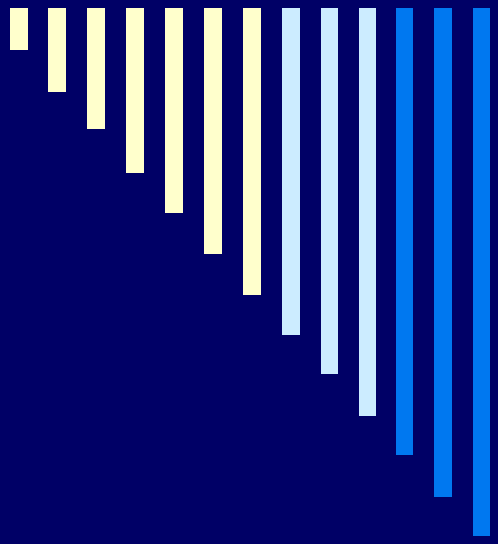

Epidemiological Studies

Epidemiological Design Strategies:

- A. Descriptive:
- A.1: Population:
- *Correlation studies.
- A.2: Individuals:
- *Case report and case series.
- *Cross section

- B. Analytic:
- B.1: Observational studies:
  - *Case control.
  - *Cohort.
- B.2: Interventional studies: Experimental (clinical trial, lab. Animal)

A. Descriptive studies: Describe pattern of disease as person, place, time.

A.1. Population:

- A.1.1: Correlation studies: Describe the disease in the entire population in relation to factor of interest, it describe the relation as linear association, but sometime may be U shape or J shape. It uses the correlation coefficient, which is measure of association and lies between (1-,1+) which means strong association, but (0) means no association.

- *Advantage:
- .Quick.
- . Not expensive.
- . It is the first step in searching for exposure-disease relationship.
- * Limitation:
- . The true in population (correlation between disease and exposure) may be not true on individuals.

A.2. Individuals:

- **A.2.1: Case report and case series: Describe the experience of a single patient or small group of patients with a similar diagnosis, it reflecting unusual representation of a disease(unusual cases e.g. polyvinyl chloride factory that cause liver angiosarcoma).**

- *Advantage:
- . Formulate hypothesis.
- *Limitation:
- . Not population based that means not represent population (no generalization).

A.2. Individuals:

- 1:A.2. Cross sectional (prevalence-transverse): Most important
- The presence of disease and factor (exposure) are assessed among individuals in our sample at same present time.
- Advantage:
- 1. Measure prevalence.
- 2. Rapid, easy, inexpensive.
- Limitation:
- . Do not know which come first disease or exposure.

B. Analytic studies:

B.1.Observational:

- B.1.1. Case control (retrospective, trohoc): Begin with group of patient (cases) and comparable group without diseases

- *Advantage:
- 1. Easy, not expensive.
- 2.Used in a rare disease.
- 3. Proves association.

- *Limitation:
- 1. Selective survival.
- 2. Bias: recall (person not remember)
- 3. Difficult to select control (control must be has the same sociodemographic and other characteristic with the case to minimize bias)
- 4. Direct measures of risk is not possible, but odds ratio is used as indirect risk measures. Odd ratio=(a/c)/(d/b)=a/c X d/b=ad/cb
- Odd ratio= Percentage of event among cases
- Percentage of same event among control group

B.1.Observational:

- **B.1.2.Cohort (longitudinal, incidence): These are observational analytic studies where group(s) of individuals are defined on the basis of presence or absence of exposure to a suspected risk factor o a disease, then followed for a period of time to assess the occurrence of a disease. Start with free from disease individuals.**

- Types of cohort:
- 1. Retrospective cohort: .
- 2. Prospective cohort.
- 3.Ambidirectional cohort: Combination of both retrospective and prospective cohort.

Cohort

- RR=Ie/Io
- RR=a/a+b
- c/c+d
- AR=Ie-Io
- RR= relative risk, risk ratio.
- AR= attributable risk, risk reduction.
- Ie= No. of cases in exposed (a)
- Total population exposed (a+b)
- Io= No. of cases in non exposed (c)
- Total population in non exposed (c+d)
- Attributable Risk %={(Ie-Io)/Ie } X100

Cohort

- Advantage:
- 1. Measures incidence.
- 2. Risk is directly measured by relative risk and attributable risk.
- 3. Proves causation.

- Limitation:
- 1. Long time and costly.
- 2. Not for rare disease but for rare exposure.
- 3. Loss to follow up (migration, or death).

B.2: Interventional studies:

- Like cohort studies but investigators themselves allocate the exposure.
- 2:A. Lab animal: Infect animal or give a carcinogen or new drugs.
- 2:B. Clinical trial: On human, either therapeutic on a diseased people as evaluating the effect of a certain drugs , or preventive on a healthy people as giving a vaccine (prophylactic).

- * Advantage:
- . It is a golden type of the epidemiological studies.

- *Limitation:
- 1.Expensive, long time.
- 2. Ethical problem.