Epidemiology

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2021

Lecture outline:

- Definition of Epidemiology
- The main uses of Epidemiology
- Importance of Epidemiology
- Basic triad of descriptive Epidemiology
- Epidemiology measurements and tools

Epidemiology

Epi = upon
Demos = people
Ology = science
Epidemiology = the science which deals with what falls upon people…..

Uses of Epidemiology:

- To study the etiology of diseases, or conditions, disorders
- Determine the certain causative factors and their characteristics
- Determine the contributing factors
- To aid in the planning and development of health services and programs

Purpose of Epidemiology:

- To investigate nature of health-related problems in the community
- To study natural history and prognosis of health-related problems
- To identify the main causes and risk factors
- To provide foundation for public policy

Basic Triad of Descriptive Epidemiology:

- Person: Age, Gender, SES, Marital state, race/genetic profile, Behavior / habits
- Place: Geographically restricted or widespread, Climate effects, Urban / sub-urban-squatter / rural, Relation to environmental exposure,
- Time: Changing or stable?

Epidemiology measurements:

- Morbidity : is the term used to describe the percentage of a population which is suffering from a disease at a given point in time.

The principle measurements of Morbidity used in epidemiology are:

- Incidence rate : the number of new cases occurring in a defined population during a specific period of time it is used to :

- control disease, research in to etiology , pathogenesis and distribution of disease and efficacy of preventive and therapeutic measure.

Epidemiology measurements:

- Prevalence : Number of people(old and new cases) in a defined population who have a specified outcome (e.g. disease) at a point in time it is used to :

- To estimate the magnitude and health/disease problems in community and identify potential high risk population , to administrative and planning purposes.

Tools Measurement of epidemiology:

- **Count**

Refers to the number of cases of a disease or other health phenomenon being studied

i.e. Number of cases of influenza in Astana in January 2012

- **Proportions**

Persons included in the numerator are always included in the denominator:

$$\text{Proportion:} \quad \frac{A}{A + B}$$

Tools Measurement of epidemiology:

- **Ratios:**

Like a proportion, is a fraction, BUT without a specified relationship between the numerator and denominator

- Example: Occurrence of Major Depression

$$\frac{\text{Female cases} = 240}{\text{Male cases} = 120} = \frac{240}{120}$$

2:1 female to male

Tools Measurement of epidemiology:

- **Rate:**

Measure of some particular event (development of disease) in population during a given time period. E.g. death rate is calculated as

$$\text{Death rate} = \frac{\text{Number of event (death or disease)in specific period}}{\text{population}} \times 1000$$