Unit 15: Introduction to Human Nutrition

15.1. Definition of Basic Terms in Human Nutrition

Nutrition is the science of how the body ingests, digests, absorbs, assimilates, and uses nutrients.

Food is any substance that people eat or drink to sustain life and promote growth. It should be culturally acceptable and provide essential nutrients.

Diet refers to the overall pattern of food consumption and eating habits of individuals or groups, including the number of meals consumed daily. It is influenced by traditions, religion, economic status, and available resources.

Nutrients are substances needed for growth, energy, repair, and proper functioning of the body. They are categorized into:

- **Macronutrients** (needed in large amounts): Carbohydrates, fats, proteins.
- **Micronutrients** (needed in small amounts): Vitamins, minerals.

Healthy Eating involves consuming a variety of foods to provide all necessary nutrients for maintaining health, energy, and well-being.

Balanced Diet is one that provides the right proportions of nutrients and calories needed for optimal health, including carbohydrates, proteins, fats, vitamins, and minerals.

15.2. Nutrients and Their Functions

1. **Carbohydrates**:
   - Provide energy (4 kcal per gram).
   - Should make up 45-65% of daily calories.
   - Found in starches and sugars.
2. **Lipids (Fats and Oils)**:
   - Provide concentrated energy (9 kcal per gram).
   - Should constitute 20-35% of daily calories.
   - Stored as energy reserves and are essential for various body functions.
   - Plant-based oils are preferable.
3. **Proteins**:
   - Essential for growth, repair, and development of body tissues.
   - Provide energy (4 kcal per gram).
   - Should make up 10-35% of daily calories.

- Complete proteins (animal-based) contain all essential amino acids; plant proteins may be incomplete but can still be valuable.

4. **Vitamins**:
   - Help maintain immune function, skin health, and energy metabolism.
   - Divided into fat-soluble (A, D, E, K) and water-soluble (B-complex, C).
   - Important sources include vegetables, fruits, and meat.

5. **Minerals**:
   - Important for bone health, enzyme functions, and reducing blood clotting.
   - Major minerals (calcium, magnesium) and trace minerals (iron, zinc).
   - Found in nuts, seeds, vegetables, and fortified foods.

6. **Water**:
   - Essential for survival, hydration, and various bodily functions.
   - Helps flush toxins, transport nutrients, and maintain body temperature.

15.3. Food Groups and Their Sources

1. Vegetables:

- Provide vitamins, minerals, and fiber.
- Examples: Spinach, carrots, broccoli.

2. Fruits:

- Rich in carbohydrates, vitamins, and minerals.
- Examples: Apples, bananas, berries.

3. Legumes and Nuts:

- High in protein and fats.
- Examples: Beans, lentils, almonds.

4. Animal Foods:

- Source of protein, fats, vitamins, and minerals.
- Examples: Meat, dairy, eggs.

5. Fats and Oils:

- Provide energy and essential fatty acids.
- Examples: Olive oil, butter, nuts.

6. Staples:

- Main source of energy, proteins, and some vitamins.
- Examples: Rice, wheat, potatoes.

15.4. Food and Nutrition Security

Food Security means having consistent access to sufficient, safe, and nutritious food for a healthy life. It includes:

- **Availability**: Sufficient food supplies.
- **Access**: Economic ability to obtain food.
- **Utilization**: Proper intake and absorption of nutrients.
- **Stability**: Consistent access over time.

Drivers of Food Insecurity:

- Lack of resources, poor access to nutritious food, geographical isolation, insufficient knowledge, inadequate water and sanitation, and poor health infrastructure.

Agriculture-Nutrition Linkage and Nutrition-Sensitive Agriculture

Agriculture-Nutrition Linkage

- **Definition:** The agriculture-nutrition linkage refers to the connections between agriculture, nutrition, and health. It highlights how changes in agriculture impact nutrition and health, and vice versa.
- **Impact:** Agriculture is crucial for providing food, which is fundamental for good nutrition. Conversely, improved nutrition can boost agricultural productivity and economic outcomes. Recognizing this, agriculture should aim to enhance both food production and nutritional quality.

Nutrition-Sensitive Agriculture

- **Definition:** Nutrition-sensitive agriculture focuses on using agriculture to improve nutrition. This means prioritizing the production of diverse, nutrient-rich foods and addressing the causes of malnutrition.
- **Objective:** The goal is to develop agriculture in a way that contributes to better nutritional outcomes. This includes promoting dietary diversity and food fortification to combat malnutrition.

Malnutrition and Its Causes in Ethiopia

Types of Malnutrition

1. **Obesity:** Caused by excessive intake of unhealthy foods, leading to higher risk of diseases like diabetes and heart disease.
2. **Stunting:** Chronic undernutrition affecting children's height-for-age, often due to insufficient food intake or frequent infections.
3. **Wasting:** Acute undernutrition, where children are very thin for their height, often due to lack of food or illness.
4. **Underweight:** A combined indicator of chronic and acute undernutrition, where children weigh less than the normal range for their age and height.
5. **Micronutrient Deficiency:** Lack of essential vitamins and minerals, such as iron, vitamin A, iodine, and zinc, which can lead to health issues like anemia, night blindness, and weak bones.

Causes of Malnutrition

- **Immediate Causes:** Insufficient food and poor health status.
- **Underlying Causes:** Household food insecurity, poor feeding practices, and inadequate health services.
- **Basic Causes:** Political, economic, social, and environmental conditions.

Impact of Malnutrition

- **Short-Term:** Weakness, increased vulnerability to infections, and higher risk of death.
- **Long-Term:** Impaired mental development, poor educational performance, reduced productivity, and increased risk of chronic diseases.

Solutions to Malnutrition

1. Educate communities about nutrition.
2. Promote nutrition-sensitive agricultural practices.
3. Prioritize nutritional interventions for infants, pregnant, and lactating women.
4. Encourage diverse, nutrient-rich diets.
5. Support families in managing nutritional intake.
6. Treat underlying medical conditions causing malnutrition.

Key Takeaways

- **Nutrients:** Essential for body function, divided into macronutrients (carbohydrates, fats, proteins) and micronutrients (vitamins, minerals).
- **Food Security:** Ensures availability, access, utilization, and stability of food.

- **BMI:** A measure to screen for weight categories, indicating potential health issues.

Understanding the links between agriculture and nutrition helps improve health outcomes and productivity, highlighting the importance of nutrition-sensitive agricultural practices.