

The Scope of Epidemiology

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Editorial

Epidemiology is a branch of medicine with a key distinction: the "patient" isn't a single person, but rather a group or population. Epidemiology, in particular, employs research, systems thinking, and statistics to uncover the root causes of various diseases and health outcomes in a population.

It is a cornerstone of public health, and shapes policy decisions and evidence-based practice by identifying risk factors for disease and targets for preventive healthcare. Epidemiologists help with study design, collection, and statistical analysis of data, amend interpretation and dissemination of results (including peer review and occasional systematic review). Epidemiology has helped develop methodology used in clinical research, public health studies, and, to a lesser extent, basic research in the biological sciences [1].

Major areas of epidemiological study include disease causation, transmission, outbreak investigation, disease surveillance, environmental epidemiology, forensic epidemiology, occupational epidemiology, screening, bio monitoring, and comparisons of treatment effects such as in clinical trials. Epidemiologists rely on other scientific disciplines like biology to better understand disease processes, statistics to make efficient use of the data and draw appropriate conclusions, social sciences to better understand proximate and distal causes, and engineering for exposure assessment.

Epidemiology, literally meaning "the study of what is upon the people", is derived from Greek *epi* 'upon, among', *demos* 'people, district', and *logos* 'study, word, discourse', suggesting that it applies only to human populations. However, the term is widely used in studies of zoological populations (veterinary epidemiology), although the term "epizootology" is available, and it has also been applied to studies of plant populations (botanical or plant disease epidemiology) [2].

The distinction between "epidemic" and "endemic" was first drawn by Hippocrates [3] to distinguish between diseases that are "visited upon" a population (epidemic) from those that "reside within" a population (endemic). [4] The term "epidemiology" appears to have first been used to describe the study of epidemics in 1802 by the Spanish physician Villalba in *Epidemiología Española* [4]. Epidemiologists also study the interaction of diseases in a population, a condition known as a syndemic.

Epidemiologists usually concentrate on two topics: distribution and determination.

- The frequency of a given disease or health outcome, as well as any patterns or trends that may be discovered, are referred to as distribution.
- Determination focuses more on cause and effect: What are the elements that contribute to a disease's risk? What are the roots causes of the problem?
- Epidemiologists concentrate their efforts on a certain population, whether it's a country, a state, a city, or even a tiny neighbourhood. Epidemiologists also look at any and all events that have to do with population health. To put it another way,

epidemiologists look into not only diseases but also any external causes that cause people to become ill, injured, or disabled [5].

Scope

Epidemiologists deal with a wide range of topics. Epidemiology is divided into six categories by the Centers for Disease Control and Prevention (CDC).

Environmental Issues

Environmental exposures that contribute to population sickness or wellness may be studied by epidemiologists. What is the local air quality, for example? Are there any allergens or asthma triggers that you should be aware of? Is there anything dangerous in the local water supply?

Infectious Diseases

Epidemiology is also concerned with infectious diseases, which can range from foodborne illness to seasonal flu. Epidemiology has always been important in obtaining a thorough understanding of pandemics like typhoid and cholera.

Non-infectious Diseases

Non-infectious diseases can include a high rate of diabetes in a particular neighbourhood or a local risk for a certain form of malignancy. Epidemiologists may investigate the factors that may lead to these illnesses [6].

Injuries

The study of injuries, such as local rates of gun violence or homicide, is also part of epidemiology. Researchers examine the factors that increase the likelihood of these injuries, as well as their influence on the community's physical and mental well-being.

Natural Disasters

The short- and long-term repercussions of a natural disaster may deserve epidemiological investigation. Hurricanes, wildfires, and earthquakes are all examples of natural disasters [7].

Terrifying Acts

Terrorism is a final category for epidemiological research. Professionals in the epidemiology discipline may investigate the impact

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of events like as the World Trade Center attacks or the deployment of biological weapons, according to the CDC [8].

Epidemiologists are experts in the field of public health

To understand population health outcomes, epidemiologists track four key metrics: disease distribution, disease factors, disease populations, and health-related effects.

Dissemination of Disease

Epidemiologists are interested in how prevalent or rare an illness is, as well as any patterns in its progression. Is the disease more common in men or in women, for example? Is it more prevalent in certain age groups? Does it only happen at specific times of the year?

Factors that Cause Disease

Epidemiologists also look at the underlying variables that make a person or a group of people more vulnerable to poor health outcomes [9].

Populations Affected by Disease

Which groups appear to be the most affected by the disease? Is the disease more limited or has it expanded beyond a specific neighbourhood, city, or state?

Health-Related Consequences

Epidemiologists research the overall influence of a disease or a health event on a population's physical and mental health. Epidemiologists may also take into account any social or economic disruptions that may have occurred as a result of the outbreak [10].

Conflict of Interest

None

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