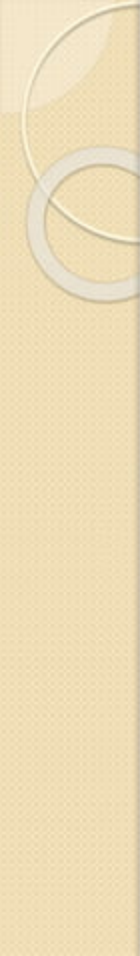




# EPIDEMIOLOGY

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- Epidemiology is defined as the detailed scientific study of frequency, distribution and determinants of disease or disability in society.
  - The studies cover sources and modes of transmission of an infection occurring endemically or erupting as an epidemic in community.

# Scope of Epidemiology

## 1) **Disease frequency:**

- ✓ Measurement of frequency of disease or disability or death and summarizing this information in the form of rates and ratio. ( Prevalence rate, Incidence rate, death rate etc)
- ✓ These rates are required for comparing the frequency in different population

## 2) **Distribution of disease:**

- ✓ This involves the determination of the pattern of the disease distribution in relation to time, place and person.
- ✓ Epidemiologist examine whether there has been an increase or decrease of disease over a given period of time, whether the disease is occurring more in women or men.

### 3) **Determinants of Disease:**

- ✓ This aspect is concerned with the testing etiological hypothesis and identifying underlying causes and risk factors of a disease.
- ✓ This aspects of epidemiology is known as analytical epidemiology.

## Aim of epidemiology

- To describe the distribution and size of the disease in population
- To identify aetiological factors in the causation of disease.
- To provide the data required for the planning, implementation and evaluation of health programmes.

# Uses of Epidemiology

- ❖ To study the history of disease pattern in the population.
- ❖ To arrive at community diagnosis. This is necessary for initiating preventive and control measures.
- ❖ To plan and evaluate health services.
- ❖ Evaluations of individual risks
- ❖ Search for cause and risk factors
- ❖ Identification of disease syndromes

# Methods of Epidemiology

- 1) Quantitative studies
- 2) Descriptive Epidemiology
- 3) Analytical Epidemiology
- 4) Experimental Epidemiology

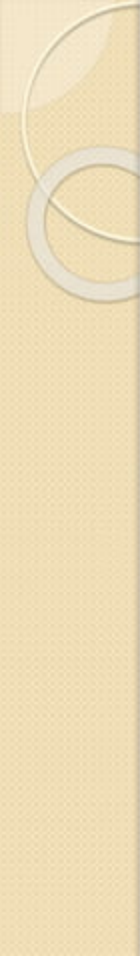


## Quantitative methods

- The basic measurements used in epidemiology are:
  - a) **Rate**: Measures the occurrence of a particular event in a population during given time period.
  - b) **Ratio**: it express a relation in size between two random quantities.
  - c) **Proportion**: It is the relation in magnitude of a part of the whole. It is expressed in percentage.

## Measurement of Morbidity

- Morbidity is defined as any deviation or departure from a state of physiological well-being.
- It may be sickness, illness or disability.
- Two measures of morbidity are **INCIDENCE** and **PREVALENCE**.

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- **Incidence:** It is defined as the number of new cases of a specific disease occurring in a defined population during a specific period of time.
  - **Prevalence:** It is defined as all current cases i.e. Old and new cases in a given population at a particular point or period of time.

## Dynamic of Disease Transmission

- Communicable diseases are transmitted from the source of infection to the host.
- The 3 links in the chain of transmission are:
  1. Source of reservoir
  2. Mode of transmission
  3. Susceptible host

# I. Source of reservoir

- **Source of infection** is defined as the person, animal, object or substance from which an infectious agent is transmitted.
- **Reservoir** is any person, animal, insect, plant or soil in which the infectious agent lives, multiplies and reproduces.
- 3 types of reservoir:
  - Animal reservoir
  - Human reservoir
  - Reservoir in non living things

## 2. Mode of transmission

- Direct:
  - a. Direct contact
  - b. Droplet infection
  - c. Contact with soil
  - d. Inoculation to skin or mucosa
  - e. Transplacental
- Indirect:
  - a. Flies – Vector borne
  - b. Fluids and food – Vehicle borne
  - c. Fomites
  - d. Fingers and hands

### 3. Susceptible host

- In case of diseases, the host may be the human.
- In host four stages are involved in infection:
  - I. Entry
  - II. Colonisation
  - III. Exit
  - IV. Survival outside

# Principles of Disease control and prevention:

- 1) Diagnosis
- 2) Notification
- 3) Isolation
- 4) Treatment
- 5) Quarantine
- 6) Investigation
- 7) Disinfection
- 8) Blocking of transmission
- 9) Immunisation
- 10) Health Education



# Common Terminology

- 1) **Morbidity**: Morbidity is defined as any deviation or departure from a state of physiological well-being.
- 2) **Mortality**: Mortality is defined as a state of death or mortal.
- 3) **Mode of transmission**: Eg: Direct or indirect contact, droplet, airborne and vectors

# Common Terminology

- 1) **Epidemic**: Sudden increase in the number of case of a disease, above what is normally expected in a particular population in a specified area.
- 2) **Pandemic**: Epidemic that has spread over several countries or continents usually affecting large population.

# Common Terminology

- 1) **Endemic**: Amount of particular disease that is present in a community
- 2) **Outbreak**: Sudden increase in occurrences of a disease when cases are in excess of normal expectancy for a particular location or season
- 3) **Quarantine**: Restriction on the movement of people, animals and goods which is intended to prevent the spread of diseases.

# Common Terminology

- 1) **Isolation**: Placing away of patients at specific distance to avoid the spread of infection.
- 2) **Incubation period**: Time elapse between exposure to a pathogenic organism and appearance of first sign or symptoms in the patients.
- 3) **Contact tracing**: Attempts to find all contacts of a confirmed case of infectious disease in order to test or monitor them for infection.

## REFERENCE

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- S. B. Bhise, M. S. Bhise. Social Pharmacy. Nirali Prakashan. 1st edition

**THANK YOU**