

الله جميل و يحب الجمال

Epidemiology

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Carranza Clinical Periodontology

9th edition 2002 chapter 5 §

Definition of Epidemiology*

"The **STUDY** of the **DISTRIBUTION** and **DETERMINANTS** of **HEALTH-RELATED STATES** in specified **POPULATIONS**, and the application of this study to **CONTROL** of health problems."

*Last, J.M. 1988. A Dictionary of Epidemiology, 2nd ed.

Epidemiology



- Descriptive §
- Etiologic §
- Analytic §
- Experimental – Interventive §

Epidemiology

Prevalence : proportion of existing cases of a disease in a population at one point in time or during a specified period of time. §

§

Incidence : number of new cases of a disease that occur in a population at risk for the disease during a specific time period. §

Epidemiologic studies

Experimental

§

Randomized Clinical trial §

Community intervention §



The effects of scaling and root planing on §
the clinical and microbiological
parameters of periodontal diseases.

J Clin Periodontology 1997;24:324 §

Epidemiologic studies

Observational

Exposure-disease relationship

Relative Risk: $\frac{\text{disease incidence in exposed group}}{\text{Disease incidence in unexposed group}}$

§

§

§

§

§

Epidemiologic studies

Observational

Cross sectional (descriptive)

Cohort (analytic)

Case-control (analytic)

§

§

§

§



Influence of smoking on long-term clinical §
 results of intrabony defects treated with
 regenerative therapy

J Periodontology 1996;67:1159 §

Cohort Study Approach

	Outcome	No Outcome
Exposed	a	b
Unexposed	c	d

$$\text{Relative Risk} = \frac{\text{Incidence in exposed}}{\text{Incidence in unexposed}} = \frac{a/a+b}{c/c+d}$$

Case-Control Study Approach

	Outcome	No Outcome
Exposed	a	b
Unexposed	c	d

$$\text{Odds Ratio} = \frac{\text{Odds of exposure in cases}}{\text{Odds of exposure in controls}} = \frac{a/c}{b/d} = \frac{ad}{bc}$$

Tests

$$\text{Sensitivity} = \frac{\text{Positives}}{\text{True positive} + \text{false negative}}$$

$$\text{Specificity} = \frac{\text{Negatives}}{\text{True negative} + \text{false positive}}$$

Predictive value

PPV

$$\frac{\text{True positive}}{\text{True positive} + \text{false positive}} \quad \$$$

NPV

$$\frac{\text{True Negative}}{\text{True negative} + \text{false negative}} \quad \$$$

100 \$

60 positive 40 negative \$

50 vs 10 20 vs 20 \$

Sensitivity= $60 / 50+20=60/70=0.85$ \$

Specificity= $40 / 20+10=40/30=1.3$ \$

PPV= $50 / 50+10=50/60=0.83$ \$

NPV= $20 / 20+20=20/40=0.5$ \$

Indices



Gingivitis

GI (Loe & Silness 1963)

§

§

MGI (Lobene 1986)

§

Bleeding index: Eastman

§

Muhlemann 1971

§

Indices



Periodontitis

§

PI (Russell 1956)

§

PDI (Ramfjord 1957)

§

ESI (Carlos 1986)

§

NIDCR

§

CPITN

§

Prevalence

Gingivitis

Peak: 20-30y	§
constant: >30y	§
44-63%	§
1/2-2/3 subgingival calculus	§

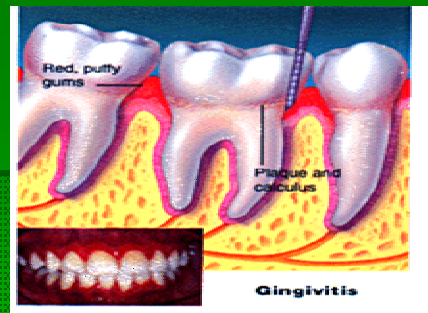
Prevalence

LOA > 3mm :	53/1%	§
LOA > 4mm :	9/2%	§
PD > 4mm :	23/1%	§
One site with recession >1mm:	51%	§
M>F		§
Upper Molars & Lower Incisors		§
Upper Centrals		§

Prevalence

Peak : 50-60 y	§
30-35% of extracts	§
Primary factor in extracts in > 40-45 y	§
11% slow progression	§
81% Moderate	§
8% Rapid	§

Risk Factors



Gingivitis

Plaque	§
Calculus	§
Smoking	§
Modifiers	§

Risk Factors

Chronic Periodontitis

§

Periodontopathogenes

§

Smoking: OR= 2.82 (1.5-7.3)

§

Diabetes: OR= 3

§

Risk Factors

Aggressive Periodontitis

§

Localized Agp

§

Generalized Agp

§

Incidental Agp

§

14-15y: 1.5/1000

§

Risk Factors



Aggressive Periodontitis §

<1% : LJP 0.53% §

GJP 0.13% §

Sex related: Black M 2.9X F §

White F 2.5X M §

Prognostic Factors

Alveolar bone loss §

Tooth mobility §

Remained tooth number §

Smoking §