

Chapter 14: Obesity



Overweight and Obesity

Overweight

- BMI \geq 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 \geq 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

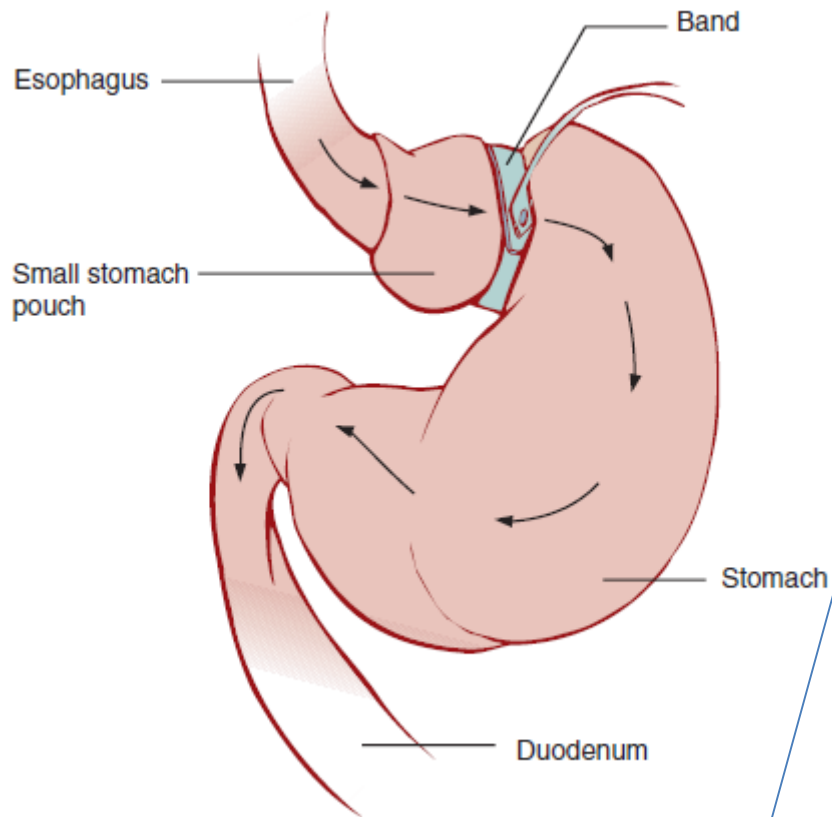
Drug	Effect	Common Side Effects	Contraindications	Nutritional Considerations
Orlistat (Xenical)	<p>↓ Fat absorption from GI tract by inhibiting pancreatic lipase</p> <p>↓ LDL cholesterol independent of weight loss</p>	<p>↓ Absorption of fat-soluble vitamins</p> <p>Significant GI side effects including 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

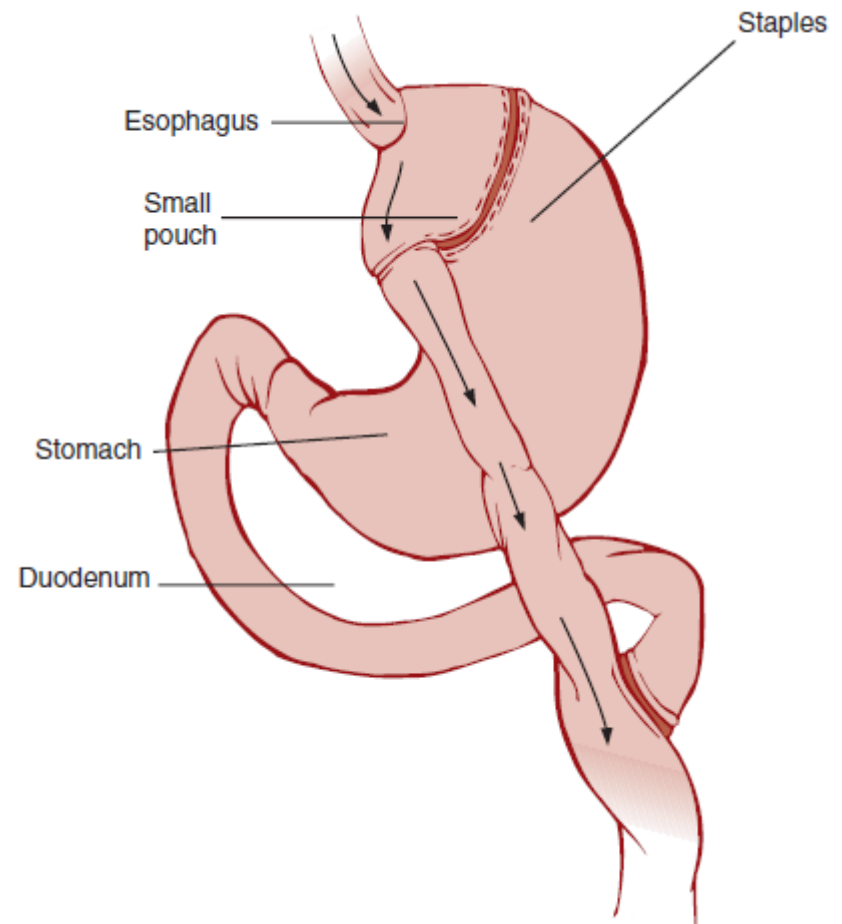
- Bariatric surgery is the most effective treatment for severe obesity
- For BMI ≥ 40
- And also for clients whose BMI is 35 to 39.9 who have **major comorbidities**

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