.
- 2- A 5% weight loss followed by 10 % promote a lower blood sugar, cholesterol, and blood pressure.
- 3- Safe weight loss of an average of 1 to 2 ( 0.5-1 kg) pounds per week.
- 4- **Rapid weight loss occurs, the chance of regaining is greater.**
- 5- Monitor food intake and weight by way of food diary or other means of recording.

# Weight Management Diet

**Why Gradual weight loss is beneficial ?**

**The answer is in the link**

- Magkos, F., Fraterrigo, G., Yoshino, J., Luecking, C., Kirbach, K., Kelly, S. C., de Las Fuentes, L., He, S., Okunade, A. L., Patterson, B. W., & Klein, S. (2016). Effects of Moderate and Subsequent Progressive Weight Loss on Metabolic Function and Adipose Tissue Biology in Humans with Obesity. *Cell metabolism*, 23(4), 591–601.  
<https://doi.org/10.1016/j.cmet.2016.02.005>

# Weight Management Diet

6- Exercise a minimum of 30 minutes most days of the week, at least 5 days a week to help promote weight loss.

7- To maintain weight loss, 60 minutes 5 to 7 days per week may be indicated.

8- Spread meals and snacks throughout the day to prevent hunger periods.

9- Drink at least 1500-2000 ml of water daily, help maintain hydration as well as to promote a sense of fullness to aid with weight loss.

# Weight Management Diet

- Weight loss with the elderly population should be evaluated based on benefit for long-term outcomes.
- Weight loss with children should be evaluated and monitored by a healthcare professions.

# Weight Management Diet

**Ideal body weight** Hundreds of formulas and theories have been used to measure the ideal body weight.

Examples:

- **G. J. Hamwi Formula**

48.0 kg + 2.7 kg per inch over 5 feet      (man)  
45.5 kg + 2.2 kg per inch over 5 feet      (woman)

- **B. J. Devine Formula**

50.0 + 2.3 kg per inch over 5 feet      (man)  
45.5 + 2.3 kg per inch over 5 feet      (woman)

- **%IBW** = (current wt./IBW) X 100

80-90% mild malnutrition

70-79% moderate malnutrition

60-69% severe malnutrition

< 60% non-survival

# Weight Management Diet/ BMI Classifications

Severely underweight	MI less than 16.5kg/m <sup>2</sup>
Underweight	18.5 kg/m <sup>2</sup>
Normal weight	BMI greater than or equal to 18.5 to 24.9 kg/m <sup>2</sup>
Overweight	BMI greater than or equal to 25 to 29.9 kg/m <sup>2</sup>
Obesity	BMI greater than or equal to 30 kg/m <sup>2</sup>
Obesity class I	BMI 30 to 34.9 kg/m <sup>2</sup>
Obesity class II	BMI 35 to 39.9 kg/m <sup>2</sup>
Obesity class III/ Severe, extreme, or massive obesity	BMI greater than or equal to 40 kg/m <sup>2</sup>



# Example

- Gender: Male, Wt.: 90 Kg, Ht.: 178 cm Age: 36 years old.

- calculating the following

- 1- BMI:

- 2- IBW:

- 3- IBW%:

- 4- EER:

- 5- The new EER

# Weight Management Diet

- **Bariatric Diet** is for morbidly obese patients who had undergo weight loss surgery.  
*↳ 40 kg/cm<sup>2</sup> and more*
- This diet is used for gastric bypass, laparoscopic adjustable band, and vertical sleeve gastrectomy.  
*1 2 3*
- It is important to determine what type of bariatric surgery was performed as the diet and nutrition plan could vary

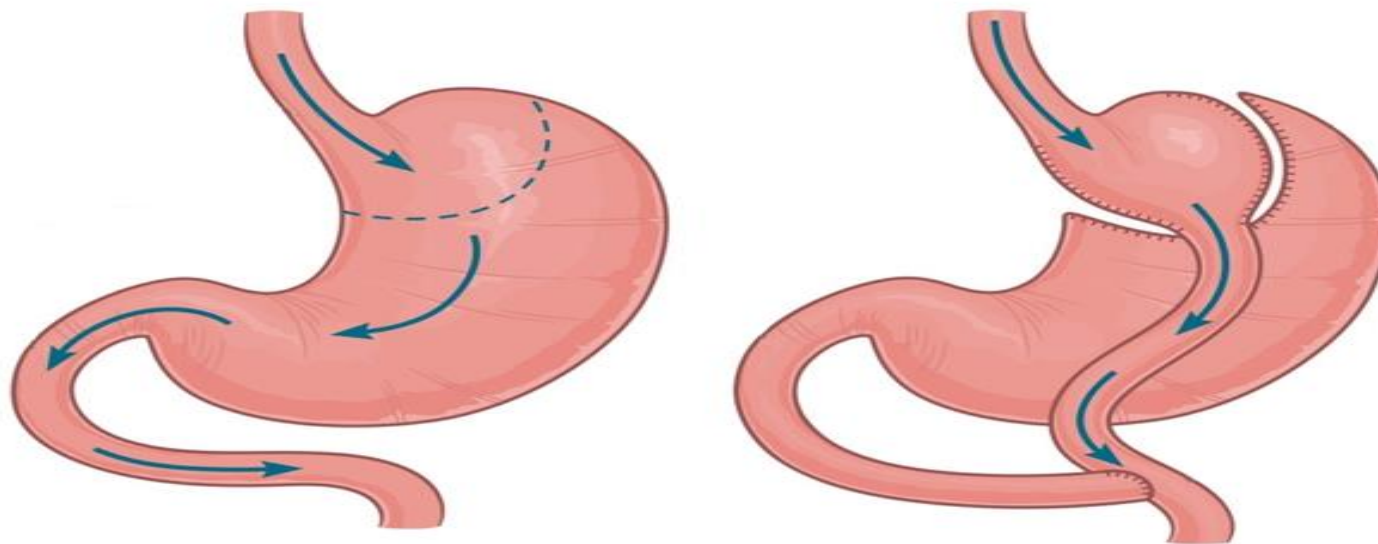
# Weight Management Diet

- **Bariatric surgery Criteria:**
- They have a **BMI of 40 kg/m<sup>2</sup> or more,**
- **Between 35 kg/m<sup>2</sup> and 40 kg/m<sup>2</sup>** and other significant diseases (for example type 2 diabetes or high blood pressure) that could be improved if they lost weight.
- Inability to achieve the desired goal by healthy diet and physical activity.
- Conformation from multidisciplinary team (specialized experience/training in bariatric surgeon, dietitian, exercise specialist and mental health professional

# Gastric Bypass

- Or Roux-en-Y gastric bypass, consists of three steps:
  - 1- Creating a small pouch in the upper section of the stomach
    - **Result: stomach become smaller, thus feel full sooner.**
  - 2- Attaches the lower part directly to the small stomach pouch.
    - **Result: Food will bypass most of your stomach and the upper part of your small intestine; absorbs fewer calories.**
  - 3- Reconnects the upper part of the small intestine to a new location in the stomach.
    - **Result: This allows digestive juices in the stomach to fully digest the food.**

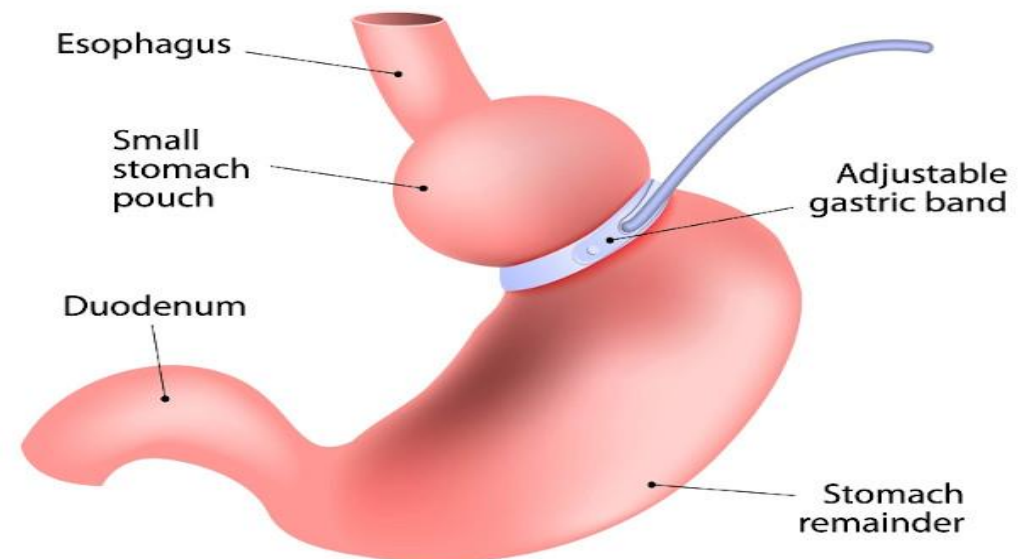
# Gastric Bypass



# Adjustable Gastric Band

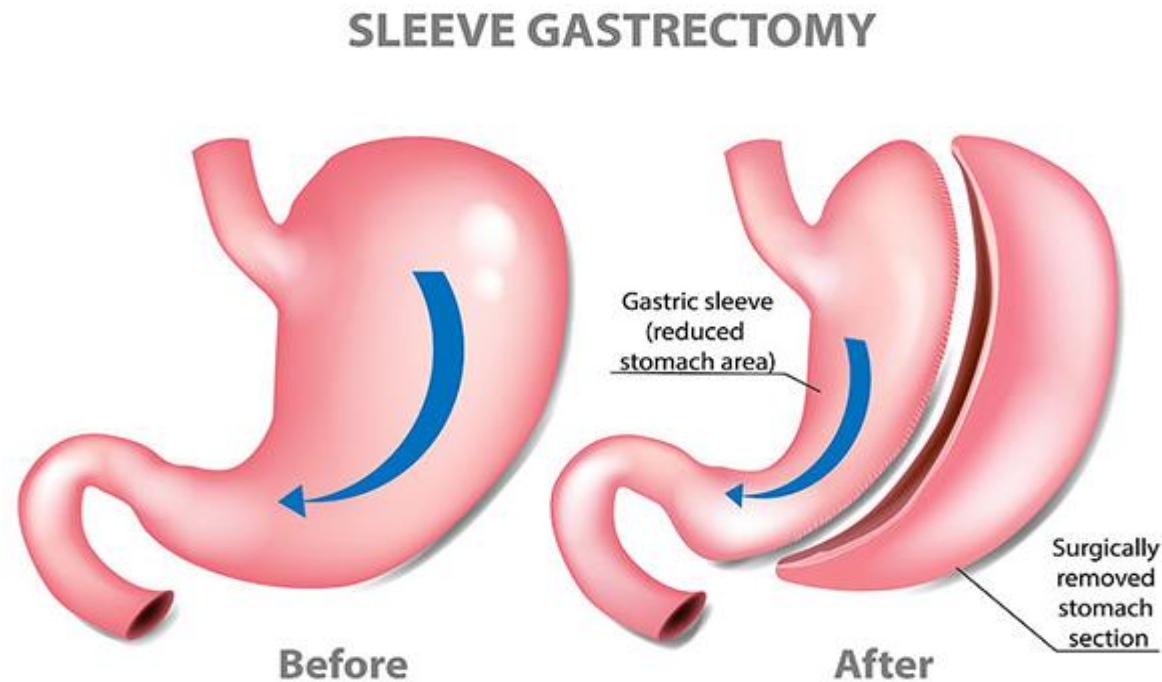
- Less commonly used compared to other methods.
- The surgeon places a ring round the top of your stomach to create a small pouch.
  - **Result: makes the patient full after eating a small amount of food.**
- The inner band can be resize ( adjusted).

Adjustable Gastric Band (LAP-BAND)



# Vertical Sleeve Gastrectomy

- Surgeon removes most of the stomach, leaving a banana-shaped section.
  - **Result: Reduces the amount of food in the stomach; feel full sooner.**



# Weight Management Diet

- The postoperative diet for all types of bariatric surgeries should be started with **clear liquid diet**.
- Carbonated and caffeinated beverages are discouraged, empty calories food.
- The **full liquid diet** is recommended for 2 days, the diet should contain 60 to 80 g of protein whey protein.
- Liquids should not be consumed with solids; Liquids should not be consumed for at least 10 minutes before and no sooner than 40 minutes after a meal



# Weight Management Diet

**Table 5.2** Diet progression following Bariatric surgery

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Day 1–2	<ul style="list-style-type: none"><li>• Clear liquids only (water, broth, diet Jell-O, Sugar-free Popsicle, Isopure protein supplement. Make sure UGI is cleared before advancing diet.</li></ul>
Days 3–14	<ul style="list-style-type: none"><li>• Full liquid diet</li><li>• Whey protein supplements to provide a minimum of 60 g protein/day.</li></ul>
Days 15–30	<ul style="list-style-type: none"><li>• Pureed diet</li><li>• Whey protein supplements to provide a minimum of 60 g protein/day.</li></ul>
Day 30 and beyond	<ul style="list-style-type: none"><li>• Soft/regular diet</li><li>• Avoid breads, dried meat, pasta, and rice</li><li>• Continue goal of 60 g protein and 64 oz water</li></ul>

# Weight Management Diet

- **Diet Principles :**

1- Eat three “meals” per day and maintain adequate protein.

2- Consume protein foods first, 60 g per day.

3- Consume no liquids with meals and 10 minutes before and 40 minutes after eating solids.

4- Supplement with multivitamin complete, calcium 1000 to 1200mg/day. (Additional vitamins such as iron, B12 sublingual may be needed.

**5- Patients should be screened for vitamin D deficiency preoperatively and treated if a vitamin D deficiency is present. Why ?**

# Weight Management Diet

- **Vitamin D and Bariatric surgery**
- **Check the link for the answer.**

Lespessailles, E., & Toumi, H. (2017). Vitamin D alteration associated with obesity and bariatric surgery. *Experimental biology and medicine (Maywood, N.J.)*, 242(10), 1086–1094.

<https://doi.org/10.1177/1535370216688567>

# Assignment #2

- Each student should find out the following about herself:
- BMI, IBW, % IBW, & BMR( then EER).
- Indicate the units of measurement.
- Indicate the formulas that you used.
- This Assignment should be handed in **25<sup>th</sup> April 2022**