BLEEDING INDICES

CONTENTS

INTRODUCTION

Dental indices are devices to find out the incidence, prevalence and severity of the disease, based on which preventive programs can be adopted

An index is an expression of a clinical observation in a numerical value. It helps to describe the status of the individual or a group with respect to a condition being measured.

DEFINITION

IDEAL REQUISITES OF AN INDEX

- Clarity
- Simplicity
- Objectivity
- Validity
- Reliability
- Quantifiability
- Sensitivity
- Acceptability

USES

For individual patient:

- Recognize an oral problem
- Effectiveness of present oral hygiene practices
- Motivation in preventive and professional care for control and elimination of disease

IN RESEARCH

- Determining baseline data before experimental factors are introduced
- Measure the effectiveness of specific agents

IN COMMUNITY

- Shows prevalence and incidence of a condition
- Assess the needs of community
- Compare the effect of a community program and evaluate the results

CLASSIFICATION OF INDICES

- Direction in which their scores can fluctuate
    - **IRREVERSIBLE** or **REVERSIBLE**
- Extent to which the area of oral cavity is measured
    - **FULL MOUTH** or **SIMPLIFIED**
- Entity which they measure
    - **DISEASE** or **SYMPTOM** or **TREATMENT**
- General Indices
    - **SIMPLE** or **CUMULATIVE**

CRITERIA FOR SELECTION OF INDICES

- Simple to use and calculate
- Permit the examination of many people in short period of time
- Require minimum armamentarium and expenditure
- Highly reproducible when assessing clinical conditions when used by one or more examiners
- Should be acceptable to the patient
- Amenable to statistical analysis
- Strongly related numerically to the clinical stages of specific disease under investigation

BLEEDING INDICES

GINGIVAL INDEX - Loe and Silness (1963)

0= Normal gingiva;

1= Mild inflammation – slight change in color and slight edema but no bleeding on probing;

2= Moderate inflammation – redness, edema and glazing, bleeding on probing;

3= Severe inflammation – marked redness and edema, ulceration with tendency to spontaneous bleeding.

Interpretation

0.1-1.0 = mild inflammation;

1.1-2.0 = moderate inflammation, and

2.1-3.0 signifies severe inflammation

SULCUS BLEEDING INDEX- Muhlemann and Sons (1971)

Score	Description
0	Healthy P & M,* no bleeding on probing
1	Bleeding on probing, no color change, no swelling of P & M
2	Bleeding on probing, change in color, no swelling of P & M
3	Bleeding on probing, change in color, slight swelling of P & M
4	Bleeding on probing, change in color, obvious swelling of P & M
5	Bleeding on probing, spontaneous bleeding, change in color, marked swelling with or without ulceration

*P & M = papillae and marginal gingiva.

GINGIVAL BLEEDING SCORE- Carter and Barner (1974)

- Records the presence or absence of gingival inflammation after passing unwaxed dental floss into the proximal sulci.

GINGIVAL BLEEDING INDEX- Ainamo and Bay (1975)

- Performed through gentle probing of the orifice of the gingival crevice. If bleeding occurs within 10 seconds a positive finding is recorded

The number of positive sites is recorded and then expressed as a percentage of the number of sites examined.

PAPILLARY BLEEDING INDEX- Saxer and Muhlemann (1975)

Table 4. Papillary Bleeding Index (PBI)[20]

Grade	Description
0	No bleeding within 30 seconds of probing
1	Bleeding within a few seconds of probing
2	Immediate bleeding on probing
3	Bleeding along gingival sulcus on slightest touch

PAPILLARY BLEEDING INDEX- Saxer (1977)

Table 5. Papillary Bleeding Index (PBI), Revised[12]

Grade	Description
0	No bleeding
1	Single bleeding point 20 to 30 seconds after probing
2	Fine line of blood or several bleeding points
3	Blood fills interdental triangle soon after probing
4	Immediate profuse bleeding, fills interdental area, flows over tooth and gingiva

PAPILLARY BLEEDING SCORE- Loesche et al., 1979

Table 6. Papillary Bleeding Score (PBS)*

Score	Description
0	Healthy gingiva, no bleeding
1	Edematous, red gingiva, no bleeding
2	Bleeding without flow
3	Bleeding with flow along gingival margin
4	Copious bleeding
5	Tendency to spontaneous bleeding, severe inflammation, marked redness, and edema

*On interproximal insertion of toothpick.[15]

MODIFIED PAPILLARY BLEEDING INDEX- Barnett (1980)

0 = no bleeding within 30 s of probing;

1 = bleeding between 3 and 30 s of probing;

2 = bleeding within 2 s of probing;

3 = bleeding immediately upon probe placement

BLEEDINGTIMEINDEX- Nowicki et al., 1981

Table 7. Bleeding Time Index (BTI)[14]

Grade	Description
0	No bleeding within 15 seconds of twice probing (i.e., 30 seconds total time)
1	Bleeding within 6 to 15 seconds of second probing
2	Bleeding within 11 to 15 seconds of first probing or 5 seconds after second probing
3	Bleeding within 10 seconds after initial probing
4	Spontaneous bleeding

EASTMAN INTERDENTAL BLEEDING INDEX- Abrams (1984)

A wooden interdental cleaner is inserted between the teeth from the facial aspect, depressing the interdental tissues 1 to 2 mm.

This is repeated four times and the presence or absence of bleeding within 15 s is recorded.

Considering the over-all high levels of reliability between and within examiners, this method would be suitable for use in clinical trials and epidemiological studies

MODIFIED SULCUS BLEEDING INDEX- Mombelli (1987)

Table 8. Assessment of Bleeding Tendency by a Modified Sulcus Bleeding Index (mSBI)[22]

Score	Description
0	No bleeding when a periodontal probe is passed along the gingival margin
1	Isolated bleeding spots visible
2	Blood forms a confluent red line on margin
3	Heavy or profuse bleeding

QUANTITATIVE GINGIVAL BLEEDING INDEX -Garg and Kapoor (1985)

This index takes into consideration the magnitude of blood stains covering tooth brush bristles on brushing and squeezing gingival tissue units in a segment, with one score for entire one segment (canine to canine, or left or right pre-molars and molars in maxillary or mandibular arches- six segments in all).

0 – no bleeding on brushing; bristles free from blood stains;

1 - slight bleeding on brushing; bristle tips stained with blood;

2 - moderate bleeding on brushing; about half of bristle length from tip downwards stained with blood;

3 – Severe bleeding on brushing; entire bristle length of all bristles including brush head covered with blood.

Bleeding is generally immediately evident on the bristles of the brush; however, 30 seconds were allowed for reinspection of each segment.

According to the authors, this index has good reproducibility, reliability, objectivity and simplicity of use.

BLEEDING ON INTERDENTAL BRUSHING INDEX- Hoefer (2010)

This index is performed by inserting a light interdental brush placed buccally, just under the contact point and guided between the teeth with a jiggling motion, without force.

Bleeding is scored as either present or absent, for each interdental site, after 30 s.

Reproducibility of Bleeding Measurements

Preber et al., 1985 and **Bleiden et al., 1992** have reported that bleeding, when assessed by dichotomous criteria, is a highly reproducible sign on repeated testing.

When examiners used the **EIBI**, which employs a triangular wooden tooth pick that is inserted and removed four times interproximally, interexaminer agreement was high (0.62 to 0.75 kappa coefficient) and intraexaminer agreement was even better (0.79 to 0.86 coefficient).

Neither parallel nor angulated probing, either with manual or controlled force probes, was superior with respect to reproducibility (0.38 to 0.56 kappa coefficient).

CONCLUSION

Measurement of gingival bleeding tendency should be an integral part of all comprehensive oral examinations.

A dichotomous bleeding score is adequate for screening large populations to determine the need for further periodontal evaluation and treatment and is appropriate for patient self-evaluation.

However, in clinical trials testing the effectiveness of anti-plaque/anti-gingivitis agents or comparing various types of periodontal therapy, a graded bleeding index, combining criteria of rapidity and extent of bleeding, is more likely to be a better prognosticator.

In clinical practice, the use of a graded bleeding index is more likely to identify sites that are at risk of further destructive activity.

For clinical use, the simpler the index, the more likely it will be used.

A graded index based only on the extent of bleeding, and not on its rapidity, is simpler to learn and reproduce.

References

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