Epidemiologic Studies

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Objective of Presentation

• This presentation provides a short overview of epidemiologic study designs and distinguish between experimental and observational epidemiologic studies.

• This presentation will be followed by detailed presentations on each epidemiologic study (cohort, case-control, cross-sectional, clinical trials).
Epidemiology, Definition

• Epidemiology is considered a basic science of public health.

• “Epidemiology is the study of how disease is distributed in population and the factors that influence or determine this distribution.”

• “Epidemiology is 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.”

Epidemiologic Studies

• “The goal of every epidemiologic study is to gather correct and sharply defined data on the relationship between an exposure and a health-related state or event in a population. The main study designs represent different ways of gathering this information. Given the strengths and weaknesses of each design, there are circumstances for which a particular type of study is clearly indicated”.

Epidemiologic Studies

- There are two main types of epidemiologic studies:
  - Experimental
  - Observational
Experimental Studies

• In experimental studies the investigator assesses the efficacy of an agent or intervention for the treatment or prevention of diseases or health problems.
• He/she enrols subjects into two groups: those who receive the agent or intervention (called treatment group) and those who do not receive it (called comparison group).
• He/she controls the exposure.
• If the investigator assigns treatment at random, the study is known as randomized clinical trial (RCT).
• Experimental studies can also be used for non-clinical purposes, for example community-based interventions such as community mobilisation and education on family planning.
Experimental Studies

The links below provide access to some examples of experimental studies:


Observational Studies

The two principal types of observational studies

1. Cohort and
2. Case–control
Cohort Study

- In cohort the study population is composed of individuals classified as exposed and not-exposed to a particular agent or condition.

- Both groups are followed for a specific time period to estimate the occurrence of an outcome or development of a health problem.
Cohort Study

The links below provide access to some examples of cohort study:


Case Control Study

- The case control study determines the association of an exposure to a disease, by identifying a group of individuals with disease and for purpose of comparison, a group of people without disease.
- The investigator collects retrospectively information on exposure history to a risk factor from both groups.
- Subjects with disease are called **cases** and subjects without disease are called **controls**.
Case Control Study

Exposed

Not Exposed

Exposed

Not Exposed

Cases (Ill)

Control (Not Ill)
Case Control Study

The links below provide access to some examples of case control study:


Cross–Sectional Studies

- Cross-sectional studies determine the relationship of an exposure to the outcome of interest. For example, high level of cholesterol and ECG evidence for ischemia.
- We survey a defined group of population for a period of time. As for the above example, for each study participant, we determine the serum cholesterol level and ECG evidence for ischemia.
- Cross-sectional study is also called “Prevalence study”. 
Cross–Sectional Studies

- Cross sectional studies measure simultaneously the exposure and health outcome in a given population and in a given geographical area at a certain time.
- It provides a snapshot on the prevalence and characteristics of health problem or condition in a population.
- Cross-sectional studies are mostly carried out for public health planning. For example “Knowledge, attitude and practice (KAP) of family planning methods among women attending antenatal clinic in area x” is a cross-sectional study.
Cross–Sectional Studies

The links below provide access to some examples of cross-sectional studies:


References


