ORIGINAL RESEARCH PAPER

Volume-8 | Issue-4 | April-2019 | PRINT ISSN No 2277 - 8179

INTERNATIONAL JOURNAL OF SCIENTIFIC RESEARCH

PERIODONTAL SCREENING AND RECORDING VERSUS TRADITIONAL CLINICAL PERIODONTAL EXAMINATION IN THE ASSESSMENT OF PERIODONTAL STATUS.

Periodontics

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ABSTRACT

Objectives : In 1992, the American Academy of Periodontology (AAP) modified the Simplified Periodontal Examination (SPE), used in New Zealand, and developed the PSR system for use in North America and the American Dental Association (ADA) adopted the PSR system. Aim of this study is to determine the relationship between Periodontal screening and recording (PSR) system and traditional periodontal examination for evaluating the periodontal status of an individual.

Methods : 200 subjects between 18 to 65 years with minimum of 18 natural completely erupted teeth and without any systemic complications were selected. First the participants were subjected to Traditional Periodontal Examination followed by PSR examination. Clinical data from the conventional periodontal examination are generated into computed PSR scores (PSRc).

Results : A total of 1144 sextants were examined. All the sextants received scores of 2,3 and 4 as determined by both methods that is PSR and PSRc. 161 sextant with furcation involvement were undiagnosed by PSR system.

Conclusion : PSR is a useful screening tool. A possible improvement in the PSR system will enhance identification of patients with periodontal diseases.

KEYWORDS

Conventional Periodontal Examination, Periodontal Screening and Recording

INTRODUCTION

Periodontal diseases are one of the primary causes of tooth loss.(1) Therefore every dental examination should include careful screening of the Periodontium, followed by complete periodontal examination so as to identify and diagnose Periodontal diseases at the earliest.(2) Early detection and diagnosis are significant components in the prevention of periodontal diseases.[2] Although there have been significant advances in the understanding of the cause and pathogenesis of periodontal disease over years, the traditional methods by which clinicians diagnose periodontal disease have remained virtually unchanged.(3) A through periodontal examination is a critically important data collection activity that is necessary to arrive at a diagnosis and develop a treatment plan.(2) A complete periodontal examination includes a thorough review of the patient's chief complaint, history of presenting illness, medical and dental histories as well as recording of probing pocket depths, clinical attachment levels, tooth mobility and position of gingival margin in relation to cement enamel junction, occlusal relationship, and bone levels.(4)

A comprehensive periodontal examination includes assessment of gingival bleeding, probing pocket depths, clinical attachment level, gingival recession, furcation involvements, mobility and mucogingival problems and this may take more than 30 minutes to complete.(5) Hence, a periodontal screening tool that is sensitive enough to detect existing periodontal diseases, while at the same time, is quick, simple, inexpensive to use for the dentist, and is safe for the patient can be considered as a good alternative.(6) Periodontal screening does not aim to make a specific diagnosis nor is it meant for the institution of complex treatment plans. The objective is to separate Periodontally healthy patients from those with periodontal disease and then, subjects with periodontal disease can be subjected to a more comprehensive examination.

The Community Periodontal Index of Treatment Needs (CPITN) was intended to provide a global standard for clinical practice and research (7) but several different periodontal screening tools were adapted from it such as Basic Periodontal Examination (BPE), Periodontal Screening and Recording (PSR) system and the Primary Essential Periodontal Examination (PEPE) which requires inexpensive equipment and which can be readily accomplish the task of separating periodontally healthy from periodontally diseased patients usually in two to three minutes and saves a valuable time of the dentist as well as patients.(8,9) The Periodontal Screening and Recording (PSR) is increasingly used in the United States, Canada and Brazil.(10) The Basic Periodontal Examination (BPE) is extensively used in the United Kingdom and New Zealand.[9] The Primary Essential Periodontal Examination (PEPE) is used in Australia. All these methods utilize the WHO probe. It has a ball end of diameter 0.5 mm and a first colored band at 3.5 - 5.5 mm. Another colored band at 8.5 - 11.5 mm may be present.(10)

In 1992, the American Academy of Periodontology (AAP) modified the Simplified Periodontal Examination (SPE), used in New Zealand, and developed the PSR system for use in North America. With the corporate sponsorship of the Procter & Gamble Company, the AAP and the American Dental Association (ADA) adopted the PSR system.(10)

A PSR examination can help to identify patients who need a comprehensive periodontal assessment. The results of this screening examination are used to separate patients into two broad categories: (a) those who have periodontal health or gingivitis and (b) those who have periodontitis. The unique aspects of the PSR system are the manner in which the probe is read and the minimal amount of information that is recorded.(10)

The limitations of PSR system are they are not intended to replace a full-mouth periodontal examination. It cannot be performed in patients who have received treatment for periodontal diseases and/or are in a maintenance phase.(11) It is necessary to differentiate pseudo-pockets from true periodontal pockets with the younger patients hence there is also limited use of the PSR system in children.(11) PSR does not measure epithelial attachment so the severity of periodontal disease may be underestimated with its use.(11)

Therefore this study was done to evaluate how Periodontal screening and recording system (PSR) reflects the periodontal status as determined by a conventional periodontal examination.

Aim

To determine the relationship between Periodontal screening and recording (PSR) system and traditional periodontal examination for evaluating the periodontal status of an individual.

MATERIAL AND METHODS

This study was conducted in Department of Periodontics, Indira Gandhi Institute of Dental Sciences, Puducherry for a period of three months between December 2013- February 2014. 200 subjects between 18 to 65 years with minimum of 18 natural completely erupted teeth and without any systemic complications were selected for the study after explaining the purpose of this study and getting their consent.

Examination of subject includes recording the medical history and a complete baseline intraoral soft tissue and hard tissue examination. First the participants were subjected to Traditional Periodontal Examination which includes Loe and Silness Gingival Index, Simplified oral hygiene index, Probing depth, Clinical attachment levels, Position of the gingival margin to the Cementoenamel junction, Presence or absence of Furcation and Presence or absence of Mobility. Each tooth was scored at six sites: mesiobuccal, buccal, distobuccal, mesiolingual, lingual and distolingual. Probing depth was determined on the same six sites using a UNC-15 Probe.

Approximately 30 minutes after the completion of the Traditional Periodontal Examination, subjects are examined by PSR system using CPITN Probe. Six measurements for each tooth are obtained, utilizing a special ball-tipped probe. This probe has a 0.5 mm ball at the tip and a color-coded area 3.5 to 5.5 mm from the tip. The probe may be plastic or metal. The ball at the end of the probe is intended to enhance patient comfort and assist in detecting overhanging margins and sub gingival calculus. The probe is inserted into the sulcus or pocket and walked around the circumference of each tooth. This method is the same technique used as with a comprehensive periodontal examination. However, the PSR system is unique in the way the probe is read. The clinician need only observe the position of the color-coded band in relation to the gingival margin. The presence of furcation involvement, mobility, mucogingival problems, or recession should also be noted. After each tooth in the sextant has been examined, only the highest code obtained is recorded and only one score is recorded for each sextant. If a sextant is edentulous, an "X" is placed. Measurements are recorded in a special box chart.

Clinical data from the conventional periodontal examination are generated into computed PSR scores (PSRc). Data in four posterior sextants maxillary right and left, mandibular right and left and two anterior sextants, maxillary and mandibular was reviewed and the the highest value for each parameter was evaluated as the score for that particular sextant. Any given sextant with mobility, furcation and/or mucogingival defects detected by the conventional examination was noted as (*) code for additional abnormalities in PSRc as according to PSR system. Thus a generated PSRc Score was obtained.

RESULTS

A total of 1144 sextants were examined. 384 anterior sextants, 760 posterior sextant, 568 maxillary sextant and 576 mandibular sextant were recorded (Table 1). All the sextants received scores of 2,3 and 4 as determined by both methods that is PSR and PSRc. Number of sextant which scored 2 was similar in both methods. PSR scored 416 sextant as 3 and 640 sextant as 4. PSRc scored 504 sextants as 3 and 552 sextant as 4 (Table 2).

PSR and PSRc showed number of sextant with Gingival recession as 616 and mobility as 232. PSR showed number of sextant with Furcation as 119 while PSRc showed number of sextant with Furcation as 280 (Table 3).

Table 4 shows that 552 sextants that had a PSRc score of 4 was overestimated as 640 sextant by PSR system and 504 sextant that had a PSRc score of 3 was underestimated as 416 sextant by PSR.

DISCUSSION

This study was done to determine the relationship between Periodontal screening and recording (PSR) system and traditional periodontal examination for evaluating the periodontal status of an individual. 200 subjects diagnosed as generalized periodontitis between 18 to 65 years of age with minimum of 18 natural completely erupted teeth and without any systemic complications were selected for the study. As the subjects selected had generalized Periodontitis, majority of sextants examined belong to score of 3 and 4.

Difference in the number of sextant with score 3 and 4 between the PSR and PSRc may be due to two different probe being used in the two system. Inflamed gingival tissue is less resistant to probing forces which was confirmed by Histological probing studies. A traditional periodontal probe, with its tapered tip, which was used during traditional periodontal examination could have penetrated beyond the actual pocket depth, thus results in a higher reading than that of a ball-ended probe which was used during PSR system. Most of the sextant examined in this study are periodontally involved inflammed site, thus probe with tapered tip could penetrate beyond actual pocket depth which resulted in the difference between the scores.

In detecting additional abnormality such as gingival recession and mobility both PSR and PSRc scores were equal. Incase of furcation involvement, conventional periodontal examination detected furcation involvement in 280 sextant with score 2,3 & 4 while PSR system detected only in 119 sextant with score 3 & 4. This occurs possibly due to the use of ball end probe for the detection of furcation involvement in the PSR system. Ball end probe with its 0.5 mm diameter cannot penetrate the furcation involvement thus resulting in the difference. A total of 161 sextant with furcation involvement were not detected by PSR. Out of 161 sextant, 51 sextant received the score of 2 therefore these sextants according to PSR system would not receive a comprehensive examination and the furcation would remain undiagnosed.

504 sextant that had a PSRc score of 3 was underestimated as 416 sextant by PSR. Since only the Periodontitis patients were selected in this study majority of the sextant belong to score 3 & 4 therefore all the sextant belong to score 3 needed comprehensive periodontal examination. 552 sextants that had a PSRc score of 4 was overestimated as 640 sextant by PSR system. However this can be resolved when comprehensive periodontal examination was performed as according to PSR criteria.

CONCLUSION

The results of PSR system is similar to that of conventional Periodontal Examination. PSR is a useful screening tool that will enhance identification of patients with periodontal diseases. A possible improvement in the PSR system such as use of specific probe for the detection of furcation involvement can be employed to improve sensitivity.

TABLE 1: Overall distribution of the sextants examined

Sextant	Over all	Anterior	Posterior	Maxilla	Mandible
Total number examined	1144	384	760	568	576

TABLE 2 : Computed PSR scores Vs PSR

SCORE	PSR c	PSR
0	-	-
1	-	-
2	88	88
3	504	416
4	552	640

TABLE 3: Computed PSR scores Vs PSR for additional parameters

	PSR	PSR c
Gingival recession	616	616
Mobility	232	232
Furcation	119*	280*

* PSR detected less number of furcations

TABLE 4: Analysis of comparison of scores by PSR and PSRc

Score	PSR C sextant	PSR sextant	Analysis
4	552	640	Overestimation
3	504	416	Underestimation

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