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E-Book on
Public Health and Hygiene

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As per U.G.C. Guidelines and also on the basis of revised syllabus of Savitribai Phule Pune University, Pune with effect from June-2025-26, also useful for all Universities.

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E-Book on
Public Health and Hygiene

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1.2 Principles and key concepts of public health.
1.3 Determinants of health (biological, environmental, socio-economic).
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2.1 Communicable diseases: Causes, symptoms and preventive measures of Malaria, sexually transmitted diseases, Rabies.
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Chapter No. 01

Introduction to public health

03 Hrs

`Content:

1.1 Definition and scope.

1.2 Principles and key concepts of public health.

1.3 Determinants of health (biological, environmental, socio-economic).

1.4 Right to be healthy.

1.1 Definition and scope:

Introduction:

Health is not just the absence of disease; it is a state of complete physical, mental, and social well-being. Public health is a branch of science that focuses on the health and well-being of communities and populations rather than individual patients. It aims to improve health outcomes by preventing diseases, promoting healthy lifestyles, and creating supportive environments.

In a country like India, where health inequalities, population pressure, and limited resources are common, public health is essential. It involves understanding health issues, identifying their causes, and applying practical solutions that help society as a whole. Public health affects every part of our daily lives, from managing pandemics to ensuring clean drinking water.

Definition of Public Health:

According to World Health Organization (WHO) Public health can be defined as-

"The science and art of preventing disease, prolonging life, and promoting health through the organized efforts of society, organisations—both public and private—communities, and individuals."

It emphasizes collective health efforts over individual treatment. Public health aims to reduce disease, encourage healthy behaviors, and improve living conditions for everyone.

Scope of Public Health:

Public health covers a wide range of areas in human life. It combines science, policy, education, and social service to create a healthier society. The main areas of its scope include:

1. Disease Prevention and Health Promotion: This focuses on preventive measures, including vaccinations, hygiene awareness, screening, and early detection of diseases, along with health education to promote healthier lifestyles.
2. Environmental Health: This area addresses clean air, safe drinking water, proper sanitation, waste management, vector control (like mosquitoes), and pollution reduction to prevent illness.
3. Epidemiology and Disease Surveillance: Epidemiology studies disease patterns, causes, and effects. Disease surveillance systems track outbreaks and help the government respond quickly.
4. Maternal and Child Health (MCH): Public health works to ensure safe motherhood, child nutrition, immunization, and infant care, which are critical for lowering mortality rates and ensuring future generations are healthy.
5. Nutrition and Food Safety: Good nutrition is a key part of public health. It includes preventing malnutrition, promoting balanced diets, and maintaining food safety standards.
6. Health Education and Behavioral Change: Awareness campaigns and education encourage people to adopt hygienic habits, stop harmful behaviors like smoking, and visit health centers for regular check-ups.
7. Occupational Health: Public health addresses health risks at work, including chemical exposure, stress, and accidents. It aims to ensure the well-being of workers.

8. Health Policy and Health Services Management: This involves planning, implementing, and evaluating health programs. Public health experts design policies to make healthcare accessible, affordable, and effective.
9. Biostatistics and Health Research: Research and statistical analysis are crucial for identifying health trends, evaluating programs, and developing evidence-based health interventions.
10. Emergency and Disaster Management: Public health teams play a major role during disasters and health emergencies by providing medical aid, safe shelter, clean water, and controlling disease outbreaks.

1.2 Principles and key concepts of public health:

Principles of Public Health:

The following are the major principles that guide public health initiatives:

1. Prevention is Better than Cure

This is the cornerstone of public health. Focus is given to preventive strategies such as vaccination, sanitation, health education, and screening tests to reduce disease burden and healthcare costs.

2. Population-based Approach

Public health interventions are designed for communities and populations, rather than treating one individual at a time. For example, water fluoridation benefits entire communities in preventing dental decay.

3. Social Justice and Equity

Every individual, regardless of socio-economic status, caste, religion, or gender, should have equal access to health services. Public health ensures fairness and aims to reduce health disparities.

4. Community Participation

Health programmes become successful when there is active involvement of the community. Public health promotes awareness, encourages behaviour change, and respects cultural values during programme implementation.

5. Intersectoral Coordination

Public health is not the responsibility of the health sector alone. Effective outcomes require coordination with education, agriculture, water supply, sanitation, housing, transport and industry sectors.

6. Use of Evidence-based Practices

Policies and programmes should be formulated based on scientific data, research, and epidemiological evidence to ensure their effectiveness and efficiency.

7. Health Promotion

Rather than merely treating diseases, public health promotes healthy living by advocating for nutrition, physical activity, hygiene, mental well-being, and safe environments.

8. Sustainability

Public health programmes should be long-term, cost-effective, and environmentally sustainable so that benefits continue even after external funding or support ends.

9. Ethical Practices

All interventions should follow ethical standards, including respect for individual rights, confidentiality, informed consent, and non-discrimination.

10. Monitoring and Evaluation

Regular assessment of public health programmes is necessary to determine their impact, identify challenges, and guide future policies.

Key Concepts of Public Health:

The practice of public health is guided by a few important concepts:

1. Determinants of Health

Health is influenced by various factors including:

- Biological (genetics, age)
- Environmental (air, water, housing)
- Socio-economic (education, income, occupation)
- Behavioural (lifestyle, habits)
- Healthcare Services (availability and accessibility)

Understanding these helps in formulating holistic health strategies.

2. Levels of Prevention

Public health operates on three key levels:

- Primary Prevention – Preventing disease before it occurs (e.g., immunisation)
- Secondary Prevention – Early diagnosis and treatment (e.g., cancer screening)
- Tertiary Prevention – Reducing complications and improving quality of life (e.g., rehabilitation for stroke)

3. Health Indicators

These are quantitative tools used to measure the health status of populations, such as:

- Infant Mortality Rate (IMR)
- Maternal Mortality Rate (MMR)
- Life Expectancy
- Morbidity and Mortality Rates

4. Epidemiology

This is the core science of public health, which studies the distribution and determinants of health conditions in populations and applies the findings to control health problems.

5. Health Systems

Public health relies on a strong healthcare delivery system, including primary health centres (PHCs), district hospitals, community health workers, and health policies.

6. Behaviour Change Communication (BCC)

Changing harmful behaviours through education, motivation, and communication is a critical strategy in public health.

7. Health Policy and Governance

Public health is shaped by government policies, laws, and regulations that support health infrastructure, environmental safety, nutrition, immunisation, and more.

1.3 Determinants of health (biological, environmental, socio-economic):

Health is a dynamic and multi-dimensional concept influenced by a wide range of factors. These influencing factors are commonly referred to as determinants of health. They are the conditions or elements that directly or indirectly affect an individual's physical, mental, and social well-being.

Understanding these determinants is essential for designing effective public health strategies, policies, and interventions.

The major determinants of health can be broadly classified into the following categories:

1. Biological Determinants
2. Environmental Determinants
3. Socio-economic Determinants

1. Biological Determinants of Health:

Biological factors are intrinsic to the human body and include genetic makeup, age, sex, and physiological conditions. These determinants are natural and often inherited from one's parents.

Key Biological Determinants:

a. Genetic Inheritance: Many diseases and disorders such as diabetes, hypertension, sickle cell anaemia, and certain cancers are genetically influenced. A person with a family history of such diseases is at a higher risk.
b. Age: Ageing brings physiological changes and a decline in immune function, making elderly individuals more susceptible to infections, chronic diseases, and degenerative conditions.
c. Sex: Biological sex influences susceptibility to certain diseases. For instance, women are more prone to autoimmune disorders, while men are at higher risk of cardiovascular diseases at a younger age.
d. Immunity: A person's immune system plays a vital role in fighting infections. Individuals with compromised immunity (e.g., HIV patients) are more vulnerable to opportunistic infections.
e. Nutritional Status: Poor nutrition leads to deficiencies and malnourishment, weakening the body's resistance to disease.

2. Environmental Determinants of Health:

Environmental factors refer to the physical, chemical, and biological conditions that surround and influence individuals. A clean and safe environment is essential for maintaining good health.

Key Environmental Determinants:

a. Air Quality: Exposure to polluted air, including industrial emissions and vehicular exhaust, increases the risk of respiratory conditions like asthma, bronchitis, and lung cancer.
b. Water Quality: Contaminated drinking water leads to waterborne diseases such as cholera, typhoid, and hepatitis.
c. Sanitation and Waste Disposal: Poor sanitation and improper waste management contribute to the spread of communicable diseases, especially in densely populated areas.
d. Housing and Shelter: Overcrowded and poorly ventilated living conditions favour the transmission of diseases such as tuberculosis.
e. Climate and Geography: Climatic conditions influence the spread of vector-borne diseases. For example, malaria and dengue are more prevalent in warm and humid regions.
f. Noise and Radiation: Prolonged exposure to high noise levels affects mental health and hearing, while exposure to radiation can lead to cancers and genetic mutations.

3. Socio-economic Determinants of Health:

Socio-economic factors play a crucial role in shaping health behaviours, access to healthcare, and overall health outcomes. These determinants are often interlinked and contribute significantly to health disparities among populations.

Key Socio-economic Determinants:

a. Education: Higher levels of education are associated with better health awareness, preventive practices, and utilisation of health services.
b. Income and Employment: Financial stability enables individuals to afford nutritious food, safe housing, and healthcare services. Unemployment and poverty are linked with poor health outcomes.
c. Occupation: Certain occupations expose individuals to occupational hazards such as chemicals, heavy machinery, or stress, which can adversely affect health.
d. Social Status and Caste: In Indian society, social stratification still impacts access to healthcare. Marginalised communities may face discrimination or lack awareness and support.
e. Cultural Beliefs and Practices: Traditional health beliefs, food habits, and reluctance to seek modern medical treatment can hinder effective disease prevention and cure.

f. Access to Health Services: Proximity to health facilities, affordability, and availability of trained medical staff are essential for timely diagnosis and treatment.
g. Gender Inequality: In some regions, women and girls may receive less attention regarding nutrition, education, and healthcare, leading to higher morbidity and mortality.

1.4 Right to be healthy:

Definition of Right to Be Healthy:

The Right to be Healthy refers to the entitlement of every human being to enjoy conditions that enable them to live a life of well-being and dignity. It includes access to timely, acceptable, and affordable health care of appropriate quality, as well as access to safe drinking water, nutritious food, proper sanitation, healthy working conditions, and health-related education.

Legal and Ethical Basis:

1. International Framework
   a. The Universal Declaration of Human Rights (1948) under Article 25 states that everyone has the right to a standard of living adequate for their health and well-being.
   b. The International Covenant on Economic, Social and Cultural Rights (ICESCR) recognises "the right of everyone to the enjoyment of the highest attainable standard of physical and mental health" (Article 12).
2. Indian Constitution
   a. Directive Principles of State Policy (Article 47) of the Indian Constitution places the duty on the State to raise the level of nutrition and the standard of living and to improve public health.
   b. Although the right to health is not explicitly mentioned as a Fundamental Right, it has been interpreted under Article 21 (Right to Life) by the Indian judiciary.

Key Components of the Right to Be Healthy:

1. Availability:
   - Adequate number of functioning public health facilities, trained personnel, and essential medicines must be available in every region.
2. Accessibility:
   - Health services should be accessible to all without discrimination. This includes physical, economic, and informational access.
   - Rural and tribal areas must not be left behind.

3. Acceptability:
    - Health services must be respectful of medical ethics and culturally appropriate.
4. Quality:
    - Health care must be scientifically and medically appropriate and of good quality.

Determinants of the Right to Be Healthy:

1. Clean Environment: Air and water pollution must be controlled to prevent respiratory and waterborne diseases.
2. Nutritious Food: Right to food is closely linked with the right to health. Malnutrition is a major cause of disease.
3. Education: Health awareness and literacy empower people to make informed choices regarding their health.
4. Employment and Decent Working Conditions: Occupational safety and protection from work-related hazards ensure long-term health.
5. Shelter and Sanitation: Overcrowded or unhygienic living conditions promote disease transmission.
6. Access to Healthcare Services: Primary, secondary and tertiary care must be easily accessible and affordable.

Challenges in Realising the Right to Be Healthy in India:

a. Inadequate public health infrastructure, especially in rural areas.
b. High out-of-pocket expenditure on medical treatment.
c. Urban-rural health divide and unequal distribution of healthcare professionals.
d. Low health literacy and superstitions.
e. Environmental degradation affecting health outcomes.
f. Lack of political will and governance issues in health delivery.

Governmental Initiatives to Ensure Right to Health:

1. National Health Policy (2017): Aims to achieve universal access to good quality healthcare services.
2. Ayushman Bharat Yojana (PM-JAY): Provides health insurance cover to economically weaker sections.
3. National Rural Health Mission (NRHM): Strengthens rural health infrastructure.
4. Mid-Day Meal Scheme and Integrated Child Development Services (ICDS) – tackle child malnutrition and promote school health.
5. Swachh Bharat Abhiyan: Promotes cleanliness and sanitation to prevent disease.

Role of Citizens and Community:

a. Practising hygiene and sanitation.
b. Participating in health awareness campaigns.
c. Demanding better services through community engagement.
d. Reporting negligence or corruption in public health facilities.
e. Supporting marginalised groups to access healthcare.

:: Questionnaires ::

Define/Explain:

1. Define the term "Public Health".
2. Explain the scope of public health in modern society.

3. Define the term "Determinants of Health" with examples.
4. Explain any two socio-economic factors influencing health.
5. What is meant by the "Right to be Healthy"?

Multiple Choice Questions (MCQs) with Answers:

Which of the following is *not* a determinant of health?

A) Income

B) Education

C) Religion

D) Genetics

Answer: C) Religion

1. The principle of **equity in health** means:
   A) Everyone pays equal tax
   B) Everyone receives same medical treatment
   C) Reducing unfair health differences among people
   D) All diseases are treated equally
   Answer: C) Reducing unfair health differences among people
2. Public health focuses on:
   A) Individual treatment
   B) Disease cure only
   C) Preventing diseases and promoting well-being in communities
   D) Private hospital services
   Answer: C) Preventing diseases and promoting well-being in communities
3. Which of the following is a biological determinant of health?
   A) Clean water
   B) Gender
   C) Literacy
   D) Economic status
   Answer: B) Gender
4. Which of the following statements is true regarding public health?
   A) It only includes vaccination
   B) It excludes mental health
   C) It aims for a healthy population
   D) It is concerned with hospital construction
   Answer: C) It aims for a healthy population

True or False:

1. Public health deals only with communicable diseases. **False**
2. Air and water pollution are environmental determinants of health. **True**
3. Economic inequality has no relation to public health. **False**
4. The "Right to Health" is a fundamental human right. **True**
5. Public health policies are made only by doctors. **False**

Short Answer Questions:

1. Mention any four principles of public health.
2. List any three environmental determinants of health with brief explanation.

3. What is meant by "health equity"? Why is it important in public health?
4. Differentiate between curative and preventive health approaches.
5. Briefly discuss the importance of socio-economic factors in public health.

Long Answer Questions:

1. Define public health. Discuss its scope and importance in the Indian context.
2. Explain the key concepts and principles of public health with suitable examples.
3. Describe the various determinants of health. How do they influence the well-being of a population?
4. Discuss the "Right to be Healthy" as a part of human rights. How can the government ensure it for all citizens?
5. Explain with examples how public health differs from clinical medicine in terms of approach and objectives.

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Chapter No. 02

Communicable and non-communicable diseases 08 Hrs

`Content:

2.1 Communicable diseases: Causes, symptoms and preventive measures of Malaria, sexually transmitted diseases, Rabies.

2.2 Non-communicable diseases: Heart Attack and Strokes, Asthma, Diabetes, Hypotension, Hypertension.

2.3 Introduction to Cancer, Depression, Anxiety, Arthritis.

2.1 Communicable diseases: Causes, symptoms and preventive measures of Malaria, sexually transmitted diseases, Rabies:

Communicable diseases, also known as infectious diseases, are illnesses that are caused by pathogenic microorganisms such as bacteria, viruses, parasites, or fungi. These diseases can be transmitted directly or indirectly from one person to another, or from animals to humans. In the context of public health, the effective prevention, control, and management of communicable diseases are of utmost importance.

In this unit, we will study the causes, symptoms and preventive measures of three major communicable diseases:

1. Malaria
2. Sexually Transmitted Diseases (STDs)
3. Rabies

1. Malaria:

Cause:

Malaria is caused by a protozoan parasite belonging to the genus Plasmodium. The disease is transmitted to humans through the bite of an infected female Anopheles mosquito.

There are four main species of Plasmodium that infect humans:

- *Plasmodium vivax*
- *Plasmodium falciparum*
- *Plasmodium malariae*
- *Plasmodium ovale*

Among these, *P. falciparum* is the most dangerous and can be fatal if not treated promptly.

Mode of Transmission:

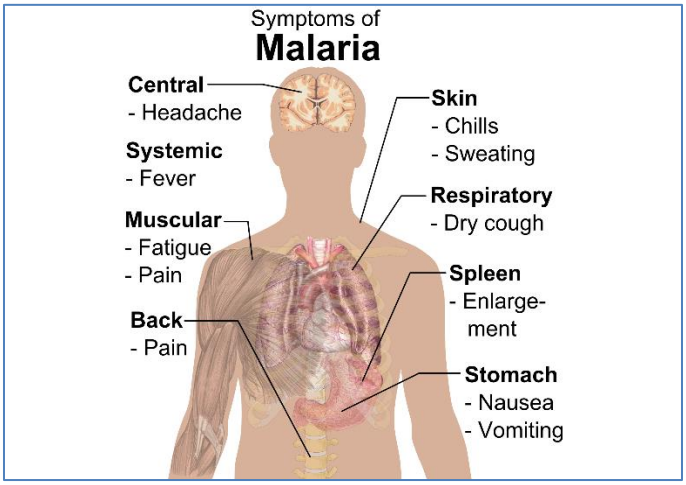
- Through the bite of infected female Anopheles mosquitoes.
- Rarely, it can also be transmitted through blood transfusion, organ transplantation, or from mother to unborn child.

Symptoms:

- High-grade fever with chills and shivering
- Sweating as fever subsides
- Headache
- Muscle and joint pain
- Nausea and vomiting
- Anaemia (due to destruction of red blood cells)
- In severe cases (especially *P. falciparum*), complications like cerebral malaria, kidney failure, and death can occur.

Preventive Measures:

- Use of mosquito nets and repellents.
- Elimination of mosquito breeding sites (stagnant water).
- Spraying of insecticides in mosquito-prone areas.
- Wearing long-sleeved clothes to avoid mosquito bites.
- Use of larvicidal agents in water storage tanks.
- Community awareness programmes on mosquito control.
- In endemic areas, chemoprophylaxis (preventive medication) may be recommended for travellers.



(Image credit: Mikael Häggström)

2. Sexually Transmitted Diseases (STDs):

Cause:

STDs are infections that are primarily spread through sexual contact. They can be caused by bacteria, viruses, and parasites. Some common STDs include:

- Gonorrhoea – caused by *Neisseria gonorrhoeae* (bacterium)
- Syphilis – caused by *Treponema pallidum* (bacterium)
- Chlamydia – caused by *Chlamydia trachomatis*
- HIV/AIDS – caused by Human Immunodeficiency Virus
- Genital herpes – caused by Herpes Simplex Virus
- HPV (Human Papillomavirus) – linked to cervical cancer

Mode of Transmission:

- Unprotected sexual intercourse with an infected person
- Sharing of contaminated needles and syringes
- From infected mother to baby during childbirth or breastfeeding
- Through infected blood transfusion

Symptoms:

Symptoms vary depending on the infection, but may include:

- Sores, ulcers or blisters in genital areas
- Burning sensation during urination
- Unusual discharge from penis or vagina
- Lower abdominal pain

- Swelling in groin area
- Fever and general malaise
- In the case of HIV: fatigue, weight loss, frequent infections

Note: Some STDs may be asymptomatic (show no symptoms), especially in the early stages.

Preventive Measures:

- Practice of safe sex using condoms
- Avoidance of multiple sexual partners
- Regular screening and medical check-ups
- Avoiding the sharing of needles and personal hygiene items
- Ensuring safe blood transfusions
- Sexual health education and awareness
- Vaccination (e.g., for HPV and Hepatitis B)

3. Rabies:

Cause:

Rabies is a deadly viral disease caused by the Rabies virus, which belongs to the Rhabdoviridae family.

Mode of Transmission:

- Mainly spread through the bite or scratch of an infected (rabid) animal, especially dogs.
- Can also be transmitted if infected saliva comes into contact with mucous membranes or broken skin.

Common rabid animals include:

- Dogs (major source in India)
- Cats
- Bats
- Monkeys

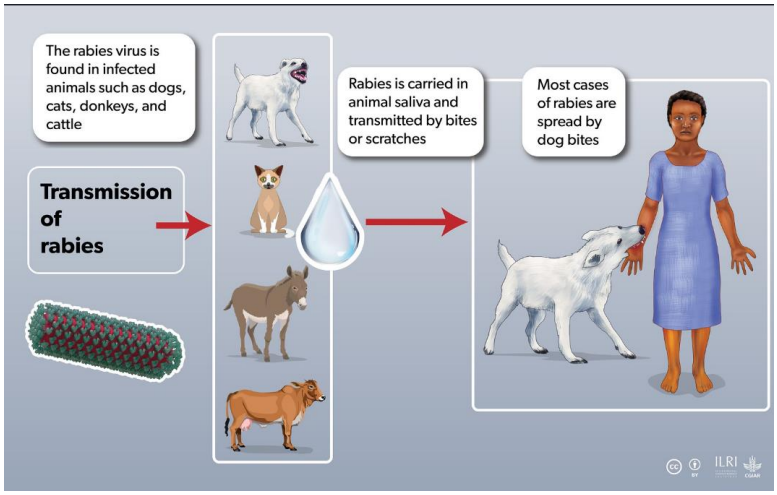


Fig: Transmission of Rabies

(Image credit: https://www.flickr.com/)

Symptoms:

Rabies affects the central nervous system. Symptoms appear after an incubation period of 1 to 3 months and include:

Early symptoms:

- Fever and headache
- Pain or tingling at the bite site

- Fatigue and malaise

Advanced symptoms:

- Fear of water (hydrophobia)
- Fear of air or breeze (aerophobia)
- Excessive salivation
- Muscle spasms and convulsions
- Aggression, confusion, hallucinations
- Paralysis and coma

Once clinical symptoms appear, rabies is almost always fatal.

Preventive Measures:

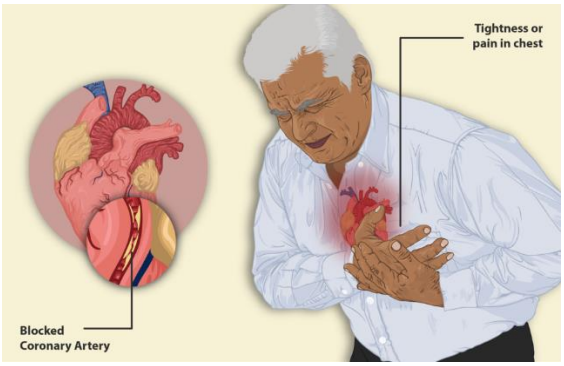
- Immediate and thorough washing of wound with soap and water after animal bite
- Seek medical attention without delay
- Administration of anti-rabies vaccine (post-exposure prophylaxis)
- In high-risk cases, rabies immunoglobulin may also be given
- Vaccination of domestic animals, especially dogs
- Avoid contact with stray or wild animals
- Public awareness and control of stray animal population

2.2: Non-communicable diseases: Heart Attack and Strokes, Asthma, Diabetes, Hypotension, Hypertension:

Non-communicable diseases are chronic health conditions that do not spread from person to person. They progress slowly and are often associated with unhealthy lifestyles, heredity, environmental conditions, and ageing.

1. Heart Attack (Myocardial Infarction):

Definition: A heart attack occurs when blood flow to part of the heart is blocked, usually due to a clot, resulting in damage to the heart muscle.



(Image credit: https://www.myupchar.com/en)

Causes:

a. Atherosclerosis (plaque build-up in arteries)
b. Smoking and tobacco use
c. High blood pressure and cholesterol
d. Obesity and sedentary lifestyle
e. Diabetes
f. Mental stress

Symptoms:

a. Chest pain or discomfort

b. Pain radiating to left arm or jaw
c. Shortness of breath
d. Sweating, fatigue, nausea

Cure/Management:

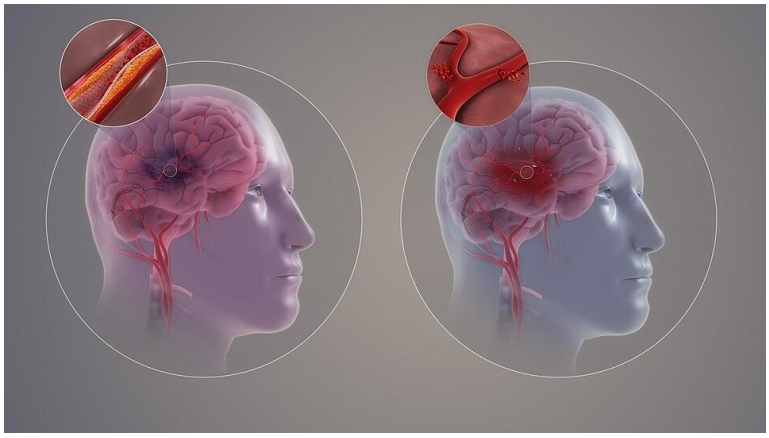
a. Emergency care with aspirin or clot-dissolving drugs
b. Angioplasty or bypass surgery
c. Medications (beta-blockers, statins)
d. Cardiac rehabilitation and follow-up care

Preventive Measures:

a. Avoid smoking and alcohol
b. Regular physical activity
c. Healthy, low-fat diet
d. Stress management (yoga, meditation)
e. Routine BP and cholesterol checks

2. Stroke:

Definition: A stroke is a condition in which the blood supply to part of the brain is blocked or bursts, damaging brain cells.



(Image credit: https://www.scientificanimations.com/)

Causes:

a. Blood clots or arterial blockage (Ischemic stroke)
b. Brain haemorrhage (Hemorrhagic stroke)
c. High blood pressure
d. Irregular heartbeat
e. Diabetes

Symptoms:

a. Sudden numbness, especially on one side
b. Trouble speaking or understanding speech
c. Dizziness, severe headache
d. Vision issues

Cure/Management:

a. Immediate medical treatment
b. Blood thinners or surgery
c. Physiotherapy for recovery
d. Blood pressure and sugar control

Preventive Measures:

a. Manage BP, sugar, and cholesterol
b. Healthy eating and daily exercise
c. No tobacco or alcohol
d. Regular health check-ups
e. Reduce stress and maintain ideal weight

3. Asthma:

Definition: Asthma is a long-term disease where airways in the lungs become inflamed and narrowed, causing breathing difficulty.

Causes:

a. Allergens like dust, pollen, pets
b. Air pollution and smoking
c. Infections and weather changes
d. Physical exertion and stress

Symptoms:

a. Wheezing and coughing
b. Chest tightness
c. Shortness of breath

Cure/Management:

a. Inhalers (bronchodilators, steroids)
b. Anti-allergy medications
c. Avoid known triggers
d. Regular medical supervision

Preventive Measures:

a. Keep home dust-free
b. Avoid polluted environments
c. Wear a mask during exposure
d. Practice breathing exercises (e.g., pranayama)
e. Follow prescribed asthma action plan

4. Diabetes Mellitus:

Definition: A chronic condition marked by high blood sugar due to insufficient insulin or improper insulin action.

Causes:

a. Genetics and family history
b. Obesity and lack of exercise
c. High sugar intake
d. Pancreatic disorders

Symptoms:

a. Frequent urination
b. Excessive thirst
c. Fatigue, blurred vision
d. Slow-healing wounds

Cure/Management:

a. Type 1: Insulin therapy
b. Type 2: Oral medicines, insulin if needed
c. Lifestyle changes (diet, exercise)
d. Regular blood sugar monitoring

Preventive Measures:

a. Maintain healthy body weight
b. Avoid sugary and processed foods

c. Regular walking or exercise
d. Routine sugar testing
e. Stress reduction techniques

5. Hypotension (Low Blood Pressure):

Definition: A condition where blood pressure is lower than normal, causing reduced blood flow to organs.

Causes:

a. Dehydration
b. Nutritional deficiencies
c. Hormonal problems
d. Heart or nervous system disorders
e. Certain medications

Symptoms:

a. Dizziness, fainting
b. Weakness, fatigue
c. Cold skin
d. Blurred vision

Cure/Management:

a. Drink more fluids and add salt (if advised)
b. Eat frequent small meals
c. Avoid sudden position changes
d. Treat underlying causes

Preventive Measures:

a. Stay well-hydrated
b. Eat balanced meals
c. Avoid skipping meals
d. Get up slowly from bed
e. Monitor medicines that lower BP

6. Hypertension (High Blood Pressure):

Definition: A chronic condition where the blood pressure stays higher than normal (above 140/90 mm Hg).

Causes:

a. Excess salt and fatty food
b. Lack of physical activity
c. Obesity
d. Stress and mental tension
e. Smoking, alcohol
f. Kidney or hormonal problems

Symptoms:

a. Often no symptoms (silent disease)
b. Headache
c. Nosebleeds
d. Blurred vision
e. Fatigue

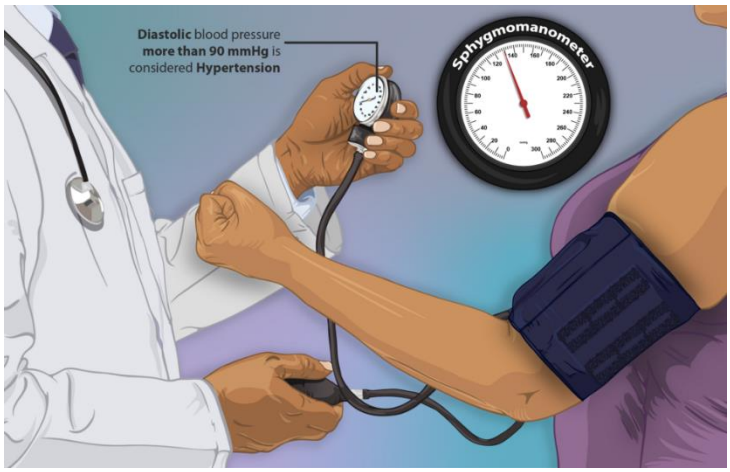
Cure/Management:

a. Daily blood pressure medication
b. Dietary control and salt restriction
c. Regular exercise and weight control
d. Monitoring blood pressure at home

Preventive Measures:

a. Low-salt, high-fibre diet

b. Avoid tobacco and alcohol
c. Engage in walking, yoga, meditation
d. Maintain healthy weight
e. Check BP regularly



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Summary Table: Causes, Symptoms, Management & Prevention:

Disease	Causes	Symptoms	Cure/Management	Prevention
Heart Attack	Atherosclerosis, Smoking	Chest pain, sweating	Surgery, medication	Healthy lifestyle, no smoking
Stroke	Clots, High BP	Weakness, speech problems	Emergency care, rehab	BP/sugar control, no alcohol/smoking
Asthma	Allergens, Pollution	Wheezing, short breath	Inhalers, avoid triggers	Dust-free environment, breathing exercises
Diabetes	Obesity, Genetics	Frequent urination, fatigue	Medication, insulin, diet	Exercise, sugar control
Hypotension	Dehydration, Deficiency	Dizziness, fainting	Diet, hydration, rest	Small meals, fluids, avoid sudden standing
Hypertension	Salt, Stress, Obesity	Headache, vision issues	BP medication, diet control	Salt restriction, weight management

2.3 Introduction to Cancer, Depression, Anxiety, Arthritis:

1. Cancer:

Definition: Cancer is a group of diseases characterised by the uncontrolled growth and spread of abnormal cells in the body. If the spread is not controlled, it can result in death.

Types of Cancer:

a. Carcinoma – affects skin or tissues lining internal organs (e.g., lung, breast).
b. Sarcoma – originates in bone, cartilage, fat, or muscles.
c. Leukaemia – cancer of blood-forming tissues like bone marrow.
d. Lymphoma and Myeloma – cancers of the immune system.

Causes:

a. Genetic mutations
b. Tobacco use and alcohol consumption
c. Environmental pollutants (e.g., asbestos, pesticides)
d. Exposure to radiation
e. Unhealthy lifestyle (junk food, sedentary habits)
f. Certain infections (like HPV in cervical cancer)

Symptoms:

a. Unusual lumps or swelling
b. Unexplained weight loss
c. Fatigue
d. Persistent cough or hoarseness
e. Changes in bowel or bladder habits
f. Bleeding or discharge

Prevention:

a. Healthy diet and regular exercise
b. Avoid tobacco and limit alcohol intake
c. Routine health screenings
d. Immunisations (e.g., HPV vaccine)
e. Use of protective gear in hazardous environments

Treatment:

a. Surgery to remove tumours
b. Chemotherapy
c. Radiation therapy
d. Targeted drug therapy
e. Immunotherapy
f. Palliative care in advanced stages

2. Depression:

Definition: Depression is a common mental health disorder marked by persistent sadness, hopelessness, and a lack of interest or pleasure in activities.

Causes:

a. Genetic predisposition
b. Hormonal imbalance
c. Traumatic life events (loss, abuse)
d. Chronic illnesses
e. Substance abuse
f. Lack of social support

Symptoms:

a. Prolonged sadness or emptiness
b. Sleep disturbances (insomnia or oversleeping)
c. Loss of appetite or overeating
d. Low self-esteem or guilt
e. Difficulty concentrating
f. Thoughts of self-harm or suicide

Prevention:

a. Developing coping skills
b. Maintaining social connections
c. Stress management through yoga or meditation
d. Seeking timely help and counselling
e. Encouraging open discussion about mental health

Treatment:

a. Psychotherapy (talk therapy or counselling)
b. Cognitive behavioural therapy (CBT)
c. Medications like antidepressants (under doctor's supervision)
d. Support groups
e. Lifestyle modifications including exercise and balanced nutrition

3. Anxiety:

Definition: Anxiety is a mental health condition where a person feels intense fear, worry, or nervousness about everyday situations. It becomes a disorder when it is excessive and persistent.

Types:

a. Generalised Anxiety Disorder (GAD)
b. Panic Disorder
c. Social Anxiety Disorder
d. Phobias
e. Obsessive-Compulsive Disorder (OCD)

Causes:

a. Family history of anxiety
b. Stressful life circumstances
c. Imbalance of brain chemicals (neurotransmitters)
d. Childhood trauma
e. Medical conditions like thyroid problems

Symptoms:

a. Rapid heartbeat
b. Shortness of breath
c. Restlessness or irritability
d. Sweating or trembling
e. Difficulty sleeping
f. Sense of impending doom or panic

Prevention:

a. Stress management techniques (deep breathing, meditation)
b. Avoiding alcohol, caffeine, and drug abuse
c. Physical activity and proper sleep
d. Early counselling and education on mental wellness

Treatment:

a. Psychotherapy (especially CBT)
b. Medications like anxiolytics and antidepressants
c. Relaxation techniques
d. Behavioural modification

e. Support from family and friends

4. Arthritis:

Definition: Arthritis refers to inflammation of one or more joints, causing pain, stiffness, and difficulty in movement. It is a common musculoskeletal disorder, especially among the elderly.

Types:

a. Osteoarthritis (OA): Due to wear and tear of cartilage.
b. Rheumatoid Arthritis (RA): Autoimmune condition where the immune system attacks the joints.
c. Gout: Caused by accumulation of uric acid crystals in joints.
d. Ankylosing Spondylitis: Affects the spine and large joints.

Causes:

a. Ageing
b. Joint injuries
c. Genetic factors
d. Obesity
e. Infections
f. Autoimmune responses

Symptoms:

a. Joint pain and swelling
b. Morning stiffness
c. Redness and warmth around joints
d. Limited movement
e. Fatigue and malaise in autoimmune types

Prevention:

a. Maintaining healthy body weight
b. Avoiding repetitive stress on joints
c. Regular physical activity
d. Balanced calcium and vitamin D intake
e. Early treatment of joint injuries

Treatment:

a. Pain relievers and anti-inflammatory medicines
b. Physiotherapy
c. Lifestyle changes (weight management, joint-friendly exercises)
d. Surgery (in severe cases – joint replacement)
e. Use of assistive devices (walkers, braces)

:: Questionnaire ::

Define/Explain Questions:

1. Define communicable diseases.
2. Define non-communicable diseases with suitable examples.
3. Explain the causes, symptoms, and prevention of malaria.
4. What are sexually transmitted diseases (STDs)? Mention any two with their symptoms.
5. Describe the mode of transmission and prevention of rabies.
6. What are the main causes and symptoms of a heart attack?
7. Explain the difference between stroke and heart attack.

8. Define diabetes. Explain its types and preventive strategies.
9. Explain the term hypertension and how it differs from hypotension.
10. Define asthma and mention its triggers and prevention.
11. What is cancer? Mention its types briefly.
12. Define depression and mention its impact on health.
13. Define anxiety and list common symptoms.
14. Explain the types, causes, and symptoms of arthritis.

Multiple Choice Questions (MCQs):

1. Which organism is responsible for causing malaria?
   a) Virus
   b) Bacteria
   c) Plasmodium
   d) Fungus
   Answer: c) Plasmodium
2. Which of the following is not a sexually transmitted disease?
   a) Syphilis
   b) Gonorrhoea
   c) Rabies
   d) HIV/AIDS
   Answer: c) Rabies
3. Rabies is transmitted by the bite of a/an:
   a) Mosquito
   b) Infected dog
   c) Housefly
   d) Rodent
   Answer: b) Infected dog
4. Which disease is characterised by high blood sugar levels?
   a) Asthma
   b) Diabetes
   c) Cancer
   d) Hypertension
   Answer: b) Diabetes
5. Which of the following is a symptom of a stroke?
   a) Sudden chest pain
   b) Fever and chills
   c) Paralysis of face or limbs
   d) Breathing difficulty
   Answer: c) Paralysis of face or limbs
6. Which is a non-communicable disease?
   a) Tuberculosis
   b) Influenza
   c) Hypertension
   d) Hepatitis B
   Answer: c) Hypertension

7. Which mental health condition involves persistent sadness and loss of interest?
   a) Anxiety
   b) Depression
   c) Bipolar disorder
   d) Schizophrenia
   Answer: b) Depression
8. Which of the following diseases is associated with inflammation of joints?
   a) Rabies
   b) Arthritis
   c) Asthma
   d) Cancer
   Answer: b) Arthritis

True or False:

1. Malaria is caused by a viral infection. – False
2. Hypertension can lead to stroke if not controlled. – True
3. Rabies can be cured easily after symptoms appear. – False
4. Depression is a communicable disease. – False
5. Diabetes can be managed through lifestyle modifications. – True
6. Asthma is a disease of the digestive system. – False
7. Cancer can only occur in elderly people. – False

Short Answer Questions:

1. Name two communicable and two non-communicable diseases.
2. What is the role of mosquitoes in spreading malaria?
3. List any two symptoms of HIV/AIDS.
4. Mention any two preventive measures for rabies.
5. What are the warning signs of a heart attack?
6. Give any two symptoms of hypotension.
7. How can one prevent or manage diabetes?
8. Mention any two causes of anxiety in modern lifestyle.
9. Write any two symptoms of arthritis.
10. How does hypertension affect the cardiovascular system?

Long Answer Questions:

1. Discuss in detail the causes, symptoms, and preventive measures of malaria.
2. Explain the nature and health consequences of sexually transmitted diseases (STDs).
3. Describe the symptoms, transmission, prevention, and control of rabies.
4. Elaborate on the major types, causes, and prevention of non-communicable diseases: heart attack, stroke, asthma, and diabetes.
5. What is cancer? Explain its types, risk factors, and measures for early detection.
6. Describe the mental health disorders depression and anxiety. Include causes, symptoms, and treatments.
7. Write a detailed note on arthritis with focus on its types, symptoms, causes, and preventive measures.
8. Compare and contrast communicable and non-communicable diseases with examples.

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Chapter No. 03
Health Education

06 Hrs

Content:

3.1 Definition, principle, and methods of health education.

3.2 Managing population growth and promoting family health, mental health challenges in children.

3.3 Harmful effects of junk food and street food, tobacco, alcohol, and drugs on health.

3.4 Unhealthy lifestyle habits: Overusing digital devices (computer & mobile phones) and their impacts on health.

3.5 Role of health education in environment improvement and prevention of diseases, national health programs and policies.

3.1 Definition, principle, and methods of health education:

Definition of health education:

Health education is a process that enables individuals and communities to increase control over their health and improve it through informed choices and behavioural changes. It involves the dissemination of scientifically sound and socially acceptable information related to health and hygiene in a manner that motivates positive health practices.

According to the World Health Organization (WHO),

"Health education is any combination of learning experiences designed to help individuals and communities improve their health, by increasing their knowledge or influencing their attitudes."

Health education is an essential part of public health that promotes preventive healthcare, develops healthy behaviours, and enhances the quality of life.

Principles of health education:

Health education is guided by certain principles to ensure that the message is effectively communicated and leads to desirable behavioural changes. These principles include:

a) Interest and Participation:

- Education must arouse the learner's curiosity and interest.
- Active participation leads to better understanding and retention of knowledge.

b) Comprehension:

- The content should be appropriate to the age, literacy level, and background of the target group.
- Use of local language, familiar examples, and culturally relevant content is important.

c) Reinforcement:

- Repeated messages help to reinforce healthy habits and behaviours.
- Reminders and follow-up sessions ensure retention.

d) Motivation:

- Learners should be motivated by showing the benefits of health-promoting behaviours.
- Motivation may be internal (personal desire) or external (social approval).

e) Learning by Doing:

- Practical demonstrations, role plays, and community participation enhance learning outcomes.
- Skills such as hand washing, first aid, and using oral rehydration solution should be taught practically.

f) Good Human Relations:

- The educator should have a friendly and respectful relationship with the learners.

- Communication should be two-way and non-judgmental.

g) Known to Unknown:

- Begin with what the learner already knows and gradually introduce new concepts.
- This builds confidence and facilitates better understanding.

h) Cultural Sensitivity:

- The health messages should respect the cultural beliefs and values of the community.
- Avoid content that may be offensive or misunderstood.

Methods of health education:

Health education uses a variety of methods depending on the target audience, the topic, and available resources. These methods are classified into three main categories:

A. Individual Approach:

This method focuses on one-on-one communication between the educator and the learner.

Examples: Personal counselling, Home visits, Patient education during clinical visits

Advantages:

- Tailored message based on individual needs
- Direct feedback and clarification possible

Limitations:

- Time-consuming
- Reaches fewer people

B. Group Approach: This method involves small to medium-sized groups where participants share experiences and learn collectively.

Examples: Group discussions, Lectures, Demonstrations, Role plays, Workshops and seminars

Advantages:

- Encourages interaction and peer learning
- Cost-effective for a moderate audience
- Better motivation through group dynamics

Limitations:

- Needs good facilitation skills
- May not address individual problems

C. Mass Approach: This method reaches a large audience and is ideal for awareness campaigns.

Examples: Radio and television programs, Posters and banners, Social media and internet campaigns, Street plays and folk media.

Advantages:

- Can reach thousands at once
- Effective for raising awareness on a large scale
- Repetition possible through mass media

Limitations:

- No direct interaction
- Message may not suit everyone in the audience
- Difficult to measure individual behaviour change

3.2 Managing population growth and promoting family health, mental health challenges in children:

Introduction: Population growth refers to the increase in the number of individuals in a specific region over time. Rapid and uncontrolled population growth is a major public health concern, especially in developing nations like India. It affects not only the availability of natural resources but also puts pressure on healthcare, education, employment, and housing.

Causes of Population Growth:

- High birth rate due to cultural and religious beliefs, lack of family planning.
- Decline in death rate due to better medical facilities and public health measures.
- Early marriage and childbearing, particularly in rural areas.
- Lack of education, especially among women.
- Limited access to contraception or lack of awareness about family planning methods.

Effects of Rapid Population Growth

- Strain on healthcare services and infrastructure.
- Unemployment and poverty, especially in urban slums.
- Environmental degradation and shortage of water, food, and housing.
- Increased maternal and child health issues.

Strategies for Managing Population Growth

a. Family Planning and Contraceptive Use

- Promoting awareness about various methods such as oral pills, condoms, intrauterine devices (IUDs), and sterilisation.
- Ensuring availability and accessibility of reproductive health services.

b. Women's Education and Empowerment

- Educated women tend to marry late and have fewer, healthier children.
- Economic independence of women helps in informed family planning.

c. Promotion of Delayed Marriages

- Legal age of marriage in India is 21 years for men and 18 years for women.
- Community awareness campaigns to discourage child marriage.

d. Government Initiatives

- National Population Policy (2000)
- Mission Parivar Vikas – to promote spacing between children and modern contraceptive methods.

Promoting Family Health

Family health means the complete physical, mental, and social well-being of all members in a household.

a. Maternal and Child Health

- Regular antenatal care (ANC) and postnatal care (PNC).
- Immunisation under Universal Immunisation Programme (UIP).
- Nutrition supplementation through ICDS (Integrated Child Development Services).

b. Nutrition and Hygiene

- Balanced diet for all age groups.
- Clean drinking water and personal hygiene practices.

c. Health Education

- Conducting sessions on lifestyle diseases, substance abuse, adolescent health, menstrual hygiene, etc.

d. Mental and Emotional Well-being

- Open communication within the family.
- Encouraging healthy parenting practices.
- Providing psychological support when needed.

Mental Health Challenges in Children:

Introduction:

Mental health is not just the absence of mental illness, but a state of emotional and psychological well-being. In children, mental health issues are often overlooked, leading to long-term consequences in behaviour, learning, and development.

Common Mental Health Problems in Children:

a) Anxiety disorders (phobias, separation anxiety)
b) Depression
c) Attention Deficit Hyperactivity Disorder (ADHD)
d) Autism Spectrum Disorders (ASD)
e) Conduct disorders (aggression, disobedience)
f) Learning disabilities (dyslexia, dyscalculia)

Causes and Risk Factors:

a) Genetic predisposition and family history.
b) Poor parenting practices (neglect, abuse, overprotection).
c) School pressure, exam stress, and bullying.
d) Social media overexposure and screen addiction.
e) Nutritional deficiencies, especially in early childhood.
f) Substance abuse and domestic violence in the family.

Signs and Symptoms:

a) Sudden changes in behaviour or mood.
b) Poor school performance and lack of concentration.
c) Withdrawal from friends or family.
d) Sleep disturbances or bedwetting.
e) Frequent complaints of headaches or stomach aches without medical cause.
f) Excessive fear, sadness, or anger.

Diagnosis and Treatment:

a) Early diagnosis through behavioural assessments and psychological evaluations.
b) Counselling and Psychotherapy: Cognitive Behavioural Therapy (CBT), play therapy.
c) Medication, if required, under the guidance of a psychiatrist.
d) Parental training and family counselling.
e) Special education support in schools.

Promoting Mental Health in Children:

a) Supportive family environment with love, care, and encouragement.
b) Balanced diet, adequate sleep, and regular physical activity.
c) Healthy school environment with friendly teachers and anti-bullying policies.
d) Limiting screen time and promoting outdoor activities.
e) Early intervention and seeking professional help when needed.

Role of Government and NGOs:

a) National Mental Health Programme (NMHP).
b) School health programmes under Rashtriya Bal Swasthya Karyakram (RBSK).
c) NGOs like Snehi, Sangath, and Childline work in child mental health awareness and support.

3.3 Harmful effects of junk food and street food, tobacco, alcohol, and drugs on health:

Good health is essential for the development of individuals and society. However, due to lifestyle changes and poor awareness, many harmful habits such as excessive consumption of junk food and street food, use of tobacco, alcohol, and drugs have increased, posing serious threats to public health.

1. Harmful Effects of Junk Food:

Definition: Junk food refers to food items that are high in calories but low in nutritional value. These often contain excess sugar, salt, unhealthy fats, preservatives, artificial colours, and flavours.

Examples: Chips, burgers, pizzas, carbonated drinks, instant noodles, deep-fried snacks, and sweets made with refined flour and hydrogenated oils.

Health Hazards of Junk Food:

- Obesity: High calorie and fat content leads to weight gain and obesity.
- Diabetes: Excess sugar and simple carbohydrates increase the risk of type 2 diabetes.
- Heart Diseases: High cholesterol and trans fats cause blockages in arteries.
- Digestive Issues: Low fibre content causes constipation and indigestion.
- Poor Mental Health: High sugar intake may contribute to mood swings and depression.
- Nutritional Deficiency: Replaces healthy meals and deprives the body of essential nutrients.

2. Harmful Effects of Street Food:

Definition: Street food refers to ready-to-eat food and beverages sold on streets or public places, usually with minimal hygiene practices.

Common Items: Pani puri, vada pav, chaat, pakoras, Chinese fast food, fruit juices, etc.

Health Hazards of Street Food:

- Food Poisoning: Due to contaminated water, unwashed vegetables, or poor hygiene.
- Infectious Diseases: Risk of typhoid, cholera, hepatitis A and E, and diarrhoea.
- Chemical Exposure: Use of adulterated or expired ingredients and colouring agents.
- Stomach Infections: Bacteria such as E. coli and Salmonella may be present.
- Low Nutritional Value: Most items are oily and lack vitamins and proteins.

3. Harmful Effects of Tobacco:

Forms of Tobacco: Cigarettes, bidis, cigars, hookah, gutkha, khaini, pan masala, etc.

Health Hazards of Tobacco:

- Cancer: Strongly associated with lung, oral, throat, and esophageal cancers.
- Heart Diseases: Smoking increases blood pressure and causes arterial damage.
- Respiratory Disorders: Leads to chronic bronchitis, asthma, and COPD (Chronic Obstructive Pulmonary Disease).
- Addiction: Nicotine causes psychological and physical dependence.
- Oral Problems: Tooth decay, gum diseases, bad breath, and mouth ulcers.

- Low Immunity: Weakens body's defence mechanisms.

4. Harmful Effects of Alcohol:
Definition: Alcohol is a psychoactive substance found in drinks like beer, wine, whisky, and rum. Excessive intake leads to intoxication and various health issues.
Health Hazards of Alcohol:

- Liver Damage: Leads to fatty liver, hepatitis, cirrhosis, and liver cancer.
- Brain Damage: Affects memory, judgement, and coordination; risk of dementia.
- Heart Problems: High blood pressure, irregular heartbeat, and heart failure.
- Mental Health Issues: Depression, anxiety, aggression, and suicidal thoughts.
- Addiction and Dependency: Causes alcohol use disorder (AUD).
- Family and Social Problems: Domestic violence, accidents, unemployment.

5. Harmful Effects of Drugs:
Definition: Drugs are chemical substances that affect brain function and body processes. Commonly abused drugs include cannabis, heroin, cocaine, LSD, opioids, and synthetic drugs.
Health Hazards of Drug Abuse:

- Addiction: Causes strong dependency, making quitting difficult.
- Mental Illness: Leads to hallucinations, depression, paranoia, and psychosis.
- Organ Damage: Liver, kidney, and heart are severely affected.
- Neurological Problems: Reduces cognitive functions and reflexes.
- Transmission of Diseases: Sharing needles can spread HIV/AIDS and hepatitis B/C.
- Social Consequences: Crime, isolation, academic failure, and unemployment.

3.4 Unhealthy lifestyle habits: Overusing digital devices (computer & mobile phones) and their impacts on health:

In today's digital era, the extensive use of computers, smartphones, tablets, and other electronic gadgets has become inseparable from our daily routine. Digital technology has undoubtedly brought numerous advantages in terms of communication, education, healthcare, and access to information. However, the unregulated and excessive use of these devices has given rise to several health issues—both physical and psychological. Overuse of digital gadgets is now recognised as a major component of unhealthy lifestyle habits, particularly among the younger population, students, working professionals, and even children.

1. What is Digital Device Overuse?

Digital device overuse refers to the habitual and prolonged use of electronic screens—beyond what is necessary or healthy—for activities such as texting, browsing social media, watching videos, gaming, or working. When screen time becomes excessive and interferes with essential activities such as sleep, physical activity, academic/work performance, and real-life social interaction, it is considered harmful.

2. Physical Health Impacts of Overusing Digital Devices:

a. Visual Disorders and Eye Health:

- Digital Eye Strain / Computer Vision Syndrome (CVS): Symptoms include dry eyes, irritation, blurred vision, redness, double vision, and eye fatigue. These symptoms are common among

people who stare at screens continuously without blinking or taking breaks.

- Blue Light Damage: Digital screens emit blue light which can penetrate the eye and may damage the retina over time. Prolonged exposure disrupts the natural sleep-wake cycle and affects melatonin production.
- Myopia (Short-sightedness): The prevalence of myopia is increasing, especially among children and adolescents due to near-screen work.

b. Musculoskeletal Problems:

- Postural Issues: Slouching or poor sitting posture while using devices leads to chronic neck pain ("text neck"), shoulder stiffness, and lower backache.
- Repetitive Strain Injuries (RSI): Overuse of fingers and wrists while typing or swiping may lead to conditions like carpal tunnel syndrome.
- Lack of Physical Activity: Long hours of screen time contribute to sedentary behaviour, which is associated with obesity, poor cardiovascular health, and metabolic disorders.

c. Sleep disorders:

- Using digital gadgets late at night can disrupt the body's circadian rhythm.
- Blue light from screens delays melatonin release, resulting in insomnia, poor sleep quality, and daytime fatigue.
- Nomophobia (fear of being without a mobile phone) and checking devices during sleep hours also disturb rest cycles.

3. Psychological and Mental Health Consequences:

a. Digital Addiction

- Individuals, especially students and youth, may develop an uncontrollable urge to check notifications, scroll through social media, or play online games. This is called digital addiction.
- Over time, it leads to reduced attention span, mental exhaustion, and loss of productivity.

b. Anxiety and Stress

- The constant pressure to stay connected or respond instantly can cause psychological stress.
- Social media usage can lead to Fear of Missing Out (FOMO), cyberbullying, and feelings of inadequacy due to unrealistic portrayals of life online.

c. Depression and Social Isolation

- Online interactions cannot substitute for real-world relationships. Excessive screen time often results in reduced family bonding, lack of emotional support, and loneliness.
- Some individuals may suffer from depression, especially when digital overuse replaces physical activity, hobbies, or meaningful human interaction.

4. Specific Impact on Children and Adolescents:

- Cognitive Development: Children exposed to screens for prolonged periods may show delayed speech, attention deficits, and poor memory retention.
- Behavioural Problems: Exposure to violent or inappropriate content can lead to aggression, disobedience, and social withdrawal.
- Obesity and Health Risks: Screen-based sedentary lifestyle increases the risk of childhood obesity, early onset diabetes, and cardiovascular issues.

5. Academic and Social Impact:

- Reduced Academic Performance: Overuse of mobile phones, video games, or social media often results in poor concentration, lack of time management, and academic negligence.

- Cyberbullying and Online Risks: Students may fall prey to cyberbullying, online scams, or harmful digital content, affecting their emotional and mental wellbeing.
- Weakening Social Bonds: Family members often sit together but are engaged separately on their devices, leading to communication gaps and emotional distancing.

6. Prevention and Management Strategies:

a. Promoting Digital Wellbeing:

- Establish daily screen time limits, particularly for entertainment or social media.
- Encourage digital detox: designate gadget-free hours or days (especially on weekends).
- Avoid device use 1–2 hours before bedtime to improve sleep quality.

b. Ergonomic and Eye-Friendly Practices:

- Use an ergonomic workstation: proper chair height, screen level at eye height, and back support.
- Apply the 20-20-20 rule: every 20 minutes, look at an object 20 feet away for 20 seconds.
- Use anti-glare screens, blue light filters, or night mode in the evenings.

c. Lifestyle Modifications:

- Incorporate daily physical exercise such as walking, yoga, or sports to counteract sedentary behaviour.
- Promote outdoor activities and offline hobbies like gardening, reading, painting, etc.
- Practise mindfulness techniques like deep breathing and meditation to reduce screen-induced stress.

d. Parental and Institutional Role:

- Parents should monitor and guide children's device use, encourage offline activities, and lead by example.
- Schools and colleges must integrate digital literacy, mental health education, and screen time awareness campaigns into their curricula.
- Introduce counselling services for students addicted to online gaming or suffering from digital fatigue.

3.5 Role of health education in environment improvement and prevention of diseases, national health programs and policies:

Health education plays a foundational role in improving environmental conditions and preventing the spread of diseases. In a populous and diverse country like India, where a large section of the population resides in rural and semi-urban areas, health education serves as a bridge between modern medical science and the community's traditional health practices. It empowers individuals to make informed choices about personal hygiene, sanitation, disease prevention, and healthy living, thereby contributing to better environmental and public health outcomes.

Role of Health Education in Environmental Improvement:

Environmental factors such as unsafe drinking water, poor sanitation, unhygienic surroundings, open defecation, and improper waste disposal are major contributors to the spread of diseases. Health education helps mitigate these by:

a. Creating Environmental Awareness: Health education sensitises individuals about how environmental pollution, waterlogging, vector breeding sites, and deforestation adversely affect health.

b. Promotion of Sanitation and Hygiene: It promotes the construction and use of toilets, the importance

of handwashing with soap, safe food practices, and waste management.
c. Safe Water Practices: Health campaigns encourage boiling water, using water filters, and protecting water sources from contamination.
d. Waste Segregation and Disposal: People are educated on the segregation of biodegradable and non-biodegradable waste, composting, and the harms of open dumping and burning of plastic.
e. Community Participation in Cleanliness Drives: Through programmes like *Swachh Bharat Abhiyan*, health education has encouraged collective responsibility for maintaining clean surroundings.

Role of Health Education in Prevention of Diseases:

Health education aids in preventing both communicable and non-communicable diseases by changing behaviour, improving awareness, and enhancing access to health services.
a. Communicable Diseases:

- Educates about disease transmission routes and preventive measures.
- Promotes immunisation and early detection.
- Disseminates information about malaria, tuberculosis, HIV/AIDS, dengue, and diarrhoeal diseases.

b. Non-communicable Diseases (NCDs):

- Raises awareness about lifestyle-related diseases such as diabetes, hypertension, cancer, and obesity.
- Promotes healthy diets, physical activity, stress management, and regular health check-ups.

c. Mother and Child Health:

- Spreads awareness about antenatal and postnatal care, institutional deliveries, child nutrition, and vaccination.

d. Mental Health:

- Helps reduce stigma related to mental illness.
- Promotes mental well-being, counselling, and access to psychiatric care.

e. Emergency Preparedness:

- Trains communities to respond to outbreaks, natural disasters, and first aid requirements.

National Health Programmes and Policies in India:

India has launched several targeted programmes and health policies aimed at disease prevention, environmental health, and public health education. Key ones include:
A. Major National Health Programmes:
i. National Health Mission (NHM) – 2013:

- Includes National Rural Health Mission (NRHM) and National Urban Health Mission (NUHM).
- Aims to provide affordable and accessible healthcare.
- Promotes community-based health awareness, especially among women and children.

ii. Revised National Tuberculosis Control Programme (RNTCP) / NTEP:

- Focuses on early detection and treatment of TB.
- Includes community education on TB symptoms, free diagnostic and treatment services.

iii. National Vector Borne Disease Control Programme (NVBDCP):

- Covers diseases like malaria, dengue, chikungunya, Japanese encephalitis.

- Health education promotes mosquito control, insecticide-treated nets, and environmental cleanliness.

iv. National AIDS Control Programme (NACP):

- Promotes safe sex, HIV testing, counselling, and reduces stigma.
- Advocates health education in schools, colleges, and among high-risk groups.

v. Universal Immunisation Programme (UIP):

- Immunisation of children and pregnant women against vaccine-preventable diseases.
- Community mobilisation and education are key strategies.

vi. National Mental Health Programme (NMHP):

- Promotes awareness about mental health.
- Includes training for health workers, school-based counselling, and suicide prevention campaigns.

B. Other Important Programmes and Campaigns:

- Swachh Bharat Abhiyan (Clean India Mission) – launched in 2014 for improving rural and urban sanitation.
- Fit India Movement – launched in 2019 to promote physical activity.
- Ayushman Bharat (PM-JAY) – for financial protection and preventive care through Health and Wellness Centres (HWCs).
- POSHAN Abhiyaan (National Nutrition Mission) – to reduce malnutrition among children, adolescent girls, and pregnant women.
- Janani Suraksha Yojana (JSY) – promotes institutional deliveries.
- National Programme for Prevention and Control of Cancer, Diabetes, Cardiovascular Diseases and Stroke (NPCDCS).

Health Policies Promoting Environmental and Public Health:

i. National Health Policy (NHP) 2017:

- Focuses on preventive and promotive healthcare.
- Strengthens health education and behavioural change communication (BCC).
- Encourages public-private partnerships and community participation.

ii. National Policy on Education (NEP) 2020:

- Integrates health and hygiene education into school and college curricula.

iii. National Environment Policy (NEP) 2006:

- Supports sustainable development and includes provisions for public awareness about environmental health.

:: **Questionnaire** ::

Define/Explain:

1. Define Health Education and explain its objectives.
2. What are the principles of health education?
3. Write a short note on methods of health education.
4. Explain the role of health education in environmental improvement.
5. What are the mental health challenges commonly faced by children today?
6. Explain the harmful effects of tobacco and alcohol on the human body.

7. How does overuse of digital devices affect our physical and mental health?

Multiple Choice Questions (MCQs):

1. Which of the following is not a principle of health education?
   a) Interest
   b) Participation
   c) Force
   d) Comprehension
   Answer: c) Force
2. The main goal of family health is to:
   a) Promote population growth
   b) Ensure individual earnings
   c) Improve the health and wellbeing of all members
   d) Encourage the use of junk food
   Answer: c) Improve the health and wellbeing of all members
3. Excessive use of mobile phones may cause:
   a) Enhanced physical fitness
   b) Improved eyesight
   c) Sleep disturbances
   d) Improved posture
   Answer: c) Sleep disturbances
4. One of the key environmental benefits of health education is:
   a) Industrial development
   b) Increase in waste
   c) Promotion of hygiene and sanitation
   d) Construction of malls
   Answer: c) Promotion of hygiene and sanitation
5. The National Mental Health Programme (NMHP) was launched in India in:
   a) 1975
   b) 1982
   c) 1990
   d) 2005
   Answer: b) 1982

True or False:

1. Health education is only meant for school children: False
2. Tobacco consumption is a major cause of oral cancer: True
3. Excessive screen time may lead to mental relaxation:False
4. Clean surroundings reduce the spread of communicable diseases: True
5. National health programmes do not address mental health: False

Short Answer Questions:

1. Mention any three methods used in health education.
2. State the importance of managing population growth in India.
3. List three common health hazards associated with junk food.
4. How does overuse of computers affect students' physical posture?

5. Suggest two ways to promote family health in rural areas.
6. What are the objectives of any two national health programmes?
7. Give two examples of environmental changes promoted by health education.

Long Answer Questions:

1. Discuss in detail the definition, principles, and methods of health education with suitable examples.
2. Explain the impact of population growth on public health and the strategies to manage it.
3. Describe the harmful effects of junk food, tobacco, alcohol, and drugs on health. How can youth be educated to avoid these habits?
4. Write a detailed account on the mental health issues faced by children in modern society. What role can school and families play in prevention?
5. Analyse how excessive use of digital devices is becoming a public health concern. Mention both physical and psychological impacts.
6. Elaborate on the role of health education in promoting environmental cleanliness, disease prevention, and supporting national health policies.

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Chapter No. 04
Hygiene
04 Hrs

`Content:

4.1: Definition, principle and importance of hygiene.

4.2: Kinds of hygiene: Personal hygiene - regular hand washing, dental care, body odour, proper grooming, good sleep habits, menstrual health.

4.3: Community hygiene: Keeping surroundings, public spaces and shared facilities clean to stop the spread of diseases and standard hygiene practices.

4.4: Food hygiene: Safe handling, preparation, and storage of food to prevent food borne illness.

Introduction to Hygiene:

Hygiene is the science and practice of keeping healthy and preventing illness through cleanliness and good sanitary habits. It is based on the idea that a clean environment and body lower the risk of infections and promote physical, mental, and social well-being. Hygiene is important for personal health, community welfare, and national public health. It not only prevents sickness but also boosts productivity, improves quality of life, and contributes to a longer life span. Hygiene can be divided into different types, like personal hygiene, community hygiene, and food hygiene.

Personal hygiene includes daily practices such as regular hand washing to stop the spread of germs, brushing teeth and taking care of oral health to prevent dental issues, bathing to manage body odor and skin infections, grooming activities like trimming nails and hair, keeping up with good sleep routines for mental and physical health, and maintaining proper menstrual hygiene with clean products and responsible disposal. These habits build confidence and social acceptance.

Community hygiene involves group efforts to keep the environment clean. This includes proper garbage disposal, cleaning public toilets, ensuring a safe drinking water supply, and maintaining cleanliness in public areas like parks, markets, schools, and hospitals. It helps to break the cycle of disease spread and is crucial for controlling epidemics.

Food hygiene aims to prevent food contamination by using safe methods when handling, preparing, cooking, and storing food. Best practices include washing raw fruits and vegetables, cooking meat thoroughly, keeping perishable items at the right temperature, and using clean utensils and water. Poor food hygiene can cause food poisoning, diarrhea, and serious illnesses like typhoid or hepatitis.

In conclusion, hygiene is a vital part of preventive healthcare. It should be taught and practiced from a young age to help create a healthier and safer society.

4.1: Definition, principle and importance of hygiene:

Definition of Hygiene:

Hygiene involves the practices, habits, and conditions that people maintain to protect their health and stop the spread of diseases. It includes cleanliness in personal, home, work, and environmental settings, with the goal of promoting physical, mental, and social well-being. The term ‘hygiene’ comes from the Greek word Hygeia, who was the goddess of health. This highlights the prevention aspect of healthcare. In today’s public health, hygiene serves as a proactive step to lower the risk of infection, illness, and contamination for individuals and communities.

Principles of Hygiene:

The principles of hygiene draw from scientific knowledge and aim to provide a safe, clean, and disease-free environment for individuals and communities. These principles guide daily actions and public health programs. Key principles include:

a. Cleanliness and Regular Washing: Keeping the body, surroundings, and personal belongings clean removes dirt, sweat, and germs. This includes daily bathing, regularly washing clothes, and maintaining a clean home. Cleanliness also applies to schools, workplaces, hospitals, and marketplaces.
b. Hand Hygiene: Washing hands with soap and clean water at critical times, such as before meals, after using the toilet, and after handling waste or animals, is one of the most effective ways to prevent infections like diarrhea and respiratory illnesses.
c. Safe Handling of Food and Water: This principle focuses on washing fruits and vegetables, cooking food thoroughly, storing food in clean, covered containers, and using safe drinking water. In rural India, boiling water or using purifiers can help prevent waterborne diseases.
d. Personal Protective Measures: Wearing masks, gloves, and handkerchiefs, along with maintaining respiratory hygiene like covering your mouth when sneezing, reduces the spread of airborne infections such as tuberculosis and COVID-19.
e. Proper Waste Disposal: Household and medical waste must be separated and disposed of correctly. Open defecation and littering should be avoided. Using toilets, composting, and municipal waste services helps ensure environmental cleanliness.
f. Ventilation and Air Hygiene: Good airflow in homes, classrooms, and workplaces prevents the buildup of indoor air pollutants and lowers the risk of airborne infections.
g. Vector Control: Preventing the breeding of pests like mosquitoes, flies, and rodents through cleanliness, proper waste disposal, and covering water containers helps control diseases such as malaria, dengue, and leptospirosis.
h. Health Education and Behavioral Change: Hygiene education develops lifelong habits. School hygiene programs, Swachh Bharat Abhiyan, and health campaigns by ASHA workers play a crucial role in shaping hygiene practices in Indian communities.
i. Institutional and Community Hygiene: Maintaining cleanliness in public areas such as schools, hospitals, public toilets, and transport systems ensures collective well-being. Government regulations and community involvement are important for this.

Importance of Hygiene:

Hygiene is not just an individual responsibility; it is a shared necessity for a healthy society. The importance of hygiene includes:

a. Prevention of Communicable Diseases: Diseases like cholera, dysentery, hepatitis A, typhoid, COVID-19, and influenza mainly spread due to poor hygiene. Following hygienic practices prevents the spread of infections.
b. Improved Personal Health and Longevity: A hygienic lifestyle boosts immunity, reduces sick days, improves digestion, and supports good mental health. It also postpones the onset of lifestyle-related diseases.
c. Boost to Mental and Social Well-being: Clean surroundings and good personal hygiene raise self-esteem, promote mental peace, and increase social acceptance. In work and school settings, hygiene also enhances productivity and discipline.

d. Reduction in Healthcare Burden: Preventing illness through hygiene is cheaper than treatment. It reduces the strain on healthcare systems, especially in resource-limited rural and urban areas.
e. Healthy Growth and Development in Children: Hygiene is crucial for child health as it lowers infections, prevents malnutrition, and promotes healthy brain development. For example, washing hands before feeding a child cuts the risk of diarrhea and stunted growth.
f. Empowerment of Women and Girls: Menstrual hygiene management (MHM) ensures that girls can attend school with dignity and women can work safely and comfortably. Poor hygiene can lead to reproductive infections and social exclusion.
g. Preparedness During Epidemics and Pandemics: In health emergencies like the COVID-19 pandemic, hygiene serves as the first line of defense. Access to clean toilets, handwashing stations, and protective measures in public spaces is vital.
h. National Development and Public Image: A hygienic population reflects discipline and progress. Initiatives like Swachh Bharat Abhiyan not only improve sanitation but also boost India's reputation in global public health.
i. Support to Environmental Sustainability: Good hygiene supports sanitation, waste management, water conservation, and clean air. This helps protect ecosystems and natural resources.
j. Encouragement of Civic Responsibility: Hygiene education promotes responsible citizenship. Students, workers, and community members who understand hygiene are more likely to engage in collective activities such as cleaning drives and health camps.

4.2: Kinds of hygiene: Personal hygiene - regular hand washing, dental care, body odour, proper grooming, good sleep habits, menstrual health:

Personal hygiene is our first line of defense against infections, communicable diseases, and low self-esteem. It includes daily practices that everyone should follow to stay clean, protect their health, and present a positive self-image. Poor personal hygiene can lead to physical illness and psychological discomfort, which can affect social and professional life. Here are the key elements of personal hygiene, each important for overall well-being:

1. Regular Hand Washing:

Hand hygiene is recognized worldwide as one of the most effective public health measures. Our hands constantly encounter germs from surfaces, people, food, and our own body fluids. If these germs get into the mouth, nose, eyes, or open wounds, they can cause serious illnesses.

Importance:

a. Prevents the spread of bacteria, viruses, and parasites
b. Reduces diarrheal diseases by up to 40%
c. Essential for food safety, healthcare, and childcare

Best Practices:

a. Use soap and running water
b. Scrub all parts of the hands, including under the nails, for 20 seconds
c. Dry hands with a clean towel or air dryer
d. Use alcohol-based hand sanitizer if soap and water are unavailable
e. Note: Poor hand hygiene can spread diseases like hepatitis A, typhoid, influenza, conjunctivitis, and intestinal worms.

2. Dental Care:

Oral hygiene involves more than just keeping teeth clean; it's crucial for overall health. The mouth connects to the digestive and respiratory tracts, and poor oral care can let harmful bacteria enter the body, causing systemic infections.

Significance:

a. Prevents tooth decay, gum inflammation, and bad breath
b. Poor dental health is linked to heart disease, diabetes, and preterm births
c. Supports confidence and social acceptance

Good Practices:

a. Brush twice daily, especially before bed
b. Use fluoride toothpaste and a soft-bristled toothbrush
c. Replace the toothbrush every 3 to 4 months
d. Rinse the mouth after meals
e. Avoid smoking and excessive sugary foods
f. Visit the dentist at least every 6 months

3. Body Odour Control:

Body odour results from the combination of sweat and bacteria on the skin. While sweating is natural, poor hygiene can cause unpleasant smells, fungal infections, and skin irritation.

Causes:

a. Accumulated sweat and bacteria, especially in areas like armpits, groin, and feet
b. Wearing unwashed or synthetic clothes in hot weather
c. Hormonal changes, particularly during adolescence

Prevention:

a. Bathe daily with soap, focusing on areas that sweat
b. Wear cotton or breathable fabrics
c. Change undergarments and socks daily
d. Use deodorants or antibacterial powders
e. Wash feet properly and keep them dry to avoid athlete's foot

Tip: Regular cleaning lowers the risk of skin issues like acne, ringworm, boils, and fungal infections.

4. Proper Grooming:

Grooming involves maintaining body cleanliness and appearance. It's not just about looking good; it also includes healthy habits that show discipline and self-respect.

Benefits:

a. Promotes mental well-being and self-confidence
b. Prevents lice, fungal nail infections, dandruff, and skin rashes
c. Important for workplace and social situations

Routine Practices:

a. Hair: Wash 2 to 3 times a week, comb regularly, and trim to avoid lice or dandruff
b. Nails: Trim weekly; avoid biting; clean regularly to prevent worm infections
c. Skin: Wash face 2 to 3 times daily; moisturize to avoid dryness
d. Clothes: Wear clean, ironed clothes appropriate for the weather; ensure uniform cleanliness for students and professionals

e. Footwear: Clean shoes or slippers daily; wear socks only once per day

5. Good Sleep Habits:

Quality sleep is vital for cellular repair, memory consolidation, hormonal balance, and emotional stability. Poor sleep habits can lead to fatigue, stress, anxiety, reduced focus, and a weakened immune system.

Recommended Sleep Duration:

a. Adults: 7 to 9 hours
b. Teenagers: 8 to 10 hours
c. Children: 9 to 12 hours (varies by age)

Practices for Healthy Sleep:

a. Stick to a regular sleep and wake time
b. Avoid screens close to bedtime, as blue light interferes with melatonin
c. Keep the room dark, quiet, and cool
d. Limit caffeine and heavy meals at night
e. Use the bed only for sleep, not for studying or entertainment

Health Impact: Chronic sleep deprivation can lead to obesity, heart disease, depression, and lower academic performance.

6. Menstrual Health:

Menstrual hygiene is crucial for adolescent girls and women. Lack of awareness, social stigma, and inadequate facilities can lead to infections, reproductive health issues, and missed school or work.

Why It Matters:

a. Prevents reproductive and urinary tract infections
b. Supports dignity, comfort, and mental well-being
c. Helps reduce school drop-out rates among girls in rural areas

Hygienic Practices:

a. Use clean and reliable menstrual products (pads, cups, reusable cloth)
b. Change sanitary products every 4 to 6 hours
c. Wash the genital area with clean water; avoid harsh soaps
d. Wash hands before and after changing pads
e. Dispose of used materials safely and discreetly
f. Educate girls and parents to break down myths and taboos

Government Support:

Initiatives like the Menstrual Hygiene Scheme (MHS) and Swachh Bharat: Swachh Vidyalaya aim to promote menstrual health education and access to sanitary products in India.

4.3: Community hygiene: Keeping surroundings, public spaces and shared facilities clean to stop the spread of diseases and standard hygiene practices:

Community hygiene is a crucial aspect of public health that emphasizes the importance of cleanliness and hygienic practices in our surroundings, public areas, and shared facilities. It plays a significant role in breaking the chain of infections, managing disease outbreaks, and ensuring a safe and dignified environment for everyone in society.

1. Keeping Surroundings Clean:

Clean surroundings encompass not just the area right around our homes but also the streets, open spaces, drains, and backyards. When garbage, wastewater, and organic waste are left unattended, they can become breeding grounds for bacteria, viruses, and disease-carrying pests like flies, mosquitoes, and rodents.

Key Practices:

a. Daily street and alley sweeping by sanitation workers
b. Community involvement in cleaning up residential areas
c. Planting trees and caring for community gardens
d. Implementing proper drainage systems to avoid waterlogging
e. Steering clear of dumping waste in open fields or rivers

Benefits:

a. Reduces the occurrence of vector-borne diseases like malaria and dengue
b. Prevents unpleasant odors, soil pollution, and water contamination
c. Enhances the visual appeal of the area and boosts mental well-being

2. Maintaining Cleanliness in Public Spaces:

Public spaces such as markets, bus stops, train stations, playgrounds, parks, schools, and places of worship see hundreds or even thousands of visitors daily. If these areas aren't cleaned regularly, they can quickly turn into hotspots for disease transmission.

Key Practices:

a. Providing enough dustbins and ensuring regular waste collection
b. Making clean drinking water and toilet facilities available
c. Periodically disinfecting benches, railings, and frequently touched surfaces
d. Using signs to discourage spitting, littering, and open defecation
e. Regulating food vendors to guarantee hygienic food preparation

Benefits:

a. Minimizes the risk of illnesses like diarrhea, typhoid, influenza, and COVID-19-like respiratory infections
b. Fosters public discipline and raises hygiene awareness
c. Encourages citizens to utilize and respect public spaces

3. Cleanliness of Shared Facilities:

Shared facilities include community toilets, common handwashing stations, water tanks, drains, bathing areas, and kitchen spaces in hostels or rural households. These places, when neglected, become highly vulnerable to contamination and infection.

Key Practices:

a. Regular cleaning and disinfection of community toilets with phenyl or bleaching powder
b. Provision of hand soap, clean water, and disposal bins
c. Safe disposal of menstrual waste and sanitary napkins
d. Scheduled tank cleaning and chlorination of drinking water sources
e. Proper ventilation in shared bathrooms and toilets

Benefits:

a. Prevents the spread of faeco-oral infections and skin diseases

b. Maintains the dignity and health of women and marginalised groups
c. Promotes equity in access to hygiene resources

4. Standard Hygiene Practices in Communities:

Standard hygiene practices are the set of guidelines or routines that communities should adopt collectively to maintain cleanliness and good health. These practices should be simple, practical, and uniformly followed by all members of society, regardless of socioeconomic status.

Essential Practices Include:

Standard Practice	Description	Purpose
Regular Handwashing	Washing hands with soap after toilet use, before eating or cooking	Prevents disease spread via hands
Use of Toilets	Avoiding open defecation and using proper toilets	Prevents soil and water contamination
Waste Segregation	Separating dry, wet, and hazardous waste	Aids in effective recycling and disposal
Safe Water Handling	Using clean containers, covering drinking water, boiling or filtering water	Prevents waterborne infections
Vector Control Measures	Covering containers, avoiding stagnant water, using mosquito nets	Reduces malaria and dengue cases
Cleaning Public Tanks and Drains	Periodic cleaning and chlorination	Prevents waterborne epidemics
Community Cleaning Drives	Involving residents in mass cleaning campaigns	Encourages civic responsibility

4.4: Food hygiene: Safe handling, preparation, and storage of food to prevent food borne illness:

1. Introduction to Food Hygiene:

Food hygiene refers to the conditions and practices that keep food safe and prevent contamination and food-borne illnesses. It is essential for public health because it ensures the food we eat is clean, safe, and nutritious. In India, where food is prepared in various settings—from homes and roadside stalls to large-scale food industries—maintaining hygiene standards is both necessary and challenging.

The increase in food-borne diseases, mainly due to microbial contamination, poor handling, and lack of awareness, shows how important food hygiene is for protecting individual and community health.

2. Safe Handling of Food:

Food handling includes all activities related to receiving, washing, cutting, cooking, serving, and packaging food. Mistakes during any of these stages can cause contamination and illness.

2.1 Personal Hygiene of Food Handlers:

a. Wash hands thoroughly with soap and water before handling food, after using the toilet, sneezing, or handling waste.
b. Keep nails trimmed, wear clean clothes, and cover hair.
c. Avoid handling food if you have infections, a cough, or skin diseases.

2.2 Clean Surfaces and Utensils:

a. Cutting, chopping, and serving surfaces should be cleaned regularly with hot water and

disinfectants.

b. Use separate cutting boards for raw meat and vegetables to prevent cross-contamination.
c. Clean and dry all utensils and kitchen equipment before use.

2.3 Raw Food Handling:

a. Store raw food away from ready-to-eat items.
b. Wash fruits, vegetables, and grains under running clean water.
c. Avoid handling food with bare hands; use gloves or clean utensils whenever possible.

3. Safe Preparation of Food:

Preparation is crucial, as food can either become safe to eat or a source of disease during this stage.

3.1 Cooking at Proper Temperatures:

a. Cooking food at the right temperature (usually above 75°C) destroys harmful microorganisms.
b. Cook meat, poultry, and seafood thoroughly, ensuring there are no pink parts in meat or raw texture in fish.
c. Reheated food should reach at least 70°C before serving.

3.2 Use of Safe Water:

a. All water used for cooking, washing, and preparation must be safe and drinkable.
b. In rural areas, boiling water or using purification tablets can help prevent contamination.

3.3 Avoiding Cross-contamination:

a. Do not mix raw and cooked foods.
b. Use different knives and chopping boards for vegetables and non-vegetarian items.
c. Avoid preparing food in unclean areas or near waste disposal sites.

3.4 Minimizing Time Between Cooking and Consumption:

a. Food should ideally be eaten soon after it is prepared.
b. If storing, keep it hot (above 60°C) or refrigerated (below 5°C).

4. Safe Storage of Food:

Improper storage creates an environment for microbial growth, pest problems, and spoilage.

4.1 Refrigeration and Freezing:

a. Perishable foods like milk, eggs, meat, and leftovers should be stored in the refrigerator at or below 4°C.
b. Frozen foods should be kept at -18°C and thawed only in the fridge or under cold water, never at room temperature.

4.2 Dry Food Storage:

a. Store cereals, pulses, and spices in airtight containers in dry, clean, and pest-free places.
b. Storage shelves should be well-ventilated and cleaned regularly.

4.3 Labeling and Rotation:

a. Label all stored food items with dates of preparation or purchase.
b. Follow the FIFO rule (First In, First Out) to avoid waste and spoilage.

4.4 Leftover Management:

a. Store leftovers in clean, covered containers.

b. Do not keep food for more than 24 to 48 hours, even in the refrigerator.
c. Reheat leftovers properly before eating.

5. Common Food-borne Illnesses:

Food-borne illnesses occur from eating contaminated food and are often caused by bacteria, viruses, parasites, or chemicals.

Disease	Causative Agent	Symptoms	Source	Prevention
Typhoid	*Salmonella typhi*	Fever, abdominal pain, diarrhoea	Contaminated water, raw food	Boiled water, hygienic cooking
Cholera	*Vibrio cholerae*	Severe diarrhoea, dehydration	Contaminated food/water	Hand hygiene, clean drinking water
Food Poisoning	*Staphylococcus aureus*	Nausea, vomiting, stomach cramps	Improper handling, spoiled food	Personal and kitchen hygiene
Hepatitis A	Hepatitis A virus	Fever, jaundice, fatigue	Raw shellfish, contaminated food	Cooked food, safe water, vaccination
Amoebiasis	*Entamoeba histolytica*	Diarrhoea, flatulence	Unwashed fruits, vegetables	Washing raw food properly

6. Guidelines for Food Safety at Household and Community Level:

a. Use only fresh, unspoiled ingredients.
b. Store cooked and uncooked food separately.
c. Use food covers to protect from flies, dust, and insects.
d. Dispose of kitchen waste daily and keep the cooking area clean.
e. Teach family members about basic hygiene practices.
f. Community kitchens and food vendors should be trained in FSSAI food safety guidelines.

7. Legal and Regulatory Aspects in India:

The Food Safety and Standards Authority of India (FSSAI), under the Ministry of Health and Family Welfare, is responsible for:

a. Setting scientific standards for food products.
b. Regulating the manufacture, storage, distribution, and sale of food.
c. Conducting inspections and enforcing hygiene standards in food businesses.
d. Raising public awareness through campaigns like “Eat Right India.”

:: **Questionnaire** ::

Define / Explain:

1. Define hygiene.
2. Explain the principles of hygiene with suitable examples.
3. State the importance of maintaining good personal hygiene.
4. Explain different kinds of hygiene with examples.
5. What is community hygiene? Why is it important?
6. Describe the concept of food hygiene and its role in preventing foodborne illnesses.
7. Explain the significance of menstrual hygiene in women's health.
8. What are the steps involved in proper hand washing?

Multiple Choice Questions (MCQs):

1. Which of the following is not a component of personal hygiene?
   a) Hand washing
   b) Dental care
   c) Littering public places
   d) Littering public places ✓
2. The main aim of hygiene is to:
   a) Look smart
   b) Prevent illness and promote health ✓
   c) Spend more money on beauty
   d) Eat more food
3. Which is a good practice for food hygiene?
   a) Leaving food uncovered
   b) Using expired ingredients
   c) Washing hands before cooking ✓
   d) Tasting food with bare fingers
4. Which of the following is a principle of hygiene?
   a) Cleanliness ✓
   b) Carelessness
   c) Laziness
   d) Ignorance
5. Community hygiene does not include:
   a) Clean public toilets
   b) Spitting in public places ✓
   c) Proper drainage
   d) Waste disposal

True or False:

1. Regular hand washing is a key part of personal hygiene. — True
2. Hygiene is only important for sick individuals. — False
3. Food should always be stored in clean, covered containers. — True
4. Community hygiene has no role in preventing diseases. — False
5. Dental care is not necessary if one brushes once a week. — False
6. Menstrual health is an essential part of women's personal hygiene. — True
7. Body odour is unrelated to hygiene. — False

Short Answer Questions:

1. Write any two principles of hygiene.
2. Mention two personal hygiene habits you follow daily.
3. How does proper grooming affect a person's social behavior?
4. List any two common practices to maintain community hygiene.
5. State two ways to store food safely.
6. What is the importance of a good night's sleep in personal hygiene?
7. Why is menstrual health education important for adolescent girls?

8. Give two examples of unhygienic food handling.

Long Answer Questions:

1. Discuss in detail the types of hygiene with relevant examples.
2. Explain the importance of personal hygiene in maintaining individual health and social wellbeing.
3. Describe the role of community hygiene in controlling the spread of infectious diseases.
4. Elaborate on the principles and importance of food hygiene.
5. Write a detailed note on menstrual health, its challenges in rural areas, and suggested hygiene practices.
6. Explain how improper hygiene can lead to communicable diseases and public health issues.
7. Illustrate the relationship between hygiene, sanitation, and public health.

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Chapter No. 05
Public health & hygiene

04 Hrs

Content:

5.1 Common hygiene-related diseases: Food poisoning, giardiasis, diarrhea.

5.2 Importance of community hygiene and public sanitation.

5.3 Hygiene practices in schools and hostels.

5.4 Role of government and NGOs in promoting hygiene (Clean India Campaign, Swachh Bharat Abhiyan, clean village campaigns).

5.1 Common hygiene-related diseases: Food poisoning, giardiasis, diarrhea:

Hygiene-related diseases are caused mainly due to poor sanitation, unsafe food and water consumption, and improper personal hygiene. In developing countries like India, these diseases are major contributors to public health issues, especially in rural areas, slums, and disaster-affected zones. Among the most common diseases in this category are food poisoning, giardiasis, and diarrhoea, which primarily affect the gastrointestinal system and often lead to dehydration, malnutrition, and even death in severe cases if untreated.

1. Food Poisoning:

Definition: Food poisoning is an illness caused by eating food or drinking water that is contaminated with harmful bacteria, viruses, parasites, or toxins. It is a form of acute gastroenteritis and generally occurs suddenly.

Types of Food Poisoning:

- Bacterial: Salmonella, Clostridium botulinum, Staphylococcus aureus, E. coli
- Viral: Norovirus, Rotavirus, Hepatitis A virus
- Parasitic: Giardia, Entamoeba
- Chemical: Pesticide residues, heavy metals (like lead, mercury)
- Fungal Toxins: Aflatoxins from moldy food (especially grains, nuts)

Pathogenesis: When contaminated food enters the digestive tract, microorganisms or their toxins damage the lining of the intestines, causing inflammation, vomiting, and diarrhoea. In some cases, they release toxins into the bloodstream, resulting in systemic effects.

Common Risk Factors:

- Poor cooking practices (undercooked meat, eggs, dairy)
- Street food with poor hygiene
- Cross-contamination in kitchens
- Lack of refrigeration
- Consuming stale or expired food

Symptoms:

- Sudden nausea and vomiting
- Diarrhoea (sometimes bloody)
- Stomach cramps
- Headache
- Mild fever
- Dehydration in severe cases

Complications:

- Severe dehydration
- Electrolyte imbalance
- Sepsis (in rare bacterial infections)
- Neurological symptoms (e.g., botulism)
- Death, especially in children and immunocompromised individuals

Prevention:

- Wash raw fruits and vegetables thoroughly
- Maintain hand hygiene while cooking and eating
- Avoid reheating food multiple times
- Drink only treated, boiled, or bottled water
- Store perishable items in the refrigerator
- Avoid eating food from unhygienic stalls

2. Giardiasis:

Definition: Giardiasis is an intestinal parasitic infection caused by the flagellated protozoan Giardia lamblia (also called G. intestinalis or G. duodenalis). It is spread primarily through ingestion of cysts from contaminated water, food, or via person-to-person contact.

Epidemiology: Giardiasis is especially prevalent in developing countries due to poor water sanitation, open defecation, and lack of public health infrastructure. It is also seen among travellers and children in day-care centres.

Life Cycle of Giardia:

- Ingested Giardia cysts reach the small intestine
- Cysts transform into trophozoites and multiply
- Attach to the intestinal lining, interfering with absorption
- Trophozoites convert back to cysts and are passed in stool

Symptoms:

- Watery or greasy stools that float
- Fatigue and malaise
- Weight loss
- Gas and bloating
- Abdominal cramping
- Nausea and burping with foul smell
- Occasionally asymptomatic

Diagnosis:

- Microscopic examination of stool (for cysts and trophozoites)
- Enzyme immunoassay (EIA) for antigen detection
- PCR tests (in advanced laboratories)

Treatment:

- Metronidazole (first-line drug)
- Tinidazole or Nitazoxanide in resistant cases
- Adequate fluid intake
- Treatment of all household contacts if required

Complications:

- Malabsorption of fats, lactose, and vitamins (especially B12)

- Chronic diarrhoea in children
- Failure to thrive in young children

Prevention:

- Boil drinking water in areas with poor sanitation
- Use water filters or chlorination
- Wash fruits and vegetables properly
- Educate children on personal hygiene
- Improve sanitation facilities in public places and schools

3. Diarrhoea:

Definition: Diarrhoea is defined as the passage of three or more loose or watery stools in a day. It can be acute (lasting less than 14 days) or chronic. It is a major cause of child mortality in India, particularly in areas lacking clean water and sanitation.

Types:

- Acute watery diarrhoea: Often viral, self-limiting
- Acute bloody diarrhoea (Dysentery): Usually bacterial (e.g., Shigella)
- Persistent diarrhoea: Lasts more than 14 days
- Chronic diarrhoea: Associated with underlying conditions like IBS or malabsorption

Causes:

- Viruses: Rotavirus, Norovirus, Adenovirus
- Bacteria: E. coli, Shigella, Salmonella, Campylobacter, Vibrio cholerae
- Protozoa: Giardia, Entamoeba histolytica
- Contaminated water and food
- Poor personal and toilet hygiene
- Side effects of antibiotics

Pathophysiology: Pathogens disrupt the normal absorption of water and electrolytes in the intestine, causing excess fluid to be expelled from the body. Some bacteria release toxins that further damage the gut lining.

Symptoms:

- Frequent loose or watery stools
- Abdominal cramps and pain
- Vomiting (especially in children)
- Fever in infectious cases
- Signs of dehydration: dry lips, decreased urination, lethargy, sunken eyes

Diagnosis:

- Clinical examination and history
- Stool culture and microscopy
- Blood tests for electrolytes if severe

Management:

- ORS (Oral Rehydration Solution): Life-saving and essential
- Zinc tablets: 10–20 mg daily for 10–14 days for children
- Antibiotics: Only when necessary (e.g., bacterial dysentery)
- Nutritional support: Continue breastfeeding and diet during illness

Complications:

- Dehydration leading to shock
- Severe electrolyte imbalance
- Kidney damage
- Growth retardation in children
- Death in extreme cases

Prevention:

- Safe drinking water (boiled, chlorinated, or filtered)
- Proper sanitation (use of toilets, sewage treatment)
- Hand washing with soap after defecation and before eating
- Food hygiene practices
- Rotavirus vaccine for infants

5.2 Importance of community hygiene and public sanitation:

Community hygiene and public sanitation are crucial pillars of public health. In a densely populated country like India, where people live in close-knit communities, the health and wellbeing of individuals are significantly influenced by the sanitary conditions of their surroundings. Poor hygiene practices and inadequate sanitation facilities contribute to the spread of communicable diseases, environmental pollution, and overall deterioration of quality of life.

The focus on community hygiene and sanitation has gained further momentum with national missions like *Swachh Bharat Abhiyan* and increased awareness about disease prevention and environmental cleanliness.

Meaning of Community Hygiene and Public Sanitation:

- Community Hygiene refers to the collective efforts taken by individuals, local authorities, and organizations to maintain cleanliness and promote health within a community setting. It includes practices such as waste disposal, safe water handling, food hygiene, and cleanliness of public spaces.
- Public Sanitation involves the provision and maintenance of sanitary facilities and services such as toilets, sewage systems, solid waste management, and drainage infrastructure. It is largely the responsibility of municipal bodies, but requires active public participation to be successful.

Importance of Community Hygiene and Public Sanitation:

1. Prevention of Communicable Diseases: Poor hygiene and sanitation are primary causes of many communicable diseases such as cholera, typhoid, diarrhoea, hepatitis, and parasitic infections. Proper disposal of human and animal waste, clean drinking water, and hygienic food handling are essential to break the cycle of disease transmission.

2. Promotion of Environmental Health: Sanitation and hygiene help protect water bodies, soil, and air from contamination. Open defecation, untreated sewage, and improper waste disposal pollute the environment, leading to ecological imbalances. Clean surroundings contribute to sustainable development and healthier ecosystems.

3. Enhanced Quality of Life: People living in clean and hygienic communities experience better physical and mental well-being. Clean public spaces reduce stress, increase community pride, and promote a sense of safety and dignity, especially among vulnerable groups like women, children, and the elderly.

4. Improved Child Health and Education: Unhygienic conditions and lack of sanitation facilities

disproportionately affect children. They are more susceptible to infections which may lead to malnutrition, absenteeism from school, and stunted growth. Availability of clean toilets in schools encourages attendance, especially among adolescent girls.

5. Economic Benefits: Investing in sanitation and hygiene saves healthcare costs and increases productivity. Healthy individuals can work efficiently and contribute to economic development. Clean towns and villages also attract tourism and investment.

6. Social Equity and Human Dignity: Access to sanitation is a fundamental human right. Marginalised groups often suffer the most due to poor community hygiene. Promoting inclusive sanitation facilities ensures equity and upholds the dignity of all individuals regardless of caste, class, or gender.

7. Response to Public Health Emergencies: During pandemics like COVID-19, community hygiene becomes even more critical. Practices such as regular handwashing, disinfection of public places, and waste management help control the spread of infections and maintain public order.

Strategies to Promote Community Hygiene and Sanitation:

- Health Education Campaigns: Conduct awareness programmes through schools, community centres, and media to educate people about hygiene practices and their benefits.
- Community Participation: Involve local residents in cleanliness drives, waste segregation, and monitoring of sanitation facilities.
- Infrastructure Development: Ensure proper construction and maintenance of public toilets, drainage systems, and waste collection units.
- Government Initiatives: Implement schemes like *Swachh Bharat Mission*, *Total Sanitation Campaign*, and *National Urban Sanitation Policy*.
- Behavioural Change: Encourage habits like using toilets, handwashing with soap, safe disposal of waste, and avoiding open defecation.

5.3 Hygiene practices in schools and hostels:

Hygiene plays a pivotal role in promoting the health and well-being of individuals, particularly in communal environments such as schools and hostels. These settings accommodate children, adolescents, and young adults who are at a formative stage of life and are highly susceptible to communicable diseases. Maintaining hygienic conditions in such institutions is not only a health requirement but also a vital component of public health education.

This chapter focuses on the hygiene practices essential for schools and hostels to ensure a healthy, safe, and conducive environment for learning and living.

1. Importance of Hygiene in Schools and Hostels:

- Prevents outbreaks of infectious diseases such as diarrhoea, influenza, conjunctivitis, and skin infections.
- Enhances attendance, academic performance, and mental well-being of students.
- Develops lifelong hygiene habits and health consciousness among students.
- Reduces healthcare costs and burden on public health systems.
- Contributes to a clean and safe environment, thereby promoting dignity and comfort.

2. Personal Hygiene Practices for Students:

Students should be educated and regularly reminded to maintain good personal hygiene. Key aspects include:

- Handwashing: Proper handwashing with soap and water before meals, after using the toilet,

and after physical activities.

- Oral Hygiene: Regular brushing of teeth twice a day using fluoride toothpaste.
- Bathing: Daily bathing using clean water and soap to prevent body odour, fungal infections, and lice.
- Nail Care: Keeping nails trimmed and clean to avoid accumulation of dirt and pathogens.
- Footwear: Wearing appropriate, clean footwear to prevent foot infections, especially in hostel bathrooms and common areas.
- Use of Personal Items: Avoiding the sharing of combs, towels, clothes, and other personal belongings.

3. Sanitation and Environmental Hygiene in Schools and Hostels:

The institution must provide and maintain proper sanitation facilities:

a. Toilet Facilities:

- Separate toilets for boys and girls with adequate privacy.
- Regular cleaning and disinfection of toilet areas.
- Availability of water, soap, and sanitary napkins in girls' washrooms.
- Functional flushing and drainage systems to prevent odour and breeding of insects.

b. Drinking Water:

- Safe, potable drinking water should be available at multiple locations.
- Use of water purifiers or regular chlorination of storage tanks.
- Periodic testing of water quality for microbial and chemical contaminants.

c. Waste Disposal:

- Proper segregation of waste (biodegradable, non-biodegradable, hazardous).
- Covered dustbins in all rooms and corridors.
- Regular collection and scientific disposal of solid waste by local authorities.

d. Cleanliness of Premises:

- Daily sweeping and mopping of classrooms, dormitories, and common areas.
- Weekly deep-cleaning of bathrooms, kitchens, and storage areas.
- Regular pest control to manage rodents, cockroaches, mosquitoes, etc.

4. Food Hygiene in Hostel Mess and School Canteens:

Food hygiene is crucial in preventing food-borne illnesses among students. Key practices include:

- Clean and sanitised kitchen environment.
- Proper storage of raw and cooked food items.
- Use of fresh and hygienic ingredients.
- Regular medical check-up of food handlers.
- Wearing of gloves, hairnets, and aprons by kitchen staff.
- Inspection of utensils, water supply, and waste disposal in the kitchen.

5. Health Education and Behavioural Training:

Health education should be an integral part of the school curriculum. This includes:

- Organising awareness programmes on personal hygiene, menstruation, nutrition, etc.
- Display of informative posters and charts on hygiene practices.
- Training students in first aid and emergency response.
- Encouraging peer-to-peer health promotion activities.

6. Role of Authorities and Stakeholders:

a. School and Hostel Administration:

- Implement and monitor hygiene policies and standard operating procedures.
- Maintain hygiene records and inspection reports.
- Appoint trained cleaning and sanitation staff.
- Conduct periodic health check-ups and vaccination drives.

b. Teachers and Wardens:

- Act as role models by demonstrating good hygiene behaviour.
- Monitor hygiene compliance among students.
- Address hygiene-related complaints promptly and empathetically.

c. Parents and Guardians:

- Reinforce hygiene practices at home.
- Provide personal hygiene kits (toothbrush, soaps, towels, etc.) to their wards.
- Stay informed about the health conditions of the child.

7. Special Considerations for Girls' Hygiene:

- Ensure menstrual hygiene management with access to sanitary napkins or menstrual cups.
- Maintain privacy and dignity in washrooms and changing areas.
- Educate about menstrual health, dispelling myths and stigma.

8. Challenges and Recommendations:

Challenges:

- Overcrowding in hostels.
- Limited budget and resources.
- Inadequate water supply or sanitation infrastructure.
- Lack of awareness and behavioural resistance.

Recommendations:

- Collaboration with NGOs and health departments for hygiene promotion.
- Incorporating hygiene evaluation in school inspections.
- Setting up student health clubs and hygiene committees.
- Encouraging community involvement in hygiene campaigns.

5.4 Role of government and NGOs in promoting hygiene (Clean India Campaign, swachh bharat abhiyan, clean village campaigns):

Hygiene and sanitation are the cornerstones of public health. Poor sanitation contributes to the spread of diseases such as diarrhoea, cholera, dysentery, and hepatitis. In a populous and developing country like India, the promotion of hygiene is a shared responsibility of the government, non-governmental organisations (NGOs), and the citizens themselves. Recognising this, India has launched ambitious programmes like the *Clean India Campaign*, *Swachh Bharat Abhiyan*, and *Clean Village Campaigns*. These initiatives reflect the commitment to create a cleaner, healthier, and more dignified environment for all citizens, especially in rural and underserved urban areas.

1. Role of Government in Promoting Hygiene:

The Government of India has implemented robust policies, schemes, and missions to address the challenges of hygiene and sanitation. Its approach is multi-dimensional—focusing on infrastructure, education, behavioural change, and community mobilisation.

1.1 Swachh Bharat Abhiyan (SBA) – A Mass Movement for Cleanliness:

Swachh Bharat Abhiyan was launched by the Prime Minister of India on 2nd October 2014, to honour the vision of Mahatma Gandhi, who believed that "cleanliness is next to godliness." It aimed to achieve a clean and open defecation free (ODF) India by 2nd October 2019.

Key Objectives:

- Eliminate open defecation in all rural and urban areas.
- Construct individual and community toilets, especially for vulnerable groups.
- Promote behavioural change through Information, Education, and Communication (IEC) activities.
- Manage solid and liquid waste scientifically.
- Encourage community involvement and build local capacity.

Impact and Achievements:

- More than 100 million toilets constructed across the country.
- Around 6 lakh villages declared Open Defecation Free (ODF).
- Substantial reduction in the incidence of sanitation-related diseases.
- Rise in women's dignity and safety due to improved toilet access.
- Incorporation of cleanliness and hygiene in school curricula.

1.2 Clean India Campaign – Extending Hygiene to All Sectors:

While Swachh Bharat Abhiyan provided a framework, the Clean India Campaign ensured the participation of all ministries, sectors, and civil society. This campaign focused on cleanliness in public places and facilities.

Major Focus Areas:

- Railways: Clean platforms, trains, and waiting areas.
- Hospitals: Sanitary conditions in government healthcare facilities.
- Schools and Colleges: Clean toilets, drinking water, and hygiene education.
- Tourist Spots and Monuments: Regular sanitation and dustbin placements.
- Government Offices: Clean corridors, washrooms, and surroundings.

Special Drives under the Campaign:

- Swachhta Hi Seva (Cleanliness is Service): A fortnight-long campaign before Gandhi Jayanti involving citizens, celebrities, and institutions.
- Plastic Waste Management Week: Awareness drives to eliminate single-use plastic.
- Swachh Survekshan: Annual cleanliness ranking of cities by the Ministry of Housing and Urban Affairs.

1.3 Clean Village Campaigns – Empowering Rural India:

The government has emphasised village-level hygiene through Gramin Swachhata Abhiyan, implemented by the Ministry of Jal Shakti under the Department of Drinking Water and Sanitation.

Key Features:

- Involvement of Gram Panchayats and Village Sanitation Committees.
- Construction of toilets under the Swachh Bharat Gramin component.
- Programmes such as Swachh Sundar Shauchalaya competitions.
- Solid waste management and composting units in rural areas.
- Use of Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA) for labour and maintenance of sanitation infrastructure.

Recognition and Incentives:

- Awards like Nirmal Gram Puraskar and Swachh Gram Awards given to villages and blocks showing excellence in cleanliness.

2. Role of NGOs in Promoting Hygiene:

Non-Governmental Organisations (NGOs) play a vital complementary role to the government. They engage with communities, build awareness, train local volunteers, and advocate for sustainable hygiene practices.

2.1 Education, Awareness, and Advocacy:

NGOs are instrumental in conducting door-to-door awareness campaigns, health and hygiene education sessions, and community meetings to promote:

- Handwashing with soap.
- Use and maintenance of toilets.
- Safe disposal of child and menstrual waste.
- Prevention of waterborne diseases.

They use culturally appropriate tools such as folk songs, dramas, puppet shows, posters, and wall paintings.

2.2 Supporting Infrastructure and Access:

Many NGOs work in partnership with governments or donors to build or upgrade sanitation facilities. Their activities include:

- Installing eco-friendly and water-saving toilets.
- Constructing incinerators for menstrual waste.
- Setting up community handwashing stations and water filters.
- Promoting rainwater harvesting to support hygiene in water-scarce areas.

2.3 Community Engagement and Behaviour Change:

Behaviour change is a long-term process. NGOs help by:

- Forming Self-Help Groups (SHGs) to spread hygiene messages.
- Training schoolchildren as hygiene ambassadors.
- Mobilising local youth and volunteers for village sanitation drives.
- Conducting follow-up visits to ensure toilets are used and maintained.

2.4 Monitoring, Evaluation, and Policy Support:

NGOs assist in surveying communities, evaluating programmes, and sharing data with local authorities. They often pilot innovative models that can be replicated by governments.

Prominent NGOs Working in Hygiene Promotion:

NGO Name	Key Contributions
Sulabh International	Pioneer in public toilets, bio-toilets, and sanitation education.
WaterAid India	Works in WASH (Water, Sanitation, and Hygiene) across slums and villages.
Gramalaya	Promotes total sanitation, especially among women in rural South India.
SEWA (Self-Employed Women's Association)	Focuses on sanitation for working women and street vendors.
Save the Children India	Hygiene programmes for schoolchildren and vulnerable

	families.

:: **Questionnaires** ::

A. Define/Explain:

1. Define public health.
2. Explain hygiene practices in schools and hostels.
3. Define food poisoning and state its causes.
4. What is giardiasis? How is it transmitted?
5. Explain the importance of community hygiene.
6. Define public sanitation and its components.
7. Write a short note on the Clean India Campaign.
8. What is the role of non-governmental organisations (NGOs) in hygiene promotion?

B. Multiple Choice Questions:

1. Which microorganism commonly causes giardiasis?
   a) Escherichia coli
   b) Giardia lamblia ✅
   c) Salmonella typhi
   d) Vibrio cholerae
2. The Swachh Bharat Abhiyan was launched in:
   a) 2005
   b) 2010
   c) 2014 ✅
   d) 2019
3. Which of the following is *not* a symptom of food poisoning?
   a) Vomiting
   b) Skin rash ✅
   c) Diarrhoea
   d) Abdominal cramps
4. Which one of these diseases is waterborne?
   a) Influenza
   b) Tuberculosis
   c) Diarrhoea ✅
   d) Malaria
5. Community hygiene refers to:
   a) Personal grooming only
   b) Cleanliness of only school buildings
   c) Sanitation at home
   d) Collective efforts to maintain cleanliness in surroundings ✅

C. True or False:

1. Swachh Bharat Abhiyan was initiated by the Ministry of Environment. ❌
2. Proper handwashing can reduce the spread of diarrhoeal diseases. ✅

3. Food poisoning only occurs due to consuming expired food. ❌
4. Clean hostels promote better health and academic performance. ✅
5. Giardiasis is caused by a virus. ❌

D. Short Answer Questions:

1. Mention any three symptoms of diarrhoea.
2. How can hygiene be maintained in a school canteen?
3. Give three examples of government schemes related to sanitation.
4. List any three preventive measures against food poisoning.
5. Write any three roles of NGOs in promoting hygiene in rural areas.

E. Long Answer Questions:

1. Discuss the causes, symptoms, prevention, and treatment of food poisoning and giardiasis.
2. Explain the role of community hygiene and public sanitation in preventing the spread of diseases.
3. Describe various hygiene practices that should be followed in schools and hostels for maintaining health.
4. Elaborate on the role of government and NGOs in promoting hygiene with reference to initiatives like the Swachh Bharat Abhiyan, Clean India Campaign, and clean village campaigns.
5. Why is public health education important for sustainable development? Give examples.

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Chapter No. 06
Health administration

05 Hrs

Content:

6.1 Structure and management of health services from national to local levels.

6.2 National health policies and government health initiatives in India, health communication methods for spreading awareness.

6.3 WHO Programme - Government and voluntary organizations and their health services.

6.4 Case study: Covid -19 pandemic, significant changes and adaptation: testing and diagnosis (swab and RT - PCR), vaccine development and preventive measures.

6.1 Structure and management of health services from national to local levels:

Health is a fundamental human right, and the provision of quality health services is the responsibility of every government. In India, a vast and complex healthcare delivery system operates at different levels, from national to grassroots. Understanding this structure is essential to comprehend how healthcare reaches the population and how various institutions are interlinked to deliver medical, preventive, and promotive services.

1. National Level Health Services:

At the apex of the health system is the Ministry of Health and Family Welfare (MoHFW), Government of India. It is responsible for framing policies, plans, regulations, and funding allocations for health and family welfare programmes.

Key Divisions under MoHFW:

- Department of Health and Family Welfare
- Department of Health Research
- National Health Authority (NHA) – Implements Ayushman Bharat - Pradhan Mantri Jan Arogya Yojana (AB-PMJAY)

Functions at the National Level:

- Policy formulation (e.g., National Health Policy)
- Designing and launching health programmes (e.g., National TB Elimination Programme, National AIDS Control Programme)
- Funding to states and UTs under centrally sponsored schemes
- Monitoring and evaluation
- Capacity building and training of human resources
- Regulation of medical education and institutions (e.g., through NMC)

National Institutes:

- All India Institute of Medical Sciences (AIIMS)
- Indian Council of Medical Research (ICMR)
- National Institute of Health and Family Welfare (NIHFW)
- Central Government Health Scheme (CGHS)

2. State Level Health Services:

Each state in India has its own State Health Department, headed by the Health Minister and managed by the Principal Secretary/Commissioner of Health.

State-Level Responsibilities:

- Implementation of national programmes with local adaptations
- Management of state-run hospitals and medical colleges
- Recruitment of medical and paramedical staff
- Regulation of private hospitals and diagnostic centres
- Coordination with district and local bodies
- Budgeting and resource allocation

State-Level Institutions:

- State Health Directorate
- State Institute of Health and Family Welfare
- Medical Colleges and State Referral Hospitals

3. District Level Health Services:

The District Health System is the backbone of health service delivery in India. The Chief Medical Officer (CMO) or District Health Officer (DHO) is responsible for all public health activities in the district.

Key Components:

- District Hospital – Tertiary care and referral services
- Community Health Centres (CHCs) – Secondary-level care with specialists
- Primary Health Centres (PHCs) – Basic curative and preventive services
- Sub-Centres (SCs) – Grassroot-level service units for maternal, child health and immunization

District-Level Activities:

- Implementation of national health programmes (e.g., Pulse Polio Campaign, Janani Suraksha Yojana)
- Health education and awareness campaigns
- Monitoring disease outbreaks and implementing control measures
- Public health surveillance and reporting

4. Block and Village Level Health Services:

Health services reach the rural population through a network of PHCs, sub-centres and health workers.

Primary Health Centres (PHCs):

- Usually one PHC for every 30,000 population
- Staff includes a Medical Officer, Nurses, Health Workers (Male/Female), Lab Technician

Sub-Centres (SCs):

- Cover around 5,000 people in plain areas and 3,000 in tribal/hilly regions
- Staffed by Auxiliary Nurse Midwives (ANMs) and Multi-purpose Health Workers
- Provide maternal and child health services, immunisation, family planning, etc.

Accredited Social Health Activists (ASHAs):

- Community-level female health volunteers under the National Health Mission (NHM)
- Bridge between community and health system
- Key roles: Counselling, mobilising, creating awareness, escorting pregnant women, home visits

5. Urban Health Services:

Urban populations, particularly the poor, are catered through:

- Urban Primary Health Centres (UPHCs)
- Municipal Hospitals and Dispensaries
- Mobile Medical Units
- Health posts under National Urban Health Mission (NUHM)

These cater to the slum and underserved areas with focus on reproductive, maternal, child, and adolescent health.

6. Integration through the National Health Mission (NHM):

The National Health Mission is the umbrella programme launched to provide accessible, affordable and quality healthcare in both rural and urban areas.

Two major sub-missions:

- National Rural Health Mission (NRHM) – For rural areas
- National Urban Health Mission (NUHM) – For urban poor

Objectives of NHM:

- Strengthening health infrastructure
- Skilled human resource development
- Decentralised planning
- Community participation through Rogi Kalyan Samitis (RKS) and Village Health Sanitation and Nutrition Committees (VHSNCs)

7**. Role of Local Bodies in Health Management**:

Panchayati Raj Institutions (PRIs):

- Gram Panchayats play a key role in village-level health planning
- Participate in immunisation drives, sanitation campaigns, and health awareness
- Supervision of local health workers

Municipal Corporations and Councils:

- Operate urban hospitals and dispensaries
- Implement water sanitation and vector control programmes
- Regulate food safety and waste management

Chart: Structure and Management of Health Services in India

Level	Institutions/Components	Functions/Responsibilities
1. National Level	- Ministry of Health & Family Welfare (MoHFW) - NHA, ICMR, AIIMS, NIHFW, CGHS	- Policy formulation (e.g., National Health Policy) - Design and launch health programs (e.g., NACP, NTEP) - Regulation, funding, training, evaluation
Departments under MoHFW	- Dept. of Health & Family Welfare - Dept. of Health Research - National Health Authority (NHA)	- AB-PMJAY implementation - Health research coordination - Family welfare schemes
2. State Level	- State Health Department - State Health Directorate - State Medical Colleges - SIHFW	- Programme implementation at state level - Regulation of hospitals - Budgeting, staff recruitment - Coordination with district/local levels

3. District Level	- District Hospital - CHCs, PHCs, SCs - District Health Officer/CMO	- Deliver curative and preventive services - National programme implementation - Disease monitoring - Health education and surveillance
4. Block & Village Level	- PHCs (1 per 30,000 population) - SCs (1 per 5,000; 3,000 in tribal areas) - ASHAs	- Grassroots health delivery - Maternal & child care, immunisation, FP - Community outreach by ASHAs for awareness and escort services
Staffing at Local Level	- MO, Nurses, ANMs, MPHWs, Lab Technicians - ASHAs (under NHM)	- Home visits, counselling, mobilisation, health promotion
5. Urban Health Services	- UPHCs - Municipal Hospitals & Dispensaries - Mobile Units - Health Posts (NUHM)	- Health care for urban poor/slum dwellers - Maternal, child, adolescent care - Outreach in underserved urban areas
6. National Health Mission	- NRHM (Rural) - NUHM (Urban)	- Strengthen rural & urban health infra - HR development, planning, participation - RKS & VHSNCs for local health governance
7. Local Bodies	- Panchayati Raj Institutions (PRIs) - Municipal Corporations & Councils	- Village health planning, sanitation drives, health awareness - Urban sanitation, food safety, waste management, water & vector control

6.2 National health policies and government health initiatives in India, health communication methods for spreading awareness:

Public health is a priority area for any developing nation. In India, the Government has consistently aimed to ensure the availability, accessibility, affordability, and quality of healthcare services through various health policies and national initiatives. These programmes reflect the vision of providing health for all, reducing the burden of communicable and non-communicable diseases, and promoting overall well-being.

1. National Health Policies of India:

The National Health Policy (NHP) acts as a guiding framework for health planning and policy-making in the country. It outlines objectives, strategies, and policy directions for improving public health.

A. National Health Policy, 1983:

- The first comprehensive health policy of India.
- Focused on universal provision of primary healthcare, especially in rural areas.
- Emphasised the role of community health workers and health education.

B. National Health Policy, 2002:

- Aimed at improving access to the decentralised public health system.
- Encouraged public-private partnerships.
- Stressed on disease surveillance, sanitation, and women's health.

C. National Health Policy, 2017:

- Latest policy reflecting Sustainable Development Goals (SDGs) and universal health coverage.
- Emphasises preventive healthcare, Ayushman Bharat, and digital health records.
- Seeks to increase public health expenditure to 2.5% of GDP.
- Aims to reduce maternal mortality ratio, infant mortality, and improve life expectancy.

2. Major Government Health Initiatives and Programmes:

The Government of India has launched numerous schemes and missions to achieve health equity and improve public health indicators.

A. National Health Mission (NHM):

Launched in 2013 by combining the National Rural Health Mission (NRHM) and the National Urban Health Mission (NUHM).

- Focus areas: maternal and child health, adolescent health, family planning, and nutrition.
- Promotes ASHA workers, mobile medical units, community participation, and health infrastructure.

B. Ayushman Bharat – Pradhan Mantri Jan Arogya Yojana (PM-JAY):

Launched in 2018, it is the world's largest government-funded healthcare programme.

- Provides ₹5 lakh per family per year for secondary and tertiary hospitalisation.
- Beneficiaries are identified based on the Socio-Economic Caste Census (SECC).
- Establishes Health and Wellness Centres (HWCs) for preventive and promotive healthcare.

C. Universal Immunization Programme (UIP):

Started in 1985, aims to protect children and pregnant women from vaccine-preventable diseases.

- Covers vaccines for diseases like TB, polio, hepatitis B, diphtheria, measles, etc.
- Includes Mission Indradhanush to intensify immunisation in underserved areas.

D. National AIDS Control Programme (NACP):

- Aims to control the spread of HIV/AIDS.
- Encourages voluntary testing, awareness, anti-retroviral therapy, and blood safety.

E. Swachh Bharat Abhiyan (Clean India Mission):

Launched in 2014 to promote sanitation and hygiene.

- Construction of toilets, open defecation-free villages, and solid waste management.
- Strong link with public health outcomes, especially in rural and slum areas.

F. POSHAN Abhiyaan (National Nutrition Mission):

- Launched to tackle malnutrition and low birth weight in children and anaemia among women.
- Encourages community-based nutrition awareness and counselling.

G. National Mental Health Programme (NMHP):

- Focuses on awareness, diagnosis, and treatment of mental illnesses.
- Strengthens mental health services at primary healthcare levels.

Health Communication Methods for Spreading Awareness:

1. Importance of Health Communication

Health communication plays a crucial role in informing, educating, and motivating individuals and communities about healthy behaviours. Effective communication can lead to positive health choices, better disease management, and preventive practices.

2. Types of Health Communication Methods:

A. Mass Media Campaigns:

- Use of TV, radio, newspapers, cinema, and digital platforms.

- Examples: Pulse Polio campaign, COVID-19 awareness ads, anti-smoking advertisements.
- Advantages: Wide reach, cost-effective, and impactful messaging.

B. Interpersonal Communication:

- Direct interactions through ASHA workers, Anganwadi workers, nurses, and doctors.
- Helps in behavioural change communication (BCC) at the grassroots level.
- Promotes trust and clarity, especially in rural or low-literacy populations.

C. Community-Based Approaches:

- Organisation of health camps, street plays (nukkad nataks), rallies, and public lectures.
- Involve NGOs, self-help groups, local leaders, and school children.
- Enhances community ownership and participation.

D. School and College-Based Awareness:

- Integration of health topics in curriculum and co-curricular activities.
- Observance of World Health Day, Nutrition Week, Sanitation Drives.
- Peer-led communication is effective among youth.

E. Digital and Social Media Tools:

- Use of web portals, mobile health apps, SMS alerts, and YouTube videos.
- Platforms like MyGov, CoWIN, and Aarogya Setu played a vital role during COVID-19.
- Helps in targeting urban youth and tech-savvy population.

3. Government Bodies and Agencies for Health Communication:

- Ministry of Health and Family Welfare (MoHFW): Designs and executes national awareness programmes.
- National Health Systems Resource Centre (NHSRC) and IEC Bureaus: Develop educational material and strategies.
- Prasar Bharati, Doordarshan, and All India Radio: Widely used for public health messages.

6.3 WHO Programme - Government and voluntary organizations and their health services:

Health is a basic human right, and ensuring health for all requires the combined efforts of international organisations, national governments, and voluntary (non-governmental) bodies. The World Health Organization (WHO) plays a vital role in setting health priorities globally, while the Government of India and voluntary organisations implement health services and programmes to meet public health needs. This synergy helps in achieving sustainable health development goals (SDGs) and better health outcomes for the population.

1. WHO Programmes and Their Global and Indian Impact:

The World Health Organization (WHO) is the leading international public health agency. It designs health programmes, provides technical support, monitors health threats, and partners with governments to implement policies. WHO focuses on promoting health, keeping the world safe, and serving the vulnerable.

Key WHO Programmes Influencing India's Public Health:

1. Expanded Programme on Immunization (EPI):
    - Launched in 1974 globally by WHO.
    - Focuses on universal immunisation of children against vaccine-preventable diseases.
    - In India, it became the Universal Immunisation Programme (UIP), now covering diseases like polio, measles, hepatitis B, and rotavirus.

2. Global Polio Eradication Initiative (GPEI):
    - WHO partnered with India and other stakeholders to eradicate polio.
    - India was declared polio-free in 2014, a significant achievement under this programme.
3. Integrated Disease Surveillance Programme (IDSP):
    - Supported by WHO for strengthening disease outbreak surveillance in India.
    - Helps detect and respond to emerging and re-emerging diseases.
4. Mental Health Action Plan:
    - Promotes mental health services in collaboration with Indian health missions.
    - WHO provides technical support and training for mental healthcare workers.
5. COVID-19 Response and Vaccination:
    - WHO coordinated with India for testing, treatment protocols, and COVAX vaccine distribution.
    - Provided PPE kits, training, and public communication guidance.
6. Reproductive, Maternal, Newborn, Child and Adolescent Health (RMNCH+A):
    - WHO supports India's implementation of this framework through policy guidance and monitoring tools.
7. Universal Health Coverage (UHC):
    - WHO promotes access to quality and affordable healthcare without financial hardship.
    - Supports Indian schemes like Ayushman Bharat through technical collaboration.

2. Government Health Services in India:

The Government of India, through the Ministry of Health and Family Welfare (MoHFW) and allied bodies, manages an extensive health delivery network. Health services are structured from national to village levels, integrating preventive, promotive, and curative care.

Key Government Health Programmes and Services:

- National Health Mission (NHM): Covers rural and urban health, maternal and child care, non-communicable diseases, and infrastructure development.
- Ayushman Bharat – PM-JAY: Provides financial protection for secondary and tertiary healthcare.
- Janani Suraksha Yojana (JSY) and Janani Shishu Suraksha Karyakram (JSSK): Encourage safe motherhood and neonatal care.
- TB Elimination Programme, Malaria Control, HIV/AIDS Control Programme: All receive technical support from WHO and operate through public health institutions.

Public Health Infrastructure:

- Sub-centres, Primary Health Centres (PHCs), Community Health Centres (CHCs), and District Hospitals form the backbone of government health service delivery.
- Mobile Medical Units (MMUs) and telemedicine initiatives enhance reach to underserved areas.

3. Voluntary Organisations and Their Health Services:

Voluntary organisations, also known as Non-Governmental Organisations (NGOs), play a supplementary and often innovative role in delivering health services, especially in rural, tribal, and slum areas. They act as a bridge between the community and government.

Roles Played by Voluntary Organisations:

- Health education, awareness, and behavioural change communication

- Running health clinics and mobile health units
- Special care for diseases like leprosy, tuberculosis, HIV/AIDS, cancer
- Mental health and rehabilitation services
- Training health workers and volunteers

Noteworthy Indian Voluntary Health Organisations:

1. Indian Red Cross Society – Offers disaster relief, first aid training, blood banks, and health education.
2. The Leprosy Mission Trust India – Focuses on diagnosis, treatment, and social rehabilitation of leprosy-affected persons.
3. HelpAge India – Works for elderly health and rights, including mobile health care for senior citizens.
4. Smile Foundation – Provides healthcare and education to underprivileged children and families.
5. SEWA (Self-Employed Women's Association) – Runs health insurance and clinics for women workers.
6. Public Health Foundation of India (PHFI) – Engaged in health research, education, and policy advocacy.

4. Collaboration between WHO, Government, and Voluntary Sector:

Health outcomes improve significantly when international agencies, national authorities, and civil society work together.

- WHO provides global standards, health intelligence, and technical support.
- The Government builds infrastructure, manpower, and programme execution.
- Voluntary organisations ensure community involvement, last-mile delivery, and monitoring.

For example:

- During COVID-19, WHO guidelines were adopted by the Indian government while NGOs facilitated awareness, vaccine drives, and food/medicine distribution.
- In polio eradication, WHO monitored and guided the campaign, government delivered the vaccines, and NGOs mobilised local communities.

6.4 Case study: Covid -19 pandemic, significant changes, and adaptation: testing and diagnosis (swab and RT - PCR), vaccine development and preventive measures:

The COVID-19 pandemic, caused by the SARS-CoV-2 virus, marked a critical chapter in global and Indian public health history. First identified in December 2019, the outbreak rapidly evolved into a global health emergency, challenging health systems, economies, and daily life across nations. India, with its vast population, faced enormous challenges but responded with swift public health measures, widespread testing, rapid vaccine development, and robust preventive strategies.

1. Testing and Diagnosis:

Swab Testing:

Swab testing was the first and most widely used method for collecting respiratory samples from suspected COVID-19 patients.

- Nasopharyngeal and oropharyngeal swabs were commonly used to collect samples from the throat and nasal cavity.
- Samples were collected by trained healthcare workers using personal protective equipment

(PPE).

- The swab samples were then sent to laboratories for RT-PCR analysis, which became the gold standard for COVID-19 diagnosis.

RT-PCR (Reverse Transcription–Polymerase Chain Reaction):

- RT-PCR testing detects the viral RNA of SARS-CoV-2 in swab samples.
- The test first converts RNA into complementary DNA (cDNA) using reverse transcription.
- The cDNA is then amplified using the polymerase chain reaction (PCR) to detect specific viral genes.

Advantages:

- High sensitivity and specificity
- Early detection, even in asymptomatic individuals
- Used for confirming active infections

Challenges:

- Required laboratory infrastructure and trained staff
- Turnaround time could vary from 6 to 24 hours depending on lab capacity

Other Diagnostic Innovations:

- Rapid Antigen Tests (RATs): Provided results in 15–30 minutes, suitable for mass screening.
- TrueNat and CBNAAT: Portable molecular testing devices adapted from tuberculosis diagnostics, useful in remote and rural areas of India.

2. Vaccine Development:

India played a significant role in the global vaccine response to COVID-19 by developing and manufacturing vaccines at record speed.

Phases of Vaccine Development:

1. Preclinical Research – Animal trials for safety
2. Clinical Trials:
    - Phase I: Safety in small groups
    - Phase II: Immune response in larger groups
    - Phase III: Efficacy and side-effect profile in thousands
3. Emergency Use Authorisation (EUA) – Given during public health emergencies

Major Vaccines in India:

Vaccine	Type	Developer	Key Features
Covaxin	Inactivated virus	Bharat Biotech in collaboration with ICMR	Fully indigenously developed
Covishield	Viral vector	Serum Institute of India (Oxford-AstraZeneca)	Most widely used in India
Sputnik V	Viral vector	Gamaleya Institute, Russia	Limited use under EUA

- Vaccination Drive in India started on 16 January 2021, targeting healthcare workers, followed by senior citizens, adults, and later adolescents.
- The CoWIN platform was introduced for online registration, vaccination tracking, and digital certification.
- India administered over 2 billion doses, making it the largest vaccination drive in the world.

3. Preventive Measures:

Since treatment options were limited in the early stages, prevention became the most effective method to control the pandemic.

a) Personal Hygiene and Safety Protocols:

- Mandatory wearing of face masks in public
- Frequent handwashing and use of alcohol-based sanitisers
- Cough and sneeze etiquette (use of elbow or tissue)
- Avoiding touching the face, nose, and eyes

b) Social and Physical Distancing:

- Keeping a minimum distance of 1–2 metres from others
- Reducing physical gatherings, festivals, and events
- Implementation of work from home and online education

c) Quarantine and Isolation:

- Home quarantine for contacts of confirmed cases
- Institutional isolation for symptomatic or high-risk patients
- Use of COVID Care Centres (CCCs) and dedicated COVID hospitals

d) Travel and Mobility Restrictions:

- Nationwide lockdown was declared from 24 March 2020
- Curfews, restrictions on inter-state travel, and international flight bans

e) Public Awareness Campaigns:

- Government launched campaigns like:
    a) "Do Gaj ki Doori" (Maintain two yards of distance)
    b) "Mask Hai Zaroori" (Masks are essential)
    c) "Break the Chain"
- Use of mobile messages, radio, television, and social media for mass education

f) Disinfection and Public Sanitation:

- Frequent cleaning of public places, buses, trains, markets
- Thermal screening at airports, railway stations, and malls
- Use of automated sanitising tunnels in crowded areas

4. Key Lessons and Public Health Impact:

- Strengthening of Health Infrastructure: Increase in ICU beds, oxygen plants, ventilators, and testing labs
- Promotion of Digital Health Tools: Aarogya Setu app for contact tracing and risk assessment
- Boost to Indigenous Research: Self-reliant vaccine production and diagnostic development
- Global Solidarity and Collaboration: India’s "Vaccine Maitri" initiative to supply vaccines to other countries

(Image credit: ttps://www.flickr.com)

:: **Questionnaires** ::

Define / Explain the Following:

- Define health administration and its key objectives.
- Explain the structure of health services from national to local levels in India.
- Define National Health Policy and mention its importance.
- Explain the term health communication with suitable examples.
- Describe the role of the World Health Organization (WHO) in international health services.
- Explain how voluntary organisations contribute to public health in India.
- Define RT-PCR testing and explain its significance during the COVID-19 pandemic.
- Explain vaccine development in the context of COVID-19.
- Define preventive measures and list those implemented during the COVID-19 outbreak.
- Describe the function of the CoWIN platform developed by the Indian Government.

Multiple Choice Questions (MCQs):

1. Which of the following is the apex body for health planning in India?
   a) Ministry of AYUSH
   b) Indian Red Cross Society
   c) NITI Aayog
   d) Central Council for Health and Family Welfare
   Answer: c) NITI Aayog
2. What is the primary purpose of the RT-PCR test in COVID-19 diagnosis?
   a) Detect antibodies
   b) Detect viral RNA
   c) Monitor body temperature
   d) Detect red blood cell count
   Answer: b) Detect viral RNA
3. Covaxin was developed by which Indian organisation?
   a) Serum Institute of India

b) Bharat Biotech
c) ICMR
d) AIIMS
Answer: b) Bharat Biotech

4. Which of the following is a government health initiative?
   a) Swachh Bharat Abhiyan
   b) Green India Mission
   c) Beti Bachao Beti Padhao
   d) Digital India Programme
   Answer: a) Swachh Bharat Abhiyan
5. Which mobile application was used for contact tracing during the COVID-19 pandemic in India?
   a) Aayush App
   b) CoWIN
   c) Aarogya Setu
   d) MyHealth India
   Answer: c) Aarogya Setu

True or False:

1. WHO is a global intergovernmental health organisation. (True)
2. RT-PCR detects DNA from the coronavirus. (False)
3. Indian Red Cross Society is a voluntary organisation. (True)
4. The National Health Policy 2017 focuses only on curative care. (False)
5. COVID-19 vaccines in India were distributed through the CoWIN platform. (True)

Short Answer Questions:

1. List the main components of India's health service structure.
2. Mention any four objectives of the National Health Policy 2017.
3. State two differences between government and voluntary health organisations.
4. How did India use health communication to promote awareness during COVID-19?
5. What are the key differences between RT-PCR and Rapid Antigen Tests?
6. What was the role of digital tools like Aarogya Setu during the pandemic?
7. Describe the significance of social distancing and personal hygiene during COVID-19.
8. Name any two COVID-19 vaccines used in India and state their developers.

Long Answer Questions:

1. Write about the structure and management of health services in India from national to village level.
2. What are the aims and importance of National Health Policies in India? Give examples like Ayushman Bharat or Janani Suraksha Yojana.
3. What is health communication? How did the government spread health awareness during COVID-19?
4. What roles do WHO, government, and voluntary organisations play in public health services?
5. Write a case study on COVID-19 in India. Include testing (swab and RT-PCR), vaccine development, and preventive steps.

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