

Epidemiology of periodontal disease

Introduction

The term epidemiology is of Hellenic origin, it consists of the preposition '**epi**' which means **among** or **against** and the noun **demos** means **people**

Epidemiology: defined as the study of the distribution of disease or a physiological condition in human populations and of the factors that influence this distribution

Epidemiologic measures of disease

Incidence is defined as the rate of occurrence of a new disease in a population during a **given period of time**

Prevalence is defined as the proportion of people affected by the disease at a specific time point such as a **cross-sectional survey**

Epidemiology has many purposes

- 1- To determine the amount and distribution of a disease in population
- 2- To investigate the causes of the disease
- 3- To apply this knowledge to control the disease
- 4- To evaluate the need and the effectiveness of health services and the need of man power

Epidemiologic study design

1. Observational: which represent most of epidemiologic studies. in these studies researchers observe natural occurrence in the population

The most common observational studies are:

- 1- Cross-sectional studies
- 2- Cohort studies
- 3- Case control studies

2. Experimental studies

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 time point**
- These studies are useful for providing prevalence data on a disease, comparing the characteristics of persons with and without a disease and generating hypotheses regarding the aetiology of the disease

Cohort studies

- Cohort studies unlike cross-sectional studies, cohort studies subjects over time and the purpose of a cohort study is to determine whether an exposure or characteristic are associated with the development of a disease or condition at the beginning of the study, all subjects must be free from the disease of interest. Subjects are classified into **exposed** and **unexposed** groups and then followed over time and monitored for the development of the disease

Case-control studies

- In case control studies, persons with the disease (cases), persons without the disease (control)
- The proportion of exposed persons would be expected to be greater among the cases than the controls
- Because case-control studies do not follow subjects over time they require fewer resources and can be conducted more quickly than cohort study

Epidemiological indices

Indices are methods for quantifying the amount and severity of diseases or conditions in individuals or proportions

Index is a numerical value describing the relative status of population on a graduated scale with definite upper and lower limit which is designed to permit and facilitate comparison with other population, classified by the same criteria and method

Types of indices:

- 1- Reversible indices measure the disease in which no damage occur and the condition is reversible such as gingivitis
- 2- Irreversible indices measure destructive disease and damaging conditions such as periodontitis
- 3- Other indices that shows both reversible and irreversible indices such as periodontal index (PI) by Russell 1956

Requirements of an epidemiological index

- 1- Easy to use
- 2- Permit the examination of many people in a short time
- 3- Define the clinical conditions objectively
- 4- Can be reproducible in assessing a clinical condition when used by one or more than one examiners
- 5- Can be analysed statistically

Periodontal index (P.I) by Russel 1956

0 – Tooth with healthy periodontium

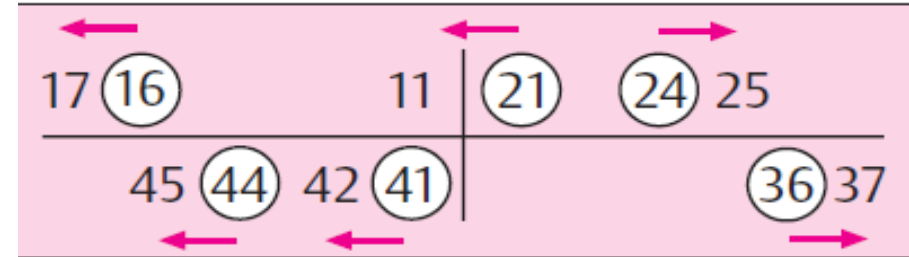
1- Tooth with gingivitis around only part of the tooth circumferences

2- Tooth with gingivitis encircling the tooth

6- Pocket formation

8- Loss of function due to excessive tooth mobility

Periodontal disease index (PDI) by Ramfjord 1959



Grade	
0	Inflammation-free. No gingival alterations
Gingiva	
1	Mild to moderate gingivitis at isolated sites on the gingiva surrounding the tooth
2	Mild to moderate gingivitis surrounding the tooth
3	Severe gingivitis, visible erythema, hemorrhage, gingival ulcerations
Periodontium	
4	Attachment loss to 3 mm, measured from the CEJ
5	3–6 mm attachment loss
6	Attachment loss greater than 6 mm

Mobility index by Miller 1950

- 0 - No detectable movement when force is applied
- 1- Crown to the tooth moves up to 1mm in any direction
- 2- The movement is more than 1mm in any direction
- 3- Tooth that can be depressed or rotated in their socket

Community periodontal index for treatment need by Ainamo et al (1982)

- It studies the most often employed index. The major difference between the CPTIN and the other indices is that it determines not the severity of gingivitis and periodontitis but also provide data concerning the extent of the therapy that is necessary and determine the manpower

- The examination is performed with a special probe, which is known as **CPI** probe with 0.5mm ball tip with black band between 3.5mm and 5.5mm (1987) and ring at 8.5mm and 11.5mm from ball tip for measurement of loss of attachment

- 0 → Healthy → No treatment need
- 1 → Bleeding on probing → Oral hygiene instruction (OH)
- 2 → Supra and /or subgingival calculus → 1 + Calculus removal
- 3 → Shallow pockets up to 5mm → 1 + 2 + root planning
- 4 → Deeper pockets from 6mm → 1+ 2+ 3+ complex treatment



Estimation of man power

0	No treatment need	0 min
1	Oral Hygiene instruction	15 min
2	1 + calculus removal	20 min
3	1+2+ root planning	30min
4	1+2+3+ complex treatment	60min