2.08 Understand the functions and disorders of the digestive system
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Essential questions

- What are the functions of the digestive system?
- How do the functions of chemical and physical digestion interrelate?
- What are the common disorders of the digestive system?
- How are disorders of the digestive system treated?
- How do you relate the body’s use of nutrients to the digestive system?
Understand the functions of the digestive system

1. Mouth: Teeth and tongue begin mechanical digestion by breaking apart food.

2. Salivary Glands: Begin chemical digestion as ptyalin begins to change starch to maltose.

3. Esophagus: Peristalsis and gravity move food along.


5. Liver: Produces bile.

6. Gallbladder: Stores bile and releases it into small intestine to emulsify fats.


9. Large Intestine: Absorbs water and some other nutrients, and collects food residue for excretion.
Functions of the digestive system

Mouth (buccal cavity)

What digestive system functions occur in the mouth?

- Mastication
- Salivary glands

What is bolus?
Functions of the digestive system

Tongue

What is the digestive system function of the tongue?

- Aids in chewing and swallowing.
Functions of the digestive system

**Teeth**

- **Incisors** - Sharp edges for biting
- **Cuspids** - Pointed for tearing
- **Bicuspsids** - For grinding food
- **Molars** - Have ridges for crushing and grinding
Functions of the digestive system

Salivary glands

- What is the function of the salivary glands? Keep the mouth moist, allows easier mastication of food.

- What chemical action takes place in the mouth as a result? It contains some antibodies, buffers, ions, waste products and enzymes that help break down food.
Functions of the digestive system

**PHARYNX**

- **What does the pharynx do?** The common passageway for air and food
Functions of the digestive system

Esophagus

- What does the esophagus do? The passageway for food as it enters the stomach.
Functions of the digestive system

**Stomach**

- What are the functions of the stomach?
- What chemicals are released there? Gastric juices of various types
- How long does it take for the stomach to empty? About 4 hours
Functions of the digestive system

Gastric juices

- Enteroendocrine glands
  - gastrin
- Parietal cells
  - HCL and intrinsic factor
- Chief type cells
  - pepsinogen
- Mucus cells
  - alkaline mucus
- Rennin
Functions of the digestive system

Small Intestine

- What digestive process occurs here? Final preparation of food to be absorbed.
- What are villi? Projections within the small intestine that the digested portion of food passes through to enter the bloodstream.
Functions of the digestive system

Pancreas

- What is its function?
  Secretes digestive juices.

Which other system does the pancreas function?
Functions of the digestive system

Liver

- What are the functions of the liver? Manufacture bile, produce and store glucose, detoxify alcohol, drugs and other harmful substances, manufacture blood proteins, store vitamins A, D and B complex, break down hormones, remove worn out red blood cells from circulation and recycle iron content.

What is the function of

- Bile- necessary for digestion of fat
- Glycogen- can be converted to glucose in case of body need.
Functions of the digestive system

Gallbladder

- What is the function of the gallbladder? It stores and concentrates bile when it is not needed by the body.

- Why is this function important? When food high in fat enters the duodenum, bile is released by the gall bladder.
Functions of the digestive system

- **Large intestine**
  - What are the functions of the large intestines?
    - Water reabsorption
    - Absorption of vitamins produced by bacteria in the large intestine
    - Packaging and compacting waste products for elimination
  - What type of diet promotes colon health? High Fiber!
  - Chyme: Semi-liquid food
Understand the functions of the digestive system

- Discuss the processes of digestion and their relevance to health.
  - Chemical
  - Physical
  - Absorption
  - Elimination
Functions of the digestive system

News Flash... New treatment!!!!

- Fecal transplant
  - Allows the bacteria from the healthy stool to repopulate the gut of the patient who has lost healthy bacteria in their gut
  - Used to treat *Clostridium difficile* that grows in human intestines
    - Symptoms range from persistent diarrhea to life-threatening inflammation of the colon to death

2.08 Understand the functions and disorders of the digestive system
Functions of the digestive system

Potty Trivia...

- What can healthcare professionals learn from observing stool specimens?
- On average, how much flatus does a person produce per day?

2.08 Understand the functions and disorders of the digestive system
Act of Digestion

- Discuss each action of the digestive system...
- Ingestion
- Mastication
- Digestion
- Secretion
- Absorption
- Excretion

2.08 Understand the functions and disorders of the digestive system
Functions of the digestive system

Check your knowledge...
Disorders of the digestive system

- **Anorexia**
  - Decreased or poor appetite
  - Symptom

- **Anorexia nervosa**
  - Eating disorder characterized by refusal to eat
  - Psychiatric disorder

2.08 Understand the functions and disorders of the digestive system
Disorders of the digestive system

Caries

- What is another name for caries? Cavities
Disorders of the digestive system

Cholecystitis

- **What is cholecystitis?**
  Inflammation of the gall bladder

- **What are the symptoms?**
  Pain in the RUQ

- **How is it treated?** Surgical removal

- **Cholelithiasis** - Gall stones
Disorders of the digestive system

Cirrhosis

- What is cirrhosis? Chronic inflammatory disease of the liver

- What are the symptoms? None at first, but as the liver starts to fail, exhaustion, nausea, weakness, weight loss abdominal pain are some common symptoms.
Disorders of the digestive system

**CONSTIPATION**

- What is constipation?
  Delayed poop. The colon absorbs excess water from the feces and it becomes dry and hard.

- What are some causes?
  Anxiety, certain medications, not enough liquids

- How do you treat it?
  Eating fruits, vegetables, drinking plenty of fluids, exercise and avoid tension
Disorders of the digestive disorders

**GASTROENTERITIS**

**What is gastroenteritis?**
Inflammation of the stomach and intestinal tract.

**What causes it?** Virus
Disorders of the digestive system

Hepatitis

- Acute
- Chronic
- Hepatitis A, B, C, D, E

What are some common symptoms of hepatitis? Fever, nausea, anorexia and jaundice
Disorders of the digestive system

IRRITABLE BOWEL SYNDROME

- Define irritable bowel syndrome. Disturbance in the functions of the intestines by unknown causes.
- Discuss how will treatments relate to:
  - Lifestyle
  - Diet
  - Medication
Disorders of the digestive system

Peptic ulcer

- What is a peptic ulcer? An ulcer found in the duodenum or stomach

- What causes it? A bacteria called H. Pylori

- How is it treated? Anti-inflammatory drugs, avoid alcohol, spicy foods.
Relevance of nutrition to the digestive system

- Healthy dietary habits help maintain homeostasis of body systems