

Definition

The word “epidemiology” is derived from the Greek words: epi “upon”, demos “people” and logos “study”

Epidemiology: as defined by Last is “the study of the distribution and determinants of health-related states or events in specified populations, and the application of this study to the prevention and control of health problems”.

Major components of the definition

- 1 .**Study:** includes surveillance, observation, hypothesis testing, analytic research and experiments
- 2 .**Distribution:** refers to analysis of: times, persons, places and classes of people affected. Epidemiology is concerned with the frequency (occurrence) of diseases and other health related conditions. Frequency of diseases is measured by morbidity and mortality rates .
- 3 . **Population:** include those with identifiable characteristics, such as occupational groups.
4. **Health related conditions:** Epidemiology is concerned not only with disease but also with other health related conditions because everything around us and what we do also affects our health. Health related conditions are conditions which directly or indirectly affect or influence health.
- 5 .**Determinants:** include factors that influence health: biological, chemical, physical, social, cultural, economic, genetic and behavioral .
6. **Application to prevention and control:** the aims of public health—to promote, protect, and restore health

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 .

There were many other scientists who contributed to the development of epidemiology. One of them was John Snow. In 1849 ,John Snow, an English physician, formulated and tested a hypothesis concerning the origin of an epidemic of cholera in London. On the basis of the available data snow postulated that cholera was transmitted by contaminated water through unknown mechanism. He observed that death rates from cholera were particularly high in areas of London that were supplied with water by the Lambeth Company or the Southwark and Vauxhall Company, both of which drew their water from the Thames River at a point heavily polluted with sewage. Between 1849 and 1854 ,the Lambeth Company changed its source to an area of the Thames where the water was "quite free from the sewage of London." The rates of cholera declined in those areas of the city supplied by the Lambeth Company, while there was no change in those areas receiving water from the Southwark and Vauxhall Company. Finally, Snow concluded that the source of cholera outbreak was contaminated water.

Epidemiology in its modern form is a relatively new discipline¹ and uses quantitative methods to study diseases in human populations to inform prevention and control efforts. For example, Richard Doll and Andrew Hill studied the relationship between tobacco use and lung cancer, beginning in

the 1950s.⁴ Their work was preceded by experimental studies on the carcinogenicity of tobacco tars and by clinical observations linking tobacco use and other possible factors to lung cancer. By using long term cohort studies, they were able to establish the association between smoking and lung cancer. This branch of epidemiology has now become important in all countries with the emergence of new communicable diseases such as severe acute respiratory syndrome (SARS), and pandemic influenza. Epidemiology has evolved considerably over the past 50 years and the major challenge now is to explore and act upon the social determinants of health and disease, most of which lie outside the health sector.

Uses of Epidemiology

1. 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).
2. 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).
3. To practice surveillance for a specific disease in order to be able to act quickly and so cut short any outbreak example cholera .
4. 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 .
5. To plan effective health services. Effective services ,interventions and remedies all depend on accurate community data.