

Human Health and Disease

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Concept and Evolution of Health

Historical Perspective:

- In ancient times, health was believed to be a balance of bodily “humors.”
 - Greek View:
 - Hippocrates suggested health depended on the balance of four humors- blood, phlegm, yellow bile, and black bile.
 - Ayurveda:
 - Similarly, the Indian Ayurveda system emphasized a balance of bodily elements for well-being.
 - It was believed that individuals with excess *black bile* had a “hot” personality and were prone to fevers- this conclusion was based on reflective thinking rather than scientific evidence.

Scientific Breakthrough:

- William Harvey's discovery of blood circulation and the **use of thermometers** to measure body temperature disproved the “good humor” hypothesis.
- This marked the shift from philosophical to experimental and biological approaches in understanding health.

Modern Definition of Health

- Health is **not merely the absence of disease** or infirmity.
- According to the World Health Organization (WHO), health is:
 - *"A state of complete physical, mental, and social well-being."*
- **Importance of Good Health:**
 - Enhances work efficiency and productivity.
 - Promotes economic prosperity.
 - Increases life expectancy.
 - Reduces infant and maternal mortality rates.

Factors Affecting Health

Health is influenced by multiple interlinked factors:

1. Genetic Disorders:

- Inherited defects or deficiencies present from birth.

2. Infections:

- Caused by pathogenic organisms (bacteria, viruses, etc.).

3. Lifestyle:

- Poor diet, unsafe drinking water, lack of exercise, insufficient sleep, and harmful habits such as smoking or substance abuse.

Maintenance of Good Health

To achieve and maintain optimal health, the following are essential:

1. Balanced Diet:

- Nutritionally adequate food intake.

2. Personal Hygiene:

- Cleanliness of body and surroundings.

3. Regular Exercise:

- Including traditional practices like **Yoga** for physical and mental wellness.

4. Vaccination/Immunization:

- Prevents infectious diseases.

5. Disease Awareness:

- Understanding how diseases affect body systems.

6. Sanitation:

- Proper waste disposal and vector control.

7. Clean Resources:

- Safe and hygienic food and water supply.

Disease: When Health Is Affected

- A **disease** is a condition where the normal functioning of one or more organs or systems is disturbed, often accompanied by identifiable signs and symptoms.

Types of Diseases:

A. Infectious Diseases:

- Easily transmitted from one person to another.
- Common examples include tuberculosis, malaria, and AIDS.
- Some, like **AIDS**, can be **fatal**.

B. Non-Infectious Diseases:

- Not caused by pathogens and not transmissible.
- Examples include **cancer, diabetes, and hypertension**.
- Drug and alcohol abuse also fall under this category as they adversely impact health.

Common Diseases in Humans

- A wide range of organisms—including **bacteria, viruses, fungi, protozoans, and helminths**—can cause diseases in humans.
- These disease-causing organisms are known as **pathogens**.
- Most parasites are also pathogens as they harm the host while living in or on it.
- Pathogens enter the body through different routes, multiply, and interfere with normal biological functions, leading to **morphological and functional damage**.
- To survive, these organisms adapt to the hostile environment inside the human body—for example, surviving acidic pH and digestive enzymes in the stomach.

Bacterial Diseases

1. Typhoid Fever

- **Pathogen:** *Salmonella typhi*
- **Transmission:** Ingestion of contaminated food or water
- **Symptoms:**
 - High fever (39°C–40°C)
 - Weakness
 - Stomach pain
 - Headache
 - Constipation
 - Loss of appetite
 - Severe cases may cause intestinal perforation and death
- **Diagnosis:** *Widal Test*
- **Interesting Case:** *Mary Mallon* (Typhoid Mary), a cook who was an asymptomatic typhoid carrier, spread the disease for years.

2. Pneumonia

- **Pathogens:** *Streptococcus pneumoniae* and *Haemophilus influenzae*
- **Transmission:** Inhalation of infected droplets/aerosols or sharing of contaminated utensils
- **Symptoms:**
 - Fever
 - Chills
 - Cough

- Headache
- Difficulty in breathing
- In severe cases: bluish lips and fingernails due to oxygen deficiency

3. Other Bacterial Diseases

- **Examples:** Dysentery, Plague, Diphtheria

Viral Diseases

Common Cold

- **Pathogen:** Rhino viruses
- **Transmission:**
 - Inhalation of droplets from cough or sneezes
 - Contact with contaminated objects (books, pens, doorknobs, keyboards, etc.)
- **Symptoms:**
 - Nasal congestion and discharge
 - Sore throat
 - Hoarseness
 - Cough
 - Headache
 - Tiredness
- **Duration:** 3–7 days

Protozoan Diseases

1. Malaria

- **Pathogen:** *Plasmodium* (*P. vivax*, *P. malariae*, *P. falciparum*)
 - *P. falciparum* causes malignant malaria (most severe, can be fatal)
- **Vector:** Female *Anopheles* mosquito
- **Life Cycle: Examples:**
 - Sporozoites enter human via mosquito bite
 - Multiply in liver cells
 - Invade and rupture RBCs, releasing toxic **haemozoin**
 - Symptoms recur every 3–4 days
- **Symptoms:**
 - Recurring chills and high fever



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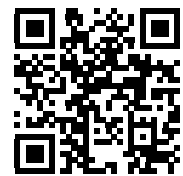


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