

# NUTRITIONAL DEFICIENCY DISORDERS.

## INTRODUCTION

Nutrition plays a fundamental role in maintaining the health and development of individuals throughout their life. The human body requires a balanced intake of nutrients - both macronutrients [carbohydrates, proteins, fats] and micro-nutrients [vitamins and minerals] - to function effectively. When the intake or absorption of essential nutrients is insufficient, it can lead to nutritional deficiency disorders.

These disorders are especially common in developing countries and among populations facing food insecurity, but they can also occur due to poor dietary habits, medical conditions, or lack of awareness even in affluent societies.

Nutritional deficiencies can lead to range of health problems, from fatigue and weakened immunity to severe developmental issues and life-threatening diseases.

# 1. Macro-nutrient Deficiency Disorders.

Macro nutrients are needed in large amount and include carbohydrates, proteins and fats.

## Protein - Energy malnutrition [PEM]

- Kwashiorkor: Caused by severe protein deficiency, particularly in young children. Common symptoms include swelling [edema], skin depigmentation, a distended abdomen, and irritability.
- Marasmus: A result of severe calorie deficiency, leading to extreme wasting of muscle and fat tissue, thin limbs, and stunted growth.

## Fat and Carbohydrate Deficiency

- Fat Deficiency: Result in dry skin, hair loss, hormonal imbalances, and poor absorption of fat-soluble vitamins.
- Carbohydrate Deficiency: Rare, but can cause fatigue, dizziness, and in extreme cases, ketosis, where the body starts breaking down fat for energy.

## 2. Micro nutrient Deficiency Disorders.

Micro nutrients are required in small amounts but are crucial for growth, immunity and organ function.

### Common Vitamin Deficiencies

- Vitamin-A:- Deficiency leads to night blindness, dry eyes and a weakened immune system.
- Vitamin-D:- Essential for calcium absorption; its deficiency causes rickets in children and osteomalacia in adults.
- Vitamin-C:- Deficiency causes scurvy, marked by bleeding gums, fatigue and joint pain.
- Vitamin B<sub>12</sub> and Folate:- Important for RBC formation; deficiencies can lead to anemia and neurological issues.

### Common Mineral Deficiencies:-

- Iron:- Most common deficiency worldwide, leading to iron-deficiency anemia with symptoms like fatigue and shortness of breath.

- Iodine :- Deficiency leads to goiter and developmental delays in children.
- Zinc :- Affects immune function, growth and wound healing.
- Calcium :- Deficiency weakens bones and increases risk of fractures and Osteoporosis.

### 3. Public Health and Global Impact.

Nutritional deficiencies are not only a medical concern but a public health issue.

- Global prevalence :- Malnutrition affects over 2 billion people globally, especially in low-income countries.

- Impact on children

Leads to stunting, poor academic performance, and increased susceptibility to infections.

- Economic Consequences

Reduces work-force productivity and increases healthcare costs.

## Prevention and Control Strategies.

- Dietary Diversification:

Encouraging varied, balanced diet rich in nutrients, fruits, vegetables, whole grains and protein.

- Supplementation:-

Providing vitamins and minerals to high-risk populations especially pregnant women and children.

- Food Fortification:-

Adding nutrients to staple foods [e.g.: Iodine in salt, Iron in flour].

- Public Health Campaigns.

Education and awareness programs to promote good nutrition practices.