Sri Aurobindo College of Dentistry

Indore, Madhya Pradesh

INDIA

Module plan

- Topic :Epidemiology of gingival and periodontal diseases
- Subject: Periodontics
- Target Group: Undergraduate Dentistry
- Mode: Powerpoint – Webinar
- Platform: Institutional LMS
- Presenter:Dr. Heena Agrawal

Contents

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Why do we need epidemiological studies?

- Is this a rare or common condition?
- Does my patient fit the profile of people likely to have this disease?
- Where on the continuum of normality to disease are the signs and symptoms I see in my patient?

WHAT IS EPIDEMIOLOGY?

- Epi - among, demos- people, logos- study
- Epidemiology - well being of society as a whole rather than individuals
- Measures prevalence, extent and severity of periodontal diseases

WHAT IS EPIDEMIOLOGY?

- 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 health problems.

- What distinguishes public health practice from clinical practice is that *public health* practice emphasizes the health of population groups, whereas *clinical* practice is concerned with the health of individual patients.

- As the definition implies, epidemiology has three purposes:

(1) to determine the amount and distribution of a disease in a population,

(2) to investigate causes for the disease, and

(3) to apply this knowledge to the control of the disease.

Epidemiologic Measures of Disease

- Prevalence
- Incidence

Prevalence

- Prevalence is the proportion of persons in a population who have the disease of interest at a given point in or period of time.
- It is calculated by dividing the number of persons in the population who have the disease by the number of persons in the population.
- Prevalence = $\frac{\text{No of persons with the disease X 100}}{\text{No of persons in the population}}$

Types of prevalence

- **Point prevalence** –
- the no of all current cases (both old & new) of a specific disease at one point in time in relation to a defined population.
- ‘A point in time’ can be either a day, few days or even few weeks

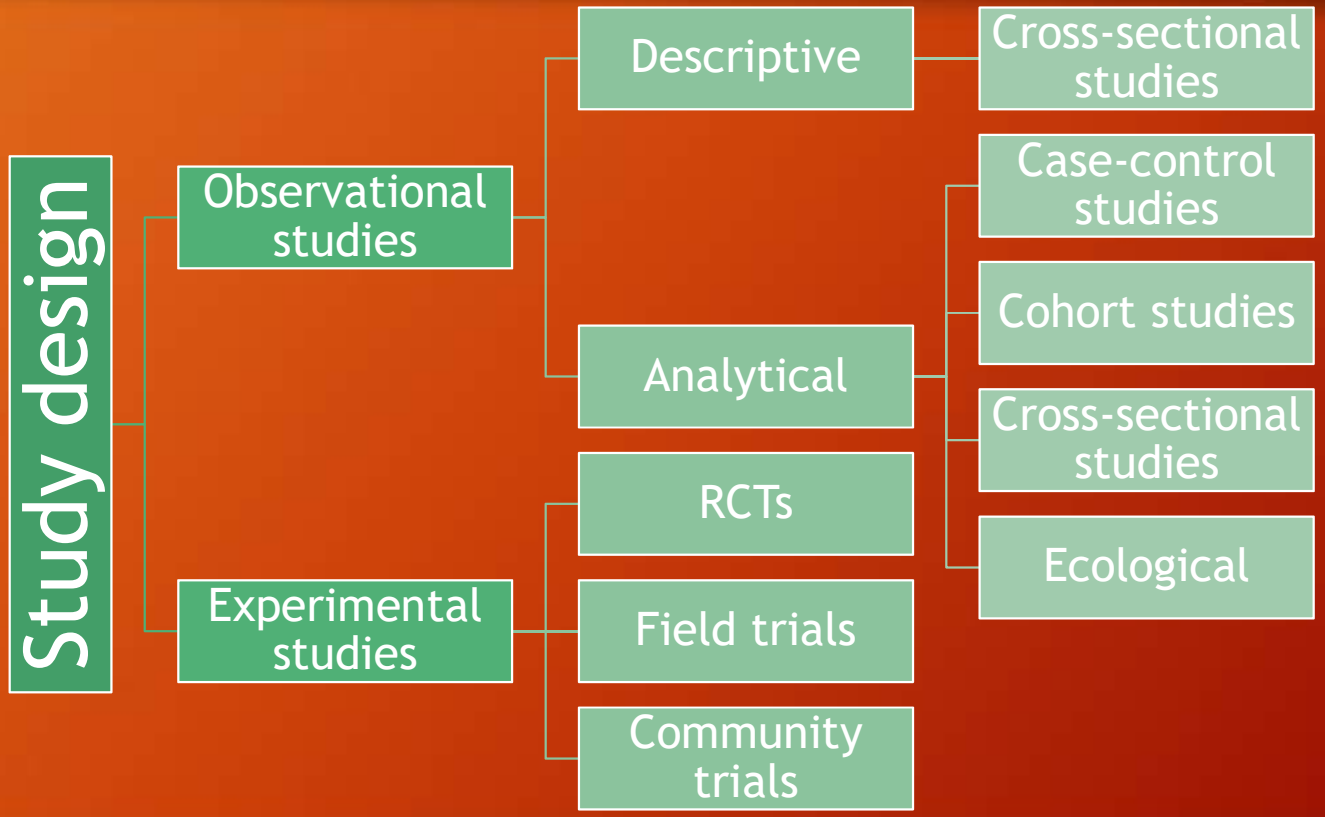
- **Period prevalence-**
- ‘the total no of existing cases (old &new) of a specific disease during a defined period of time in relation to a defined population’
- It is the sum of the point prevalence & the incidence.

Incidence

- The number of new cases of a specific disease occurring in a defined population during a specified period of time
- also referred to as *risk* or *cumulative incidence*

- Incidence = $\frac{\text{no. of new case during a given period of time x 1000}}{\text{no. of persons at risk}}$

Epidemiologic Study Designs



Descriptive studies

- Usually the first phase of an epidemiological investigation.
- Concerned with observing the distribution of disease or health related characteristics in human population & identifying the characteristics with which the disease in question seems to be associated.

Cross-sectional studies

- In cross-sectional studies the presence or absence of disease and the characteristics of the members of a population are measured at a point in time.
- These studies are useful for providing prevalence data on a disease, comparing the characteristics of persons with and without disease, and generating hypotheses regarding the etiology of a disease.
- Whereas cohort and case-control studies are considered *analytic* study designs, cross-sectional studies are considered *descriptive*.
- The advantages of cross-sectional studies are that they are generally less expensive than longitudinal studies and can be conducted more quickly.

Cohort Studies

- Unlike cross-sectional studies, cohort studies follow subjects over time.
- The purpose of a cohort study is to determine whether an exposure or characteristic is associated with the development of a disease or condition.
- “Cohort” is a group of persons who share a common experience within a defined time period ; for example, age ,occupation , pregnancy, etc.
- The association between exposure & disease outcome can then be determined.

Case–control studies

- Case–control studies provide an efficient way to investigate the association between an exposure and a disease, especially a rare disease.

- In a case-control study, persons with the disease *(cases)* and persons without the disease *(controls)* are recruited into the study and assessed for the exposure of interest.

Diagnosis

- **Normal versus Abnormal; Health versus Disease**

- For epidemiologists to study disease in populations or for clinicians to care for individual patients, they must be able to identify individuals with disease.

Principles of Diagnostic Testing

- Practitioners use diagnostic tests to increase the probability of making correct diagnoses.

- In dentistry the diagnosis of periodontal disease is made by the assimilation of clinical and radiographic information, such as bleeding on probing, pocket depth, attachment loss, and bone loss.

Sensitivity and Specificity

- When a diagnostic test for a disease or condition gives a positive result, the result can be correct*(true positive)* or incorrect *(false positive)*.
- When a test gives a negative result, the result can be true *(true negative)* or false *(false negative)*.
- The ability of a test to give a correct answer is indicated by its sensitivity and specificity.

Sensitivity

- The *sensitivity* of a test is the proportion of subjects with the disease who test positive.

- A highly sensitive test is unlikely to be negative when someone has the disease (false negative).

- Because sensitive tests rarely give false-negative results, sensitive tests are most informative when the results are negative.

- That is, if the results are negative, the clinician can be reasonably sure the person does not have the disease

Specificity

- The *specificity* of a test is the proportion of subjects without the disease who test negative
- A highly specific test is unlikely to be positive when a person does not have the disease (false positive).
- Specific tests are especially indicated when the misdiagnosis of disease in the absence of disease could harm a person emotionally, physically, or financially.
- For example, a false-positive screening test for HIV could cause significant emotional stress until more definitive testing could be performed.

- Because highly specific tests rarely give false-positive results, specific tests are most informative to clinicians when the results are positive.

- Ideally, a diagnostic test would be highly sensitive and specific; however, for most tests, sensitivity comes at the expense of specificity, and vice versa.

RISK VERSUS PROGNOSIS

- **Risk**
- The likelihood that a person will get a disease in a specified time period is called *risk* For any given disease, the risk of developing the disease differs among individuals.

Risk Factors

- The characteristics of individuals that place them at increased risk for getting a disease are called *risk factors*
- As the definition implies, exposure to a risk factor must occur before the onset of disease. Exposure to a risk factor may have been at a single point in time, episodic, or continuous.
- Removal of a risk factor or a reduction in exposure should reduce an individual's risk of getting the disease, but once a person has the disease, removal of the risk factor may not make the disease disappear.

Risk Assessment

- The process of predicting an individual's probability of disease is called *risk assessment*.
- Clinicians use risk assessment in several ways.
- One way is to predict which patients are at risk for disease.
- For example, people who smoke cigarettes or have diabetes are at a higher risk of developing periodontal disease than nonsmokers or non-diabetic persons.

Prognosis, Prognostic Factors, and Prognosis Assessment

- **Prognosis**
- Once disease is identified, the patient and clinician usually turn their attention to the course of disease.

- Depending on the disease, important outcomes may include death, survival, or quality-of-life issues, such as pain and disability.

Prognostic Factors, and Prognosis Assessment

- The characteristics or factors that predict the outcome of a disease once disease is present are known as *prognostic factors*,
- The process of using prognostic factors to predict the course of a disease is called *prognosis assessment*.
- In periodontics, factors often considered in the generation of a prognosis include, but are not limited to, tooth type, furcation involvement, bone loss, pocket depth, tooth mobility, occlusal force, patient's home dental care, presence of systemic disease, and cigarette smoking

EPIDEMIOLOGICAL TRIAD

Host

- Age
- Sex
- Race
- Position
- Severity of bone loss
- Endocrinal factors
- TFO
- Malocclusion
- Occupation
- Habits
- Income
- Education
- Socioeconomic status
- Tobacco
- Parafunctional habits
- Brushing habits
- Systemic factors

Agent

- Stains
- Plaque
- Calculus
  - Supragingival
  - Subgingival

Environment

- Geographical factors
- Urbanization
- Nutrition
- Stress

Gingivitis and Periodontitis

- ***GINGIVITIS :*** *"Inflammation Of Gingiva"*
- It is the inflammation of the Gingiva in which the junctional epithelium remains attached to the tooth at its original level.

- ***PERIODONTITIS :***
- It is the inflammatory process which involves the Gingiva and the periodontium & loss of periodontal attachment has occurred.

MEASURE OF GINGIVITIS

- GINGIVAL INDEX
- GINGIVAL BLEEDING INDEX
- SULCUS BLEEDING INDEX

MEASURE OF PERIODONTITIS

- Periodontal Index *(by Russell A.L. in 1970)*
- Periodontal Disease Index *(by Sigurd P. RamfJord in 1959)*
- Gingival Periodontal Index *(O. Leary T.J., Gibson W.A., Shannon I.L., Schuessler C.F. & Nabers C.L. In 1963)*
- Extent & Severity Index *(J.P. Carlos, M.D. Wolfe & A. Kingman in 1986)*
- Community Periodontal Index (CPI)
- Community Periodontal Index Of Treatment Needs (CPITN)

National survey in India

- **National oral health survey and fluoride mapping DCI,2004**
- First ever national wide survey
- WHO probe & CPI index used
- M- F
- Rural >Urban

Age group(yrs)	Periodontitis
12	57 %
15	67.7 %
35-44	89.6 %
65-74	79.9 %

Thank you