

Dental Indices

- Indices used for dental fluorosis measurement

Dental fluorosis is hypoplasia or hypo mineralization of tooth enamel or dentine produced by the chronic ingestion of excessive amounts of fluoride during the developing period of teeth.

Dean in 1931 was discovered that the fluoride in drinking water was the causative agent of dental fluorosis. So that Dean in 1942 introduced an index for assessment of dental fluorosis known as:

"Dean's Classification of Dental Fluorosis" or simply as

Dean's Fluorosis Index which recommended in survey of WHO 1997(world health organization).

Criteria of index

Normal 0 Enamel (translucent, smooth, glossy and creamy white color).

Questionable (0.5) Enamel discolored (slight aberration from the translucency of normal enamel, ranging from a few white flecks to occasional white spot.

Very mild (1) Small, opaque, paper, white area scattered irregularly over the tooth, but not involving as much as approximately 25% of tooth surface (no more than 1-2 mm of white opacity at the tip of cusps of bicuspids or second molar.

Mild (2): The white opaque areas in the enamel of teeth are more extensive, but not involve as much as 50% of tooth.

Moderate (3): All enamel surfaces of teeth are affected and subject to attrition show wear, brown stains is a disfiguring feature.

Sever(4) All enamel surfaces of teeth are affected and hypoplasia is so marked that general form of the tooth may be affected, discrete pitting , brown stain wide spread teeth often present a corroded like appearance.

2. Indices used for assessment of periodontal disease

Indices are used to express clinical observations in terms of numeric values , these values may further be used for quantitating and evaluating the factors being studied. Periodontal disease is a pathogenic process, it begins as a microscopic lesion from bacterial infections, the causative bacteria are found in dental plaque . various characteristic are to be checked to assess the periodontal disease :

1. Dental plaque-» primary etiological factor in periodontal disease, which is soft deposit resulting from the colonization and growth of micro• organism on the tooth surfaces.
2. Gingival inflammation-» inflammatory process of the gingiva . most form of gingivitis are plaque induced.
3. Periodontitis ◆ also it is an inflammatory condition of the gingival tissues, characterized by loss of attachment of periodontal ligament and the bone support of tooth.
4. Calculus ◆ A hard deposit of inorganic salts(minerals) mixed with food debris, bacteria and desquamated epithelial cells. Two main types of dental calculus can be identified according to the location:
 - i, supra gingival calculus: It extended occlusal to the free gingival margin and visible in oral cavity.
 - ◆ sub gingival calculus: deposit apical to the free gingival margin, found in periodontal pockets and not visible on oral examination

- Dental plaque index:

Plaque index described by (Siiness and Loe 1964) --rPII

- This index used for assessment the thickness of plaque at the gingival area of the tooth.

- Area of examination: 4 gingival areas (facial, lingual, mesial and distal) are examined, or examined facial, mesial and lingual areas assign double score for mesial reading.

Only 6 index teeth used for scoring of this index:

1. $\begin{matrix} 6 & 2 & 4 \\ 4 & & 2 & 6 \end{matrix}$ for permanent teeth.

2. $\begin{matrix} E & B & D \\ D & B & E \end{matrix}$ for primary teeth.

Scoring criteria

- 0 Free of plaque.
- 1 No plaque seen by naked eye, a film of plaque adhering to the free gingival margin and adjacent area of the tooth, which can be recognized by running the probe or using disclosing agent.
- 2 A thin to moderate accumulation of soft deposits within the gingival pocket or on the tooth gingival margin, which can be seen with naked eye.
- 3 A abundance of soft matter within the gingival pocket and or on the tooth surface and gingival margin.

Index calculation

PIf = $\frac{\text{sum of all v.d.u.s. acquired}}{\text{Total no. of surfaces examined}}$ this for individual

For a group = $\frac{\text{total scores of individuals in a group}}{\text{Total no. of individual in a group}}$

Indices used for measurement of calculus:

Calculus Surface Index (CSI) was developed by Ennerver et al in 1961.

CSI assess the presence or absence of supra gingival or sub gingival calculus on four or six mandibular incisors, by visual or tactile examination .

Each incisor is divided into 4 scoring units.

Index calculation:CSI= total no. of surfaces with calculus is considered the CSI score pre person.

Indices used for measurement of gingival inflammation

Gingival index(GI) was developed by Loe and Silness in 1963, For assessing the severity of gingivitis and its location in all surfaces of all teeth or selected teeth or on selected surfaces of all teeth or selected teeth using blunt explorer probe. this index is widely used due to its validity, reliability and easy to use.

..._ the teeth selected as the index teeth the same of plaque index teeth(PII).

Criteria of GI :

- 0 Absent of inflammation/normal gingiva.
- 1 Mild inflammation. Slight change in color , slight edema, no bleeding on probing.
- 2 Moderate inflammation , moderate glazing, redness, edema and hypertrophy. Bleeding on probing.
- 3 Sever inflammation, marked redness and hypertrophy ulceration.
Tendency to spontaneous bleeding.

Index calculation

GI for individual= $\frac{\text{Total scores}}{\text{Total no. of examined surfaces}}$

$\frac{\text{Total no. of all subjects}}{\text{Total no. of examined subjects}}$ --GI for group=----

◆the numerical scores of the gingival index may be associated with varying degree of clinical gingivitis:

Gingival scores	condition
0.1-1.0	Mild gingivitis
1.1-2.0	Moderate gingivitis
2.1-3.0	severe gingivitis

Indices used for measuring of periodontal disease:

Periodontal Disease Index (PDI) was developed by SIGURD P. RAMFJORD in 1959, which is a clinician's modification of Russel's Periodontal Index (PDI) for epidemiological surveys of periodontal disease.

•PI measure the level of the periodontal attachment related to the cemento enamel junction of teeth.

Component of Periodontal Disease Index:

1. Plaque component of PDI was developed by Ramfjord in 1959.
 - Use a numerical scale to assess the extent of plaque covering the surface area of tooth.
 - The scoring is done on the six Ramfjord (index) teeth.
 - The surfaces scored are the Facial, lingual, mesial and distal).

Scoring criteria:

- 0 no plaque present
- 1 Plaque present on some but not on all interproximal, buccal and lingual surface of the tooth.
- 2 Plaque present on some on all interproximal, buccal and lingual surfaces, covering less than one half of these surfaces,
- 3 Plaque extending over all interproximal, buccal and lingual surfaces, covering more than one half of these surfaces.

Note:

Only fully erupted teeth should be scored.

•Missing teeth should not be substituted.

Calculation : Plaque Score of an individual = $\frac{\text{Total score}}{\text{No. of teeth examined}}$

2. Calculus component of the Periodontal Disease Index(PDI):

Also this index was described by Ramfjord 1959 as one of the components of PDI, to assess the presence and extent of calculus of 6 index teeth. The facial (buccal/labial) and lingual surfaces of the 6 index teeth are examined.

Criteria of scoring:

- 0 Absence of calculus.
- 1 Supra gingival calculus extending only slightly below the free gingival margin(not more than 1 mm).
- 2 Moderate amount of supra gingival and sub gingival calculus or sub gingival calculus alone.
- 3 An abundance of supra gingival and sub gingival calculus.

Calculation of the index: =- $\frac{\text{Total scores}}{\text{No. of teeth examined}}$

- ## 3. Gingival and Periodontal component of Periodontal Disease Index(PDI).
- Periodontal disease index dose so by combining the assessments of gingivitis and gingival depth on 6 index teeth(Ramfjord teeth)

Criteria of Index

- 0 absence of Signs of inflammation
Mild to moderate inflammatory gingival change, not extending around the tooth.
- 2 Mild to moderate severe gingivitis extending all around the tooth.
- 3 Severe gingivitis characterized by marked redness, swelling tendency to bleed and ulcerate.

Indices used for Treatment Needs Assessment: Community

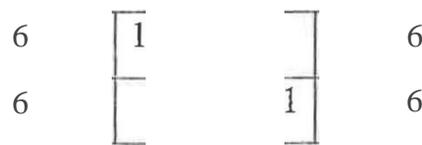
Periodontal Index of Treatment Needs (CPITN).

This index was developed by WHO (World Health Organization) and F.D.I (Federation Dentaire International) 1982.

!•The CPITN is recommended for epidemiological surveys of periodontal health.

•The examination done by special probe(CPITN probe).

Index teeth : Epidemiological surveys assessing this index are recorded per sextant(dividing the mouth in to 6 sextant or parts) based on 6 index teeth .



Criteria of CPI index

- 0 No need for care.
- 1 Gingival bleeding on gentle probing:
- 2 Presence of calculus and other plaque retentive factors.
- 3 Presence of 4 or 5 mm pocket.
- 4 Presence of 6mm or deeper pocket

Criteria of TN index

- 0 No treatment need.
A need for improving of personal oral hygiene.
- 2 A need for professional cleaning (scaling and polishing) and requirement for oral hygiene instruction. And for shallow pocket 4-5mm need scaling and root planning.
- 3 Deep pocket 6mm or deeper need deep scaling , root planning and more complex procedure.

Advantages of CPITN:

1. Simplicity.
2. Speed.
3. International uniformity.
4. Records the common treatable conditions like periodontal pockets, gingival inflammation and calculus.

