Chapter 17: Adults Nutrition Conditions and Interventions

Overweight and Obesity

- Being overweight or obese increases the risk of :
  - hypertension, dyslipidemia, coronary heart disease, type 2 diabetes, stroke, gallbladder disease, osteoarthritis, sleep apnea and respiratory problems, back problems, and endometrial, breast, prostate, and colon cancers.

- These risks rise as the degree of excess weight rises.

Etiology of Obesity

- complex and chronic condition

- stemming from numerous interacting physiological, individual, and environmental factors that affect the type, frequency, and quantity of food and beverages consumed and the body's metabolic processes

Screening and Assessment

- Classifications of Obesity

Table 17.3 Classification of overweight and obesity by BMI, waist circumference, and associated disease risk[7]

			Disease Risk* Relative to Normal Weight and Waist Circumference	
	BMI (kg/m^2)	Obesity Class	Men ≤102 cm (<40 in) Women ≤88 cm (<35 in)	Men >102 cm (>40 in) Women >88 cm (>35 in)
Underweight	<18.5		—	—
Normal	18.5–24.9		—	—
Overweight	25.0–29.9		Increased	High
Obesity	30.0–34.9	I	High	Very high
	35.0–39.9	II	Very high	Very high
Extreme Obesity	≥40	III	Extremely high	Extremely high

BMI

- Although BMI approximates body fat for most healthy individuals, there are exceptions:

  - Athletes or others with greater-than-average percentages of muscle mass
  - Individuals with little muscle mass
  - Individuals with dense, large bones
  - Dehydrated and over-hydrated individuals

Central Adiposity

- Body fat content and its distribution is a more important indicator of health than BMI

- Increased waist circumference is associated with higher risk even in persons of normal weight.

Waist circumference

- Waist circumference is measured and compared to sex-specific cutoffs of :
  - >40 in (102 cm) for men
  - >35 in (>88 cm) for women

- To measure waist circumference, place a tape measure around the abdomen just above the hip bone, level with the navel and parallel to the floor. The tape should be snug but not compressing the skin. Measure after exhaling


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Nutrition Assessment

- After the need for weight management is identified→

- a comprehensive assessment is used to understand the individual's experience with overweight, current eating and physical-activity patterns, psychosocial and medical factors, and his/her motivation and readiness to change and goals

- **Table 17.4** Nutrition assessment of adults with overweight or obesity and obesity-related diseases and conditions

Table 17.4 Nutrition assessment of adults with overweight or obesity and obesity-related diseases and conditions

Anthropometrics

- Height, weight, BMI, waist circumference, waist-hip ratio

Food and Nutrition History

- Weight history: age of onset, highest/lowest adult weights, patterns of weight gain and loss, environmental triggers to weight gain, triggers to excessive or disordered eating
- Dieting experience: number and types of diets, weight-loss medications, success of previous efforts
- Current eating patterns: meal and snack patterns (skipped meals, largest meal, snacks/grazing)
- Eating location and environment: meals eaten out (cafeteria, fast food, restaurant, carry lunch), family meals, television on at mealtime
- Types and amounts of food typically eaten: 24-hour recall or food frequency, food preferences, ethnic foods, cultural practices
- Nutritional intake: assessment of reported intake for energy and adequacy of key nutrients
  - Total caloric intake
  - Type and amount of fat (saturated, mono saturated, *trans* fats, omega-3 fatty acid)
  - Sources of key nutrients: fruits and vegetables (vitamins A, C, antioxidants and phytochemicals, potassium, fiber), bread and grains (fiber, B-vitamins, iron, folic acid), milk and dairy (calcium, vitamin D), fish, meat, beans, nuts (protein, iron, omega-3 fatty acid)
  - Energy-dense foods (bakery goods, such as cookies, cake, sweet rolls), chips and crackers, candy, salad dressings and toppings, specialty coffee drinks, alcoholic beverages, fried foods)
  - Salty foods: salt-shaker use, processed meats, chips and crackers, nuts, convenience foods, restaurant foods
  - Supplement use: nutrient-enhanced food or beverage products, vitamin/mineral supplements, herbal supplements

Physical Activity

- Level of activity at work, school, home
- Frequency, intensity, and duration of planned exercise beyond routine work and leisure activities

Laboratory

- Lipid profile: total serum cholesterol, HDL, LDL, triglycerides
- Glucose: random or fasting glucose, hemoglobin A1c, glucose tolerance test

Medical and Health History

- Obesity severity, extent of physical limitations, impact on activities of daily living
- Potential contributing causes: endocrine, neurological, physical disability, genetics/family history, medications
- Obesity-associated conditions: diabetes, hypertension, cardiovascular diseases, cancer, fatty liver disease, sleep apnea
- Mental health: daily stress level, recent life-changing events (birth, death, marriage, job change or loss, new medical diagnosis), depression, post-traumatic stress disorder, eating disorder (binge-eating, bulimia)
- Active medical diagnoses and medication use

Social History

- Occupation, family composition, caretaking responsibilities
- Economic constraints, food insecurity, food/nutrition program participation, access to health care, coverage for nutrition intervention

Nutrition Knowledge and Attitudes

- Basic understanding about foods and nutrition, guidelines for healthy eating, recommended serving sizes
- Role of nutrition in patient's diseases or conditions; previous diet instruction or lifestyle-management program
- Level of self-care regarding nutrition: experience in meal planning, food purchasing and preparation
- Confidence in ability

Readiness to Change

- Reasons to lose weight at this time, weight-loss goals
- Stage of change: precontemplation, contemplation, preparation, action, maintenance
- Support system

Motivation

- Several factors contribute to understanding the client's motivation to engage in a weight-loss program:
  - reasons and motivation for weight reduction,
  - previous weight-loss attempts,
  - patient's understanding of causes of obesity and how obesity contributes to several diseases,
  - attitude toward physical activity,
  - capacity to engage in physical activity,
  - time available for weight loss intervention,
  - financial considerations.

Physical Activity for Weight Management

- For obese individuals, exercise should be initiated slowly and the intensity increased gradually
- Even 10-minute sessions have been shown to have beneficial effects.
- 30 minutes of moderate physical activity five days a week would burn approximately 1000 calories.

MNT for weight management

- Pharmacology for weight loss
- Bariatric surgery

CVD

- Cardiovascular diseases (CVD) are diseases related to the heart and blood vessels and are usually associated with atherosclerosis

- Atherosclerosis : (hardening of the arteries), which is a buildup of plaque in the blood vessel wall

- https://www.youtube.com/watch?v=8fuvtMiZfao

CVD

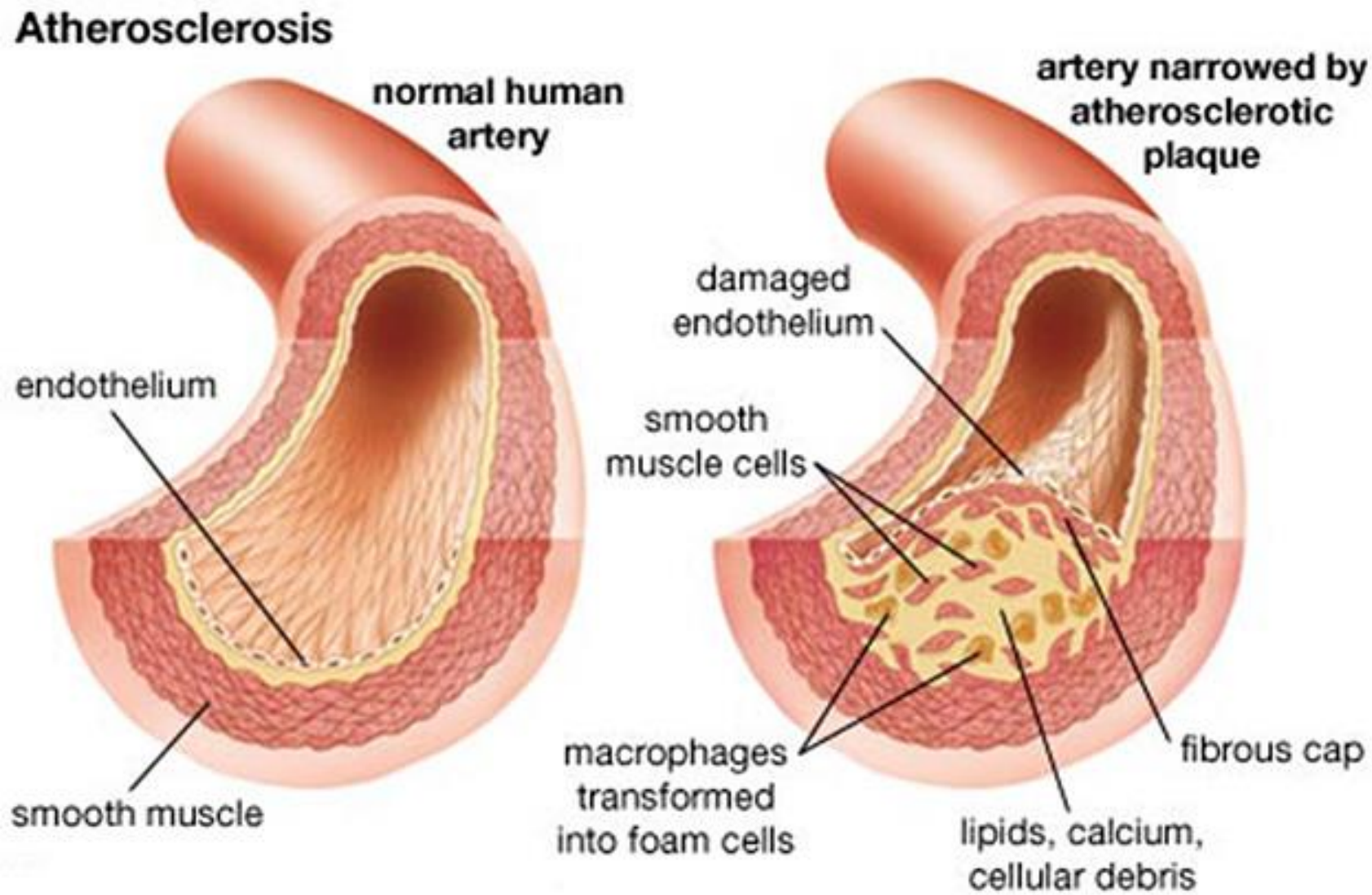
- Atherosclerotic lesions begin to form in adolescence

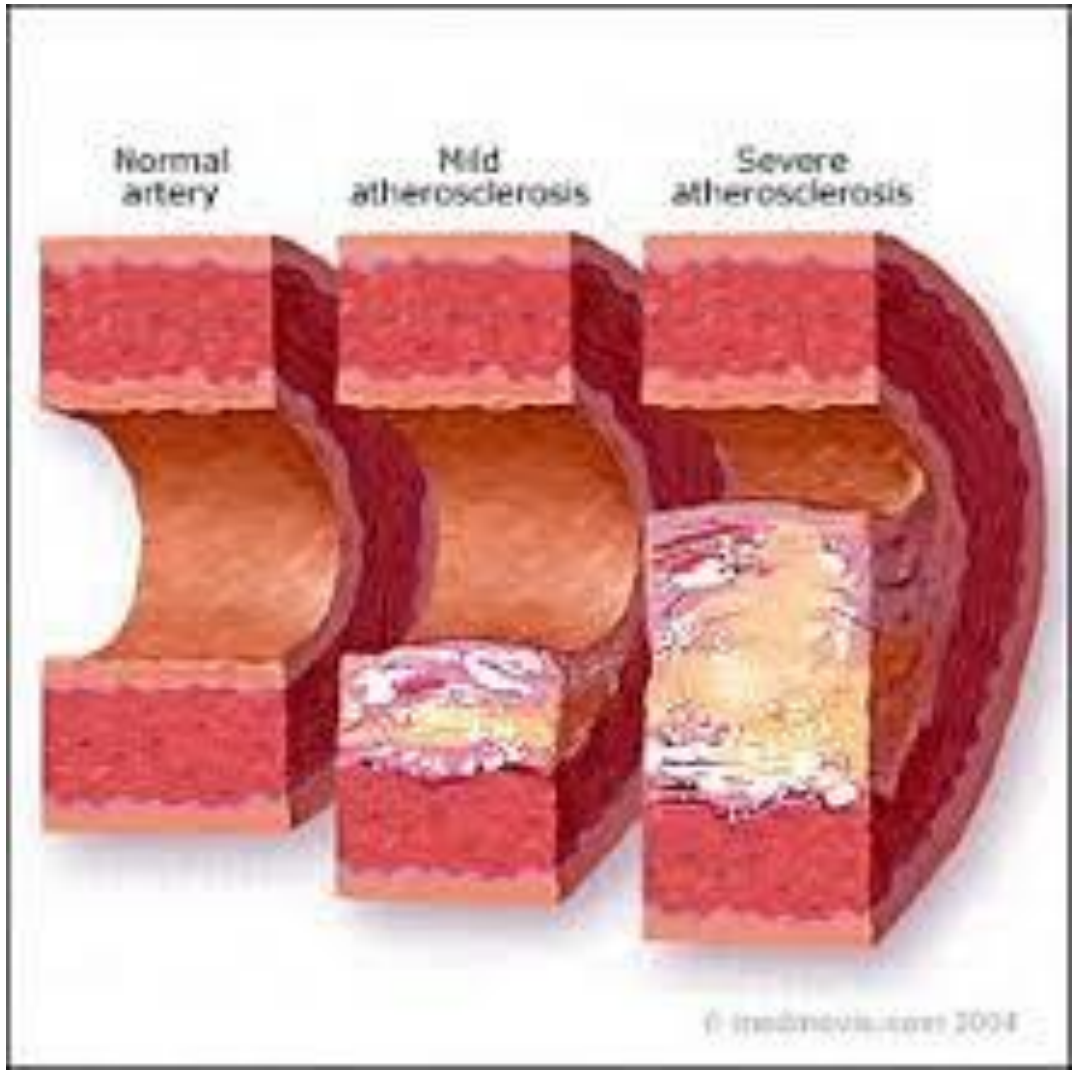
- and may remain silent until a vessel becomes occluded or blocked by the plaque or a blood clot and a heart attack (myocardial infarction) or stroke occurs

Etiology of Atherosclerosis

- begins when fatty deposits become part of tissues that form over injured arterial wall cells.

- Fibrous plaques (containing fats, cholesterol, collagen, muscle, and other cells and metabolites) form and gradually become calcified, increasing the extent of atherosclerosis.


Atherosclerosis
normal human artery
endothelium
smooth muscle
artery narrowed by atherosclerotic plaque
damaged endothelium
smooth muscle cells
macrophages transformed into foam cells
lipids, calcium, cellular debris
fibrous cap


Normal artery
Mild atherosclerosis
Severe atherosclerosis

Progression of atherosclerosis

- High blood levels of homocysteine
- abnormal blood clotting factors
- abdominal obesity
- elevated blood glucose and insulin levels

- can be slowed, neutralized, or partially reversed by dietary and lifestyle modifications

Physiological Effects of Atherosclerosis

- The buildup of lesions and plaque inside the blood vessels reduces blood flow.
- Consequently, the heart has to work harder to pump blood through this narrower space
  to reach all parts of the body, leading to higher blood pressure levels.
- Atherosclerosis decreases blood circulation to the heart, resulting in decline in organ function.

- Build up of plaque
- → reduces blood flow
- → heart works harder
- → high blood pressure
- → low blood circulated to the heart because of atherosclerosis
- → decline in organ function

Risk Factors for CVD table 17.7

- *Dyslipidemia* (high LDL cholesterol, low HDL cholesterol, and high triglycerides)
- high blood pressure,
- lifestyle factors of diet, physical activity, and smoking.
- Genetics, evidenced through a family history of these diseases,
- gender (women are at lower risk until menopause),
- older age are also risk factors.

- More recently recognized is the interconnectedness of CVD with obesity, diabetes, infection, and inflammation

Nutrition Assessment Components

- Food and nutrition history to determine usual intake, especially amount and type of fat, fruits and vegetables, bread and grains, meat, fish, and dairy foods; meal and snack patterns; and supplement use

- Nutrition knowledge of healthy-eating recommendations and relationship of food choices to CVD risk, and attitudes about food choices and change
- Physical activity
-

Nutrition Assessment Components

- Anthropometric measurements of weight, height, BMI, and waist circumference.

- Laboratory values for lipid and blood glucose profiles

- Medical and social history to clarify other health and lifestyle factors that impact nutritional status, food choice and access, and motivation and ability to initiate and maintain lifestyle changes

Nutrition Interventions for CVD

- Primary Prevention
  - All young and middle-aged adults, with risk factors or not, should follow the principles of a ***cardio-protective diet*** **that emphasizes plant foods (vegetables, fruits, and grains), appropriate fats, fish and lean meat, and dairy**

Table 17.8 Diet and lifestyle recommendations for cardiovascular disease reduction[47]

a. Balance calorie intake and physical activity to achieve or maintain a healthy body weight.

b. Consume a diet rich in vegetables and fruits.

c. Choose whole-grain, high-fiber foods.

d. Consume fish, especially oily fish, twice a week.

e. Limit intake of saturated fat to less than 7% of calorie intake, *trans* fat to <1% of calorie intake, and dietary cholesterol to less than 200 mg per day by:

—choosing lean meats and vegetable alternatives;

—selecting fat-free (skim), 1%, and low-fat dairy products; and

—minimizing intake of partially hydrogenated fats.

f. Minimize intake of beverages and food with added sugars.

g. Choose and prepare foods with little or no salt.

h. If you consume alcohol, do so in moderation.

i. When you eat food that is prepared outside the home, follow the AHA Diet and Lifestyle Recommendations.

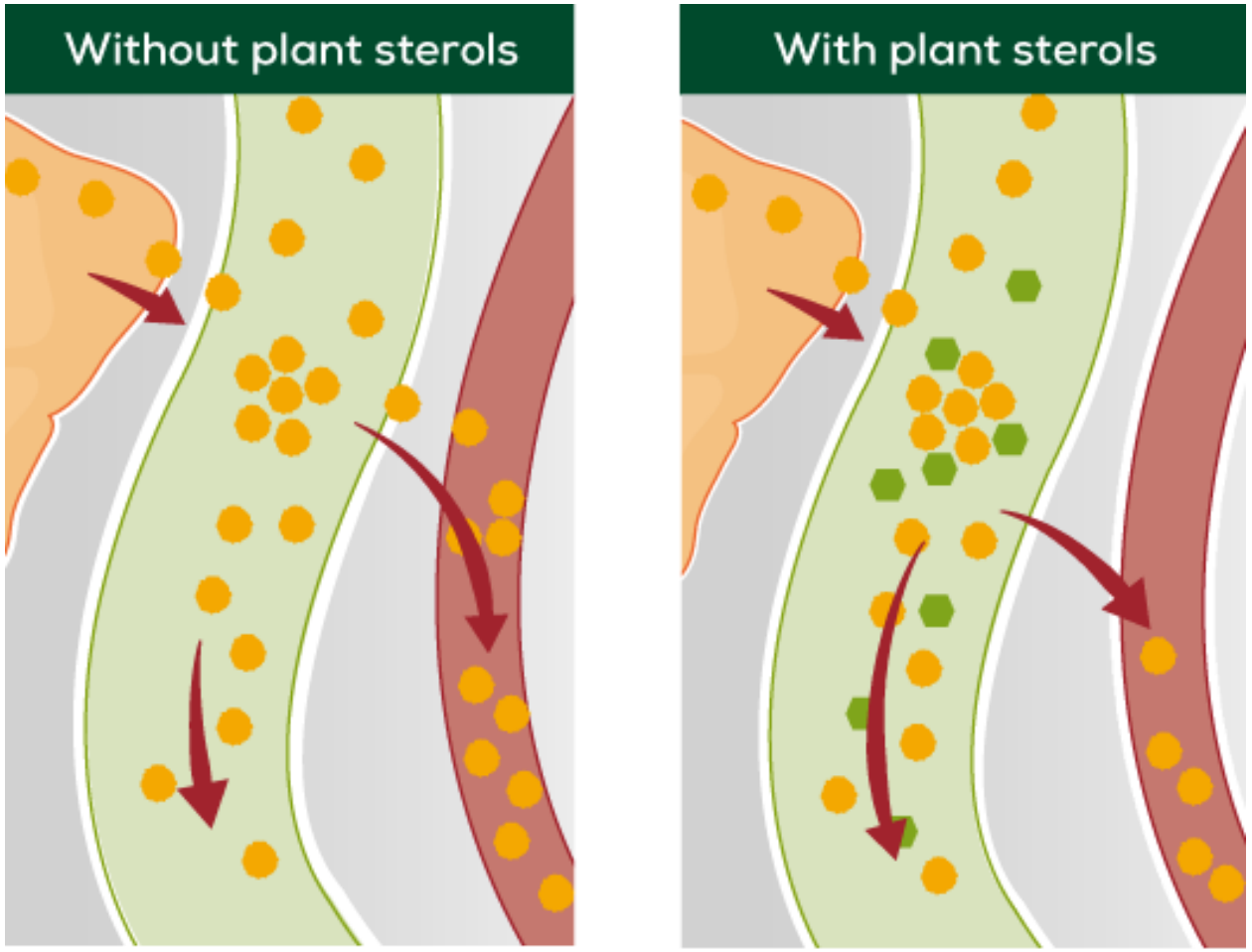
Therapeutic Lifestyle Changes (TLC) for high-risk individuals

-
  - Total fat intake: 25–35% of calories
  - Saturated fat intake: less than 7% of total calories
  - Monounsaturated fat: up to 20% of calories
  - Polyunsaturated fat: not more than 10% of calories
  - *Trans* fat to <1% of calories
  - Dietary cholesterol intake: less than 200 mg per day
  - Carbohydrates: 50–60% of total calories
  - Dietary fiber intake: 20–30 grams per day, with 5–10 grams from viscous fiber
  - Dietary options for additional reduction of LDL
- - Plant stanols/sterols (2 grams per day) from spreads
  - Addition of 5–15 grams of additional viscous fiber
  - Expenditure of at least 200 calories per day through physical activity
  - Weight reduction if overweight or obese

Stanols / sterols

- Phytosterols, essential component of **plant cell** membranes, that resemble the chemical structure of animal cholesterol.

- When eaten, they block particles responsible for cholesterol transport, which results in less cholesterol absorption



More cholesterol absorbed = higher blood cholesterol levels

Less cholesterol absorbed = lower blood cholesterol levels

Plant sterols partially block the absorption of cholesterol from the gut, significantly lowering blood cholesterol levels