

SCIENTISTS' OPINION ON DETERMINING THE ORAL HYGIENE INDEX

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Abstract; *Oral hygiene index (OGI) is one of the important diagnostic indicators in dentistry, which helps to assess the state of oral hygiene. This article analyzes the opinions, approaches and scientific studies of various scientists on the determination of OGI. The development of OGI determination methods based on legal standards, its importance and effectiveness in modern dentistry are considered.*

Keywords; *Oral cavity, hygienic index, dentistry, diagnostics, scientists, laws and regulations, scientific research.*

Introduction; Oral hygiene index is an important parameter necessary for assessing the state of inflammation and microflora in the oral cavity. OGI measurements play a key role in monitoring the oral health of patients in dentists, as well as in preventing dental problems. Currently, various scientific schools and scientists are developing different methodologies for OGI measurements and implementing them in dental practice.

Main part; The essence of the oral hygiene index is that the OGI is a measurable indicator for determining the hygienic condition of the oral cavity, its value is estimated based on the level of oral hygiene, the condition of the teeth, tongue and oral mucosa. There are several methods for determining the OGI, among which the Silness and Loe methods are the most common. The main advantage of this method is its simplicity and accurate results.

Opinions of scientists; OGI developed by various scientists

There are specific aspects of the methodologies. For example, Keith and other researchers propose to determine OGI not only based on the method of tooth cleaning, but also taking into account other inflammatory processes in the mouth. Also, microbiological approaches and techniques for detecting pathogenic microorganisms on the surface of the teeth are used to determine OGI. Legally, the competent development and effective use of the methodology of hygienic indices in dental practice ensures the safety of patients established by law. There are a number of recommendations given by our scientists to assess oral hygiene.

The Green Vermillion Index is one of the indicators used in dentistry to assess plaque and gingival condition on the tooth surface. Plaque Index (PI, 1960) This index, proposed

by Gren and Vermellion, is used to identify plaque. The assessment is carried out as follows: Only the labial and buccal surfaces of the teeth are examined.

Plaque is identified using a special solution (with staining agents) or assessed based on the visual appearance of the plaque.

Each tooth is scored as follows: After that, the sum of the scores is divided by the number of teeth examined and an average is obtained.

Calculation formula: $PI = \frac{\text{sum of scores}}{\text{number of teeth examined}}$

Interpretation of the result:

0 — clean, perfect hygiene

0.1–0.9 — good hygiene

1.0–1.9 — satisfactory hygiene

2.0–3.0 — poor hygiene

Silnes and Løe index (Plaque Index - PI, 1964)

This index was developed to assess the amount and distribution of plaque.

The assessment is based on plaque visible to the naked eye without special dyes. The examination is carried out in the following order: The 4 surfaces of each tooth (labial/buccal, lingual, mesial and distal) are assessed separately. After the assessment, the scores from the 4 surfaces for each tooth are summed and divided by 4. An average result is obtained across the teeth. Then, an overall PI (Plaque Index) is generated.

Calculation formula: $PI = \frac{\text{sum of points}}{\text{number of evaluated surfaces}}$

Interpretation of the result:

0 — no plaque, perfect hygiene.

0.1–0.9 — good hygiene.

1.0–1.9 — satisfactory hygiene.

2.0–3.0 — poor hygiene.

Rumford index; (Ramfjord teeth index, 1959)

This index, proposed by Rumfjord, was developed for a quick and easy assessment of periodontal disease and plaque. The Rumfjord index selects 6 primary teeth for assessment, rather than the entire dentition. These teeth are:

16 — upper right first molar,

21 — upper left central incisor,

24 — upper left first premolar,

36 — lower left first molar,

41 — lower right central incisor,

44 — lower right first premolar.

The assessment criteria are as follows: The Rumfjord index is mainly used to assess periodontal status and plaque and includes the following indicators:

Plaque Index (PI)

Gingival index (Gingival Index, GI)

Periodontal Pocket Depth

Clinical Attachment Level

Rumfjord Plaque Index assessment:

Calculation procedure: 4 surfaces of each selected tooth are evaluated: labial/buccal, lingual, mesial and distal. The results are summed and divided by the number of surfaces (6 teeth \times 4 surfaces = 24 surfaces).

Formula: $PI = \frac{\text{sum of points}}{24}$

The importance of Rumfjord: It speeds up clinical trials.

Convenient for systematic monitoring and epidemiological studies, saves time in large patient groups.

Tartar index; (Calculus Index – CI, Green-Vermillion, 1964)

The tartar index (CI) is used to assess the amount of hard plaque — i.e. calculus (tartar, dental calculus) — that has accumulated on the surface of teeth. This index is widely used in assessing the state of plaque and dental calculus hygiene, as well as in dental examinations and epidemiological studies.

Evaluation procedure: Specially designated teeth are examined: 16, 11 (or 21), 26 (upper row) 36, 31 (or 41), 46 (lower row)

The labial (buccal) and lingual surfaces of the teeth are evaluated.

Index calculation: The scores from all surfaces assessed are summed. The sum is divided by the number of surfaces examined.

Formula: $CI = \frac{\text{sum of scores}}{\text{number of evaluated surfaces}}$

Interpretation of the result:

0 — perfect hygiene, no germs.

0.1–0.9 — good hygiene.

1.0–1.9 — average level of hygiene.

2.0 and above - unsatisfactory hygiene.

Note: The tartar index is often used in conjunction with the plaque index (DI-S) and tartar index (CI-S) as part of the Green-Vermillion OHI-S system to form the overall oral hygiene index (OHI-S).

Navy Plaque Index (NPI, 1973)

This index was developed by the US Navy to measure the amount of plaque on teeth in dental research and practice.

The uniqueness of the NPI score is that it assesses plaque in specific anatomical areas of the tooth.

Evaluation procedure: The gingival area on the buccal and lingual surfaces of each tooth is divided into 3 parts:

mesial (the part facing the middle),

central (middle part),
distal (the part facing the end):

Index calculation: Scores are added for each tooth (3 zones are assessed on each surface). The sum of the scores is divided by the number of surfaces assessed.

Formula: $NPI = \frac{\text{sum of points}}{\text{number of zones evaluated}}$

Interpretation of the result:

0 — no plaque, perfect hygiene.

0.1–0.6 — good hygiene.

0.7–1.9 — satisfactory hygiene.

2.0 and above - unsatisfactory hygiene.

Note: The Navi index is widely used in military dentistry and epidemiological studies because it allows for accurate assessment of the exact location and distribution of plaque.

Turesky index ; (Turesky modification of the Quigley-Hein Plaque Index, 1970). Developed by Turesky et al., this index is an improved version of the Quigley-Hein index. It is used to determine the amount and distribution of plaque on the tooth surface, especially in clinical studies and in dental hygiene evaluation.

Evaluation procedure: The labial (buccal) and lingual surfaces of all teeth are examined. Plaque is visualized using erythrosine or other staining agents.

Index calculation: The scores obtained for all examined teeth are summed, and the sum of the scores is divided by the number of surfaces examined.

Formula: $PI = \frac{\text{sum of points}}{\text{number of surfaces inspected}}$

Interpretation of the result:

0 — perfect hygiene

0.1–1.0 — good hygiene

1.1–2.0 — average hygiene

2.1 and above - unsatisfactory hygiene

Note: The Turesky modification allows for an accurate assessment of not only the presence of plaque but also its extent. Therefore, it is often used to test the effectiveness of hygiene products.

Arnim index ; (Arnim Bleeding Index, 1963)

The Arnim index is used to assess the degree of inflammation of the gingival (dental) tissue. This index is used to determine the healthy or inflamed state of the gums, specifically based on the bleeding reaction of the gums.

Evaluation procedure: A special periodontal probe is used to examine the gum line with light pressure. The teeth are scored based on their response to the probe. The total score is added up and divided by the number of teeth or gum areas examined.

Formula: $BI = \frac{\text{sum of scores}}{\text{number of teeth or areas examined}}$

Interpretation of the result:

0 — healthy gums, no signs of inflammation.

0.1–1.0 — mild inflammation.

1.1–2.0 — moderate inflammation.

2.1–3.0 — severe inflammation.

Note: The Arnim index is very important in identifying early stages of gum disease, in preventive examinations, and in periodontal research.

Conclusion; Methods and techniques developed by scientists to determine the oral hygiene index play an important role in dental practice. Also, legal standards and scientifically based approaches to determining the OGI are important in supporting innovations in the field of healthcare. In turn, these methods help ensure quality and safety in the provision of dental services.

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