

Human Nutrition

Balanced Diet:

- A balanced diet includes essential nutrients in the right proportions, influenced by factors like age, gender, activity level, pregnancy, and breastfeeding.

Malnutrition:

- Imbalances in nutrient intake lead to conditions like obesity (excess nutrients), starvation (insufficient nutrients), coronary heart disease (excess saturated fats), kwashiorkor (too little protein), and constipation (lack of fiber).

Alimentary Canal:

- **Ingestion:** Food intake via the mouth.
- **Digestion:** Includes mechanical digestion (breaking food into smaller pieces) and chemical digestion (enzymes breaking down large molecules into smaller, soluble ones).
- **Absorption:** Nutrients pass through the small intestine into the blood.
- **Egestion:** Undigested food is excreted as feces.

Digestive System:

- **Mouth:** Mechanical digestion (chewing) and chemical digestion (amylase breaking down starch). Sourced from: <https://freeexamacademy.com>
- **Stomach:** Mechanical digestion (churning) and chemical digestion (pepsin breaking down proteins, hydrochloric acid aiding digestion and killing bacteria).
- **Pancreas:** Secretes enzymes (proteases, lipases, amylases) for digestion in the duodenum.
- **Small Intestine (Duodenum & Ileum):** Site of nutrient absorption, with villi increasing surface area for efficient nutrient absorption.
- **Liver:** Produces bile to emulsify fats and neutralize stomach acidity.
- **Colon (Large Intestine):** Reabsorbs water and bile salts, stores feces in the rectum, and controls egestion via the anus.

Cholera Infection:

- Cholera causes chloride ions to enter the small intestine, leading to water loss (diarrhea). Treatment includes oral rehydration therapy (water with salts and sugars).

Mechanical Digestion:

- Teeth types:
 - **Incisors:** Biting.
 - **Canines:** Tearing.
 - **Pre-molars and Molars:** Grinding food.
- Dental decay occurs due to bacteria-produced acids dissolving enamel, preventable by good dental hygiene.

Chemical Digestion:

- Enzymes break down large molecules:
 - **Proteases:** Break down proteins.
 - **Lipases:** Break down fats.
 - **Amylases:** Break down carbohydrates.
- Stomach acidity (hydrochloric acid) and pancreatic/bile alkalinity ensure optimal enzyme function. Sourced from: <https://freeexamacademy.com>

Absorption:

- Nutrients are absorbed into the blood via villi in the small intestine, using diffusion or active transport. Villi structure (with microvilli and a one-cell-thick lining) maximizes absorption efficiency.