

Chapter 14: Obesity



Overweight and Obesity

Overweight

– BMI ≥ 25 .

- It is related to an excessive body weight, not necessarily excessive body fat.
- Muscle, bone, fat, and water all contribute to body weight

Obesity

- BMI ≥ 30
- which is generally assumed to be related to an excessive amount of body fat.

Obesity Causes

1. Genetic (30% - 40%)
2. Environment (60% - 70%)
3. Interaction between both

1. Genetic Causes

- More than **300 genes** have been linked to obesity
- They are involved in **how likely a person is to gain or lose weight** in response to changes in calorie intake
- by influencing:
 - basal metabolic rate
 - where body fat is distributed
 - response to overeating

2. Environmental Causes

- increasing consumption of **soft drinks**
- great proportion of food consumed **away from home**
- the growing **portion size** of restaurant meals
- low levels of **physical activity**
- increases in **television** watching
- Increased use of electronic devices in the home



5 cups
270 calories



Tub
630 calories



3-inch diameter
140 calories



5-6-inch diameter
350 calories



333 calories



590 calories



Original 8-ounce bottle
97 calories



20-ounce bottle
242 calories



Complications of Obesity

- insulin resistance
- Type 2 diabetes
- Hypertension
- Dyslipidemia
- Cardiovascular disease, stroke
- gallstones and cholecystitis
- sleep apnea
- respiratory dysfunction
- Increased incidence of certain cancers

Goals of treatment

- Weight loss to **healthy BMI category**
- **Maintained** permanently
- 1- to 2-pound loss every week for the first 6 months of weight loss therapy

Treatment Approaches

| BMI Category and Classification | Diet, Physical Activity, and Behavior Modification | Pharmacotherapy | Surgery |
|--------------------------------------|--|--------------------|--------------------|
| 25–26.9 Lower range of overweight | With comorbidities | | |
| 27–29.9 Upper range of overweight | With comorbidities | With comorbidities | |
| 30–34.5 Obesity class 1 | Yes | Yes | |
| 35–39.9 Obesity class 2 | Yes | Yes | With comorbidities |
| ≥40 Obesity class 3 | Yes | Yes | |

1. Diet Modification

- Fewer calories
 - Subtracting 500 to 1000 calories from the client's estimated total energy needs
- If 1500 calories can promote a 1- to 2- pound loss per week, will a bigger cut in calories speed the weight loss process?

1. Diet Modification

- **Macronutrient Composition**
 - (1) low fat/ high carbohydrate
 - (2) high fat/low carbohydrate
 - (3) moderate fat/high carbohydrate

Macronutrient Composition

What matters with weight loss is *the **amount** of calories consumed, not the source of those calories*

1. Diet Modification

- **Macronutrient Composition**
 - **The best** : Myplate intake patterns, (regardless of the total calorie count)
 - $\geq 55\%$ carbohydrate
 - $\leq 30\%$ fat
 - 15% from protein

1. Diet Modification

Nutrition education

- *Eat **smaller portions** at meals and snacks*
 - *know the portion sizes !*
- *Use “good” **carbs** in place of “bad” carbs.*
- *Choose healthy fat—**in moderation** (with high fiber intake) → greater weight loss*
 - *Unsaturated fats (poultry, fish, nuts, vegetable oils)*
 - *Saturated and trans fats (red meats, dairy, margarine, shortening, butter)*

Nutrition education

- Use *cooking techniques* that do not add additional calories
- *Modify recipes* to lower the calorie content
 - Non stick pans cookware , ... etc
- Read “*Nutrition Facts*” labels to comparison shop.
- *Distribute calories throughout the day*

2. Physical Activity

- helps preserve or increase lean body mass
- Helps increase basal metabolic rate

3. Behavior Modification

- Make a list of reasons why you want to lose weight.
- Give yourself a **nonfood reward** (e.g., new clothes, a night of entertainment) for losing weight.
- Learn to distinguish **hunger from cravings**.
- Avoid tasting food while cooking; **don't take extra portions to get rid of a food**.
- Place the low-calorie foods in the front of the refrigerator; keep the high-calorie foods hidden.

3. Behavior Modification

- Never skip meals.
- Serve food directly from the stove to the plate instead of family style, which can lead to large portions and second helpings.
- Use a small plate to give the appearance of eating a full plate of food.
- Chew food thoroughly and eat slowly.

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3. Pharmacotherapy

- recommended for people with a BMI **more than 30** or for people with a BMI of **more than 27 with comorbid conditions**
- Diet + drug → greater weight loss
- is not effective as a sole treatment and people usually regain the weight that was lost once the drug is stopped

3. Pharmacology

sibutramine

| Drug | Effect | Common Side Effects | Contraindications | Nutritional Considerations |
|--------------------------|--|--|---|---|
| Sibutramine (Meridia) | <p>Suppresses appetite and promotes satiety; lessens the decrease in metabolic rate that often occurs with weight loss</p> <p>Associated with effective weight maintenance</p> | <p>Constipation, dry mouth, and headache are usually mild and transient</p> <p>May ↑ heart rate and blood pressure</p> | <p>CVD</p> <p>Uncontrolled HTN</p> <p>Use of MAO inhibitors</p> <p>Relative contraindication: use of other SSRI</p> | <p>May need ↑ fluid, ↑ fiber, ↓ Na, ↓ fat</p> <p>Avoid ↑ tryptophan foods</p> |

3. Pharmacology

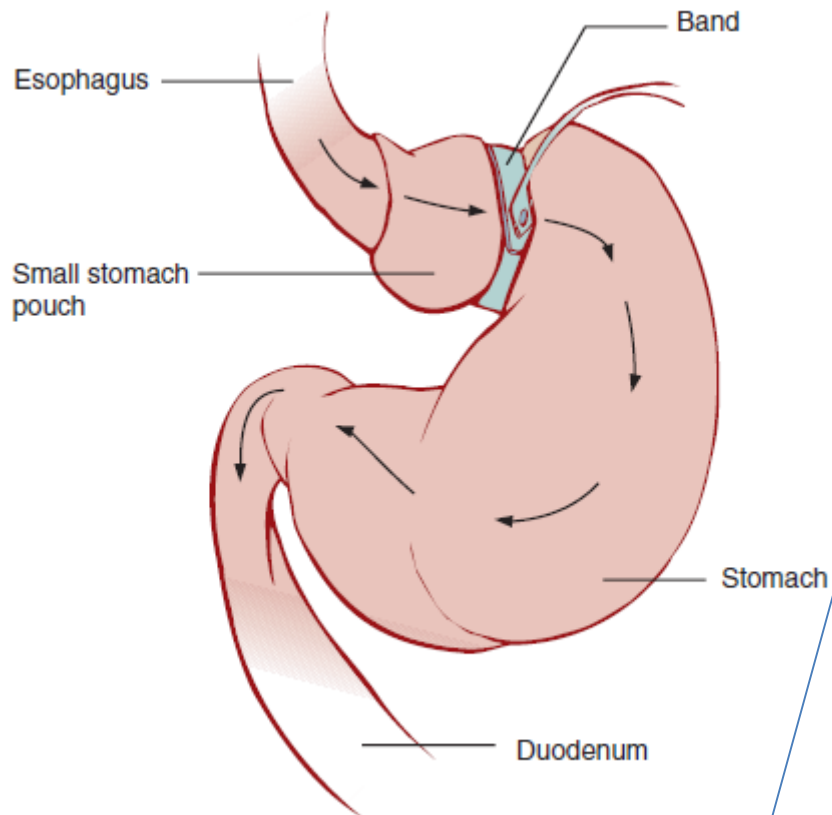
| Drug | Effect | Common Side Effects | Contraindications | Nutritional Considerations |
|-----------------------|---|---|--|--|
| Orlistat (Xenical) | <p>↓ Fat absorption from GI tract by inhibiting pancreatic lipase</p> <p>↓ LDL cholesterol independent of weight loss</p> | <p>↓ Absorption of fat-soluble vitamins</p> <p>Significant GI side effects including diarrhea, flatulence, bloating, and abdominal pain</p> | <p>Malabsorption syndromes</p> <p>Caution with hyperoxaluria, calcium oxalate renal stones, and diabetes</p> | <p>Limit total fat to limit side effects</p> <p>Distribute fat evenly throughout the day</p> |
| orlistat | <p>Improves fasting glucose and glycohemoglobin in Type 2 diabetics</p> | <p>Oily anal leakage (initial side effects tend to ↓ over first several months)</p> | | <p>Multivitamins may be needed; should not be taken within 2 hours of eating</p> |

4. Surgery

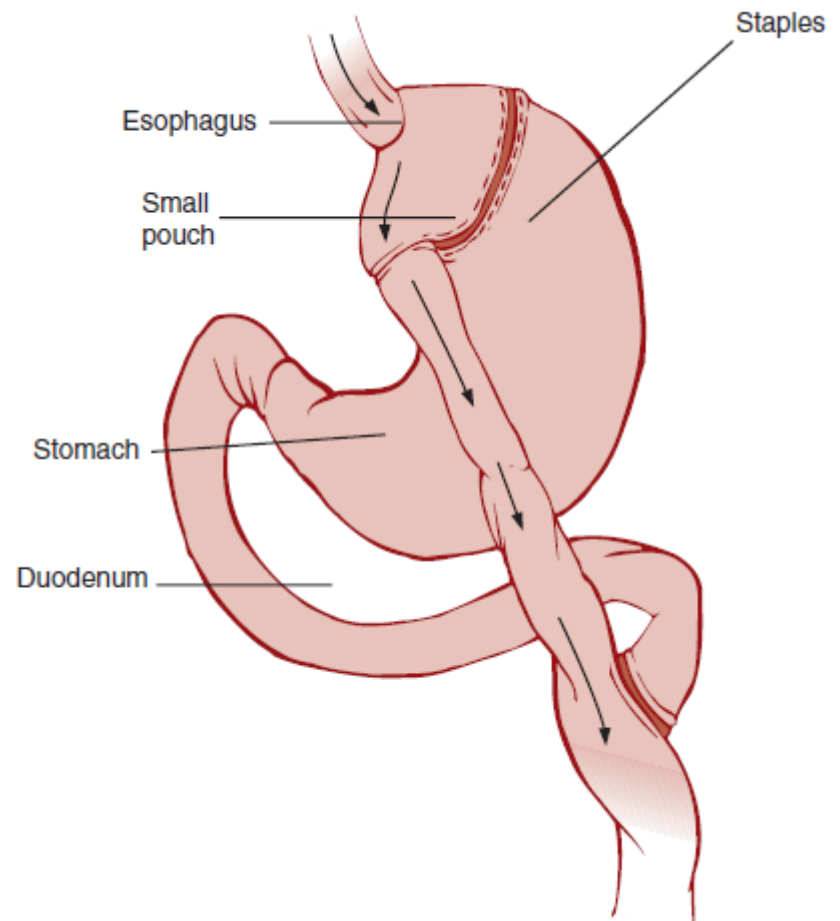
- Bariatric surgery is the most effective treatment for severe obesity
- For BMI ≥ 40
- And also for clients whose BMI is 35 to 39.9 who have **major comorbidities**

4. Surgery

Laparoscopic Adjustable Gastric Banding



Roux-en-Y Gastric Bypass



Laparoscopic Adjustable Gastric Banding

- An inflatable band is encircled around the uppermost stomach and buckled
- Clients must understand the importance of:
 - **eating small meals**, eating slowly, chewing food thoroughly
 - **progressing the diet gradually** from liquids, to pureed foods, to soft foods.

Roux-en-Y Gastric Bypass

- gastric restriction to limit food intake with the construction of bypasses of the duodenum and the first portion of the jejunum
- Which creates malabsorption of calories and nutrients

Roux-en-Y Gastric Bypass

- Rapid emptying of the stomach pouch contents into the small intestine may produce the “**dumping syndrome**”
- characterized by nausea, lightheadedness, diarrhea, and abdominal cramping that improve over time

Roux-en-Y Gastric Bypass

- The major complication with RYGB is anastomotic leak.
- Iron, calcium, and vitamin B12 deficiencies may occur.
- After 5 years, weight loss averages 68% to 80% of excess body weight

Post-Surgical Diet

- begins with small quantities of sugar-free clear liquids.
- Within the first week the diet advances as tolerated to full liquids
- followed by pureed foods
- then a regular diet within 5 to 6 weeks after surgery.
- Nutrient deficiencies and dumping syndrome are a problem only for gastric bypass, not for LAGB