Epidemiology

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Epidemiology

- Learning Objectives:
- At the end of this unit the student is expected to:

1. Define Epidemiology
2. Identify the main issues in the definition
3. Discuss the uses of Epidemiology

WHAT IS EPIDEMIOLOGY?

Epidemiology is the study of how disease is distributed in populations and the factors that influence or determine this distribution. Why does a disease develop in some people and not in others? The premise underlying epidemiology is that disease, illness, and ill health are not randomly distributed in human populations.

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Rather, each of us has certain characteristics that predispose us to, or protect us against, a variety of different diseases. These characteristics may be primarily genetic in origin or may be the result of exposure to certain environmental hazards. Perhaps most often, we are dealing with an interaction of genetic and environmental factors in the development of disease.

Define

- **Epidemiology** is the study of the frequency, distribution and determinants of diseases and other health related conditions in human populations, and the application of this study to the promotion of health, and to the prevention and control of health problems.

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- It defines epidemiology as “the study of the distribution and determinants of health-related states or events in specified populations and the application of this study to control of health problems.”1

THE OBJECTIVES OF EPIDEMIOLOGY

- To identify the ***etiology*** or ***cause*** of a disease and the relevant **risk factors** —that is, factors that increase a person's risk for a disease.
- To reduce morbidity and mortality from the disease.
- to determine the extent of disease found in the community.
- to study the natural history and prognosis of disease.

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- To evaluate both existing and newly developed preventive and therapeutic measures and modes of health care delivery.
- To provide the foundation for developing public policy relating to environmental problems, genetic issues, and other considerations regarding disease prevention and health promotion.

Major components which deals with Epidemiology

- 1. Population. The main focus of epidemiology is on the effect of disease on the population rather than individuals. For example malaria affects many people in Ethiopia but lung cancer is rare. Also Breast cancer affects many people in Iraq but AIDS is rare. If an individual develops lung cancer, it is more likely that he/she will die. Even though lung cancer is more killer, epidemiology gives more emphasis to malaria since it affects many people.

- 2. Frequency. This shows that epidemiology is mainly a quantitative science. Epidemiology is focus with the frequency of diseases and other health related conditions. Frequency of diseases is measured by morbidity and mortality rates.

- 3. **Health related conditions.** Epidemiology is focus not only with disease but also with other health related conditions because every thing around us and what we do also affects our health. Health related conditions are conditions which directly or indirectly affect or influence health. These may be injuries, births, health related behaviors like smoking, unemployment, poverty etc.

- 4. Distribution. Distribution refers to the geographical distribution of diseases, the distribution in time, and distribution by type of persons affected.
- 5. Determinants. Determinants are factors which determine whether or not a person will get a disease.

- 6. Application of the studies to the promotion of health and to the prevention and control of health problems. This means the whole aim in studying the frequency, distribution, and determinants of disease is to identify effective disease prevention and control strategies

History of Epidemiology

- Although epidemiological thinking has been traced to the time of Hippocrates, who lived around 5th century B.C., the discipline did not flourish until 1940s. Hippocrates displayed an extraordinary awareness of the impact of environment and behavior on personal well–being. Hippocrates therefore identified forces that epidemiologists today recognize as major determinants of human health.

Uses of Epidemiology

- To make a community diagnosis. Epidemiology helps to identify and describe health problems in a community (for example, the prevalence of anemia, or the nutrition status of children).
- To monitor continuously over a period of time the change of health in a community. (for example, the effect of a vaccination program, health education, nutritional supplementation).

Uses of Epidemiology

- To practice surveillance for a specific disease in order to be able to act quickly and so cut short any outbreak (example cholera).
- To investigate an outbreak of a communicable disease, analyze the reasons for it, plan a feasible remedy and carry it out, and monitor the effects of the remedy on the outbreak.

Uses of Epidemiology

- To plan effective health services. Effective services, interventions and remedies all depend on accurate community data.