

بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

In the name of **ALLAH**
the most Beneficent and the most merciful

ALLAH IS THE MOST MERCIFUL
AND THE MOST BENEFICENT



EPIDEMIIOLOGY

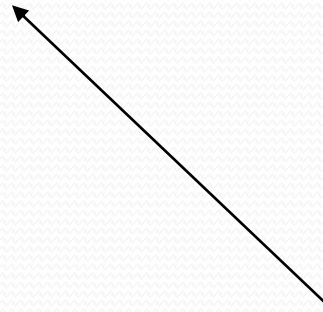
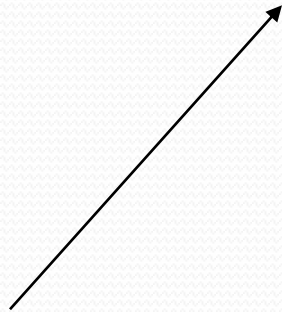
- “I keep six honest serving men; they taught me all I know.” Their names are
- what, why, when, how, where and who.”

RIGHT HAND OF COMMUNITY MEDICINE

COMMUNITY MEDICINE

EPIDEMIOLOGY

BIOSTATISTICS



EPIDEMIOLOGY

- Epi = among
- Demos = people
- Logos = study

EPIDEMIOLOGY

Epidemiology is the basic science of preventive and social medicine.

History

Epidemiology began with Adam and Eve, both trying to investigate the qualities of the "forbidden fruit". Epidemiology is derived from the word epidemic (epi=among; demos=people; logos=study), which is a very old word dating back to the 3rd century B.C.

EPIDEMIOLOGY

- Epidemiology has been defined by John M. Last in 1988 as:-
- "The study of the **distribution** and **determinants** of **health-related states** or **events** in specified populations, and the **application** of this study to the control of health problems"

EPIDEMIOLOGY

1. Disease frequency

- Inherent in the definition of epidemiology is measurement of frequency of disease, disability or death, and summarizing this information in the form of rates and ratios (e.g., prevalence rate, incidence rate, death rate, etc). Thus the basic measure of disease frequency is a rate or ratio.

EPIDEMIOLOGY

Rates are essential for comparing disease frequency in different populations or subgroups of the same population in relation to suspected causal factors. Such comparisons may yield important clues to disease aetiology. This is a vital step in the development of strategies for prevention or control of health problems.

EPIDEMIOLOGY

2. Distribution of disease

- It is well-known that disease is not uniformly distributed in human populations.
- An important function of epidemiology is to study these distribution patterns in the various subgroups of the population by time, place and person.

EPIDEMIOLOGY

2. Distribution of disease

- That is, the epidemiologist examines whether there has been an increase or decrease of disease over time span;
- whether there is a higher concentration of disease in one geographic area than in others;
- whether the disease occurs more often in men or in a particular age-group, and
- whether most characteristics or behaviour of those affected are different from those not affected

EPIDEMIOLOGY

3. Determinants of disease

- A unique feature of epidemiology is to test aetiological hypotheses and identify the underlying causes (or risk factors) of disease. This requires the use of epidemiological principles and methods. This is the real substance of epidemiology. This aspect of epidemiology is known as "analytical epidemiology".

EPIDEMIOLOGY

3. Determinants of disease

- In recent years, analytical studies have contributed vastly to our understanding of the determinants of chronic diseases, e.g., lung cancer and cardiovascular diseases.

Aims of epidemiology

Epidemiology has three main aims

- **a.** to describe the distribution and magnitude of health and disease problems in human populations
- **b.** to identify aetiological factors (risk factors) in the pathogenesis of disease; and
- **c.** to provide the data essential to the planning, implementation and evaluation of services for the prevention, control and treatment of disease and to the setting up of priorities among those services.

Aims of epidemiology

The ultimate aim of epidemiology is to lead to effective action:

- **a.** to eliminate or reduce the health problem or its consequences; and
- **b.** to promote the health and well-being of society as a whole.

Epidemiological approach

The epidemiological approach to problems of health and disease is based on two major foundations:

- a. Asking questions
- b. Making comparisons.

a. Asking questions

RELATED TO HEALTH EVENTS

- a. What is the event ? (the problem)
- b. What is its magnitude?
- c. Where did it happen?
- d. When did it happen?
- e. Who are affected?
- f. Why did it happen?

a. Asking questions

RELATED TO HEALTH ACTION

- a. What can be done to reduce this problem and its consequences ?
- b. How can it be prevented in the future ?
- c. What action should be taken by the community?
By the health services? By other sectors ? Where and for whom these activities be carried out ?
- d. What resources are required ? How are the activities to be organized ?
- e. What difficulties may arise, and how might they be overcome?

b. Making comparisons

- The basic approach in epidemiology is to make comparisons and draw inferences.
- This may be comparison of two (or more groups) - one group having the disease (or exposed to risk factor) and the other group(s) not having the disease (or not exposed to risk factor), or comparison between individuals

b. Making comparisons

- By making comparisons, the epidemiologist tries to find out the crucial differences in the host and environmental factors between those affected and not affected.
- In short the epidemiologist weighs, balances and contrasts. Clues to aetiology come from such comparisons.

Epidemiology and clinical medicine

- The basic difference between epidemiology and clinical medicine is that in epidemiology, the unit of study is a "defined population" or "population at-risk"; in clinical medicine, the unit of study is a "case" or "cases".

Epidemiology and clinical medicine

- In clinical medicine, the physician is concerned with disease in the **individual patient**, whereas the epidemiologist is concerned with disease patterns in the **entire population**. Epidemiology is thus concerned with both the sick and healthy.

Epidemiology and clinical medicine

- It has been stated that **clinicians** are interested in cases with the disease, the **statistician** with the population from which the cases are derived, and the **epidemiologist** is interested in the relationship between cases and the population in the form of a rate.

Epidemiology and clinical medicine

- In clinical medicine, the physician seeks a **diagnosis** from which he derives a prognosis and prescribes **specific treatment**. The epidemiologist is confronted with relevant **data** derived from a particular epidemiological study. He seeks to identify a particular **source of infection, a mode of spread or an aetiological factor** in order to determine a future trend and recommend specific control measures

Epidemiology and clinical medicine

- The epidemiologist also evaluates the outcome of preventive and therapeutic measures instituted which provides the necessary guidance and feed-back to the health care administrator for effective management of public health programmes

Epidemiology and clinical medicine

- In clinical medicine, the **patient comes to the doctor**; in epidemiology, the **investigator goes out into the community** to find persons who have the disease.

Epidemiology and clinical medicine

- Clinical medicine is based on **biomedical** concepts with an ever-increasing concern for refining the technique of diagnosis and treatment at the individual level. The subject matter of clinical medicine is easily "perceived" by such techniques as **clinical and laboratory examinations** including postmortem reports

Epidemiology and clinical medicine

- In contrast, the subject matter of epidemiology is "conceptual" and can only be symbolized in the form of **tables and graphs**

Epidemiology and clinical medicine

- Finally, it may be stated that clinical medicine and epidemiology are not **antagonistic**. Both are closely related, co-existent and mutually helpful

Epidemiology and clinical medicine

- Most epidemiological enquiries could never be established without appropriate clinical consideration as to how the disease in question can be identified among individuals comprising the group under scrutiny. Likewise, a knowledge of prevalence, aetiology and prognosis derived from epidemiological research is important to the clinician for the diagnosis and management of individual patients and their families

