

**INDEX-BASED PERIODONTAL ASSESSMENT VERSUS
CONVENTIONAL EXAMINATION IN ROUTINE DENTAL
PRACTICE: A CLINICAL STUDY IN UZBEKISTAN.**

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Abstract. This paper reports a clinical study designed to determine whether standardised, index based periodontal assessment improves the detection and diagnostic accuracy of periodontal disease compared with conventional, non-index clinical examination among adult patients undergoing routine dental checkups in Uzbekistan. Forty two patients aged 20 to 40 years were randomly divided into two equal groups. The first group received professional oral hygiene combined with structured periodontal assessment using the Approximal Plaque Index, the Simplified Oral Hygiene Index, Bleeding on Probing, the Papillary Bleeding Index, and the Community Periodontal Index of Treatment Needs, together with plaque disclosure, while the second group underwent standard dental cleaning without index based assessment. Patients were examined at baseline and at 14, 28, and 42 days. Preliminary observations indicate that both groups experienced an improvement in oral hygiene over time, but the index based assessment group showed a more pronounced reduction in plaque scores and gingival inflammation, together with a more structured identification of early periodontal changes through the Community Periodontal Index of Treatment Needs. Final statistical analysis is ongoing, and the findings reported here should therefore be regarded as preliminary. The results nonetheless suggest that standardised periodontal indices enhance the objectivity and completeness of clinical examination and may support earlier detection and more consistent monitoring of periodontal disease in routine dental practice.

Keywords: periodontal indices, Approximal Plaque Index, Simplified Oral Hygiene Index, Bleeding on Probing, Papillary Bleeding Index, Community Periodontal Index of Treatment Needs, periodontal health, dental examination.

Background. Periodontal disease remains one of the most common conditions encountered in routine dental practice worldwide, and its early stages are frequently underdiagnosed when clinical examination relies solely on visual inspection without standardised measurement. Population level surveys conducted since the World Health

Organization introduced the Community Periodontal Index of Treatment Needs in 1978 have consistently shown that periodontal disease of varying severity affects a substantial proportion of adults, and that early gingival changes are easily overlooked in the absence of a structured examination protocol. A range of periodontal indices has therefore been developed over the past six decades to provide objective, reproducible criteria for assessing plaque accumulation, gingival bleeding, and periodontal treatment needs, including the Approximal Plaque Index described by Lange, the Simplified Oral Hygiene Index described by Greene and Vermillion, Bleeding on Probing, the Papillary Bleeding Index described by Saxer and Mühlemann, and the Community Periodontal Index of Treatment Needs developed by the World Health Organization.

Although these indices are well established in periodontology and are widely used in epidemiological research, their systematic application is not universal in everyday clinical practice, where examination is often limited to a general visual assessment without numerical scoring. Evaluating whether the routine incorporation of standardised indices meaningfully improves the detection and monitoring of periodontal disease compared with conventional examination therefore has direct practical relevance for dental services in Uzbekistan and in comparable health care settings elsewhere.

Table 1. Periodontal and hygiene indices used in the study

Index	Original source	What it measures	Scoring or interpretation
Approximal Plaque Index (API)	Lange	Presence or absence of plaque in interdental spaces, assessed with a probe from the oral or vestibular aspect depending on quadrant	Expressed as a percentage of positive sites; 0 to 24% optimal, 25 to 39% good, 40 to 69% sufficient, 70 to 100% poor hygiene
Simplified Oral Hygiene Index (OHI-S)	Greene and Vermillion	Debris and calculus deposits on six representative tooth surfaces, four posterior and two anterior	Combined debris and calculus score from 0 to 6; 0 excellent, 0.1 to 1.2 good, 1.3 to 3.0 fair, 3.1 to 6.0 poor hygiene

Bleeding on Probing (BOP)	Ainamo and Bay	Presence or absence of bleeding within approximately ten to fifteen seconds after gentle probing of the gingival sulcus	Expressed as the percentage of bleeding sites out of all sites examined
Papillary Bleeding Index (PBI)	Saxer and Mühlemann	Bleeding response of the interdental papilla after gentle probing, graded by intensity and spread of bleeding	Ordinal scale from 0, no bleeding, to 4, profuse bleeding filling the interdental space
Community Periodontal Index of Treatment Needs (CPITN)	World Health Organization	Presence of bleeding, calculus, and periodontal pocket depth, recorded per sextant using a WHO periodontal probe	Sextant codes 0 to 4, with higher codes indicating shallow or deep pockets and greater treatment need

Purpose of the Study. The purpose of this study was to evaluate whether the use of standardised, index based periodontal assessment improves the detection and diagnostic accuracy of periodontal disease compared with conventional, non-index clinical examination among patients undergoing routine dental examinations in Uzbekistan.

Materials and Methods. A total of 42 patients aged 20 to 40 years undergoing routine dental checkups were included in the study. Participants were randomly divided into two groups of 21 patients each. The first group received professional oral hygiene combined with standardised periodontal assessment using the Approximal Plaque Index, the Simplified Oral Hygiene Index, Bleeding on Probing, the Papillary Bleeding Index, and the Community Periodontal Index of Treatment Needs, together with plaque disclosure. The second group underwent standard dental cleaning without index based assessment. Clinical examinations were conducted at four time points, namely at baseline and at 14, 28, and 42 days after the initial visit. Statistical analysis of the collected data is currently in progress and will be performed using appropriate parametric and non-parametric methods once data collection is complete.

Table 2. Overview of the study design

Group	Intervention	Number of patients	Assessment approach
Index based assessment group	Professional oral hygiene combined with structured periodontal assessment and plaque disclosure	21	API, OHI-S, BOP, PBI, CPITN recorded at each visit
Conventional examination group	Standard dental cleaning without index based assessment	21	General visual examination only

Table 3. Timeline of clinical examinations

Time point	Assessment performed
Baseline	Initial periodontal and hygiene status recorded before intervention in both groups
Day 14	First follow up examination to record short term change in plaque and bleeding indices
Day 28	Second follow up examination to assess consistency of improvement over time
Day 42	Final examination of the observation period, used for preliminary comparison between groups

Results. Preliminary observations indicate that both groups demonstrated an improvement in oral hygiene over the course of the study. However, patients in the index based assessment group showed a more pronounced reduction in plaque levels and gingival inflammation than those examined conventionally. A consistent decrease in Approximal Plaque Index and Simplified Oral Hygiene Index scores was observed in this group over the study period, accompanied by a corresponding reduction in bleeding indices, namely Bleeding on Probing and the Papillary Bleeding Index, suggesting an overall improvement in periodontal status.

In addition, the use of the Community Periodontal Index of Treatment Needs allowed for a more structured and earlier identification of periodontal changes compared with conventional examination in the second group, since the sextant based scoring system draws attention to shallow pocketing and bleeding before these changes would typically prompt concern on visual inspection alone. As final statistical analysis is still ongoing, these observations should be regarded as preliminary, and the statistical significance of the differences between groups remains to be confirmed.

Discussion. The pattern observed in this study is consistent with the general rationale for using standardised periodontal indices in clinical practice, namely that numerical scoring of plaque, bleeding, and pocketing draws attention to early or localised changes that might otherwise be overlooked during a general visual examination. The Approximal Plaque Index and the Simplified Oral Hygiene Index provide complementary information, with the former focusing specifically on interdental plaque, an area particularly prone to being missed during routine brushing, and the latter offering a broader assessment of debris and calculus across representative tooth surfaces. Bleeding based indices such as Bleeding on Probing and the Papillary Bleeding Index add a functional dimension to plaque scoring by capturing the gingival tissue response to biofilm accumulation, while the Community Periodontal Index of Treatment Needs extends this assessment to periodontal pocket depth at the level of the sextant, allowing treatment needs to be graded rather than simply classified as present or absent.

It should be noted that the Community Periodontal Index of Treatment Needs has recognised limitations as a screening tool, including a tendency in some populations to overestimate calculus prevalence and a partial recording protocol that can underestimate the true prevalence of deep periodontal pockets compared with full mouth examination. These limitations do not diminish the value of the index for routine screening purposes but do suggest that patients with a high sextant score should proceed to a more detailed periodontal examination rather than relying on the screening result alone.

Several limitations of the present study should be acknowledged. The final statistical analysis has not yet been completed, so the apparent differences between groups cannot currently be described as statistically significant. The sample size of 21 patients per group is modest, and the observation period of 42 days is relatively short for assessing periodontal outcomes, which typically require several months to demonstrate stable change. The study also does not report whether examiners were blinded to group allocation, which could influence the consistency of index scoring. These factors should be taken into account when interpreting the preliminary results, and confirmation through completed statistical analysis and, ideally, a longer follow up period would strengthen the conclusions.

Conclusion. The preliminary findings of this study suggest that the use of standardised periodontal indices enhances the objectivity and comprehensiveness of clinical examination in routine dental practice. Index based assessment appears to improve the early detection and ongoing monitoring of periodontal disease compared with conventional, non-index examination, supporting its wider implementation in routine dental care. Completion of the ongoing statistical analysis, together with a longer period of follow up, will be required to confirm the clinical significance of these preliminary observations.

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