

Original Research Article

Self-assessment and clinical diagnosis of periodontal status among patients visiting dental institution in Bangalore city: a cross-sectional study

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Received: 03 July 2023

Revised: 25 September 2023

Accepted: 30 September 2023

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ABSTRACT

Background: Periodontal diseases are a group of lesions affecting tissues surrounding and supporting the teeth. Periodontal diseases are considered as a group of highly prevalent infectious, inflammatory conditions of the supporting structures of the teeth which affects more than 50% of the world's adult population. The present study was undertaken to evaluate the extent of agreement between clinical and self-assessed periodontal health status among patients visiting the outpatient department of Rajarajeswari Dental College and Hospital, Bangalore, India.

Methods: A cross-sectional study was done among 250 patients who attended the outpatient department of Rajarajeswari Dental College and Hospital, Bangalore. The study population was subjected to a self-administered questionnaire which was followed by periodontal examination. The clinical examination included an assessment of the periodontal condition using CPI and mobility.

Results: There was a marked discrepancy between the two values of self-assessed and clinically diagnosed periodontal health status which shows that the self-assessed periodontal tool was a poor indicator of the periodontal health status.

Conclusions: The present study showed that there is a discrepancy between the subjectively and objectively assessed periodontal health status. Increasing people's awareness and knowledge of their own dental disorders and changing their attitudes and behavior towards oral health care will help in improving oral as well as general health.

Keywords: Clinical examination, Periodontal health status, Questionnaire, Self-assessed

INTRODUCTION

Periodontal diseases are inflammatory disorders caused by specific microorganisms in the dental plaque that may lead to loss of periodontal attachment, including the destruction of the periodontal ligament and adjacent

supporting bone. It is one of the most prevalent diseases affecting the whole adult population worldwide, varying only in degree from mild to severe depending on multiple factors.¹ Epidemiological RESEARCH indicates that periodontal diseases are widespread worldwide, and evidence shows that their extent and severity increase with age.²

Periodontal diseases are mainly caused by improper oral hygiene that allows bacteria in plaque and calculus to remain on teeth and infect the attachment apparatus. The other common risk factors are smoking and chewing tobacco, which affects tissue healing capacity. Crooked, rotated, or overlapping teeth create more areas for plaque and calculus to accumulate and are harder to maintain.³

Periodontal diseases are highly prevalent, particularly amongst socially disadvantaged populations, impact on quality of life, and are costly to treat. These diseases are also associated with major chronic conditions including coronary heart disease and diabetes mellitus.⁴ Perceptions of oral health depend on the understanding by the individual of what “normal” oral health is, and the specific symptoms he or she may experience. Recognition of health and disease by a person, the knowledge of what to do when a problem occurs and the appropriate response from the health professional are the major factors in the prevention and control of chronic inflammatory periodontal diseases.⁵

Comparisons of oral health normative versus self-perceived assessments could demonstrate the individual’s efficacy in evaluating personal health status and highlight fields in which self-perceived assessment is precise or unprecise.⁶ Studies comparing questionnaires and interviews with clinical examinations have demonstrated the efficacy of self-perceived assessment concerning the number of teeth and the presence of dentures.⁷

Self- assessed method is cheap, easy to administer, time saving and requires less resources with no demand for trained examiners. This method will be highly beneficial in a developing country like India where the prevalence of periodontal disease remains high and resources are scarce. Hence, the aim of the study was to evaluate the accuracy of the self-assessed and clinical diagnosis of periodontal health among patients attending the OPD of Rajarajeswari Dental College and Hospital, Bangalore.

METHODS

A cross-sectional study was conducted among patients attending the outpatient department of Rajarajeswari Dental College and Hospital, Bangalore. The institution is situated on the outskirts of the city and it provides oral care to a large population. Sample size of 250 was calculated based on a similar study done by Nagarajan et al.²

An ethical clearance was obtained from the institutional ethical committee of Rajarajeswari Dental College and Hospital, Bangalore. Patients with at least 20 permanent teeth and no complicating medical histories from adults who were attending as casual patients at Rajarajeswari Dental College and Hospital, Bangalore and consented for the study were included in the survey. A pilot study was conducted among 30 patients to check the reliability of the questionnaire. All the participants were able to

answer the questions and each participant took 6-7 minutes to complete the questions. These 30 patients were not included in the study.

An informed consent was obtained from each participant and were subjected to a self-administered questionnaire followed by periodontal examination. The questionnaire consisted of a sociodemographic profile and questions regarding bleeding gums, deposits on teeth, sensitivity of teeth, receding gums, swelling of gums, loose teeth. The questionnaire was translated to the local language (Kannada). The assessment of the periodontal status was carried out by using community periodontal index.⁸ Mobility was checked with the help of blunt end of 2-mouth mirrors. The mobility of the teeth were recorded under the following codes: code 1: no mobility present and code 2: mobility present.

Statistical analysis

Data was entered into the computer database. Frequency distributions, sensitivity and specificity analysis was performed to assess the relationship between subjective and objective perceived periodontal treatment needs.

RESULTS

The present cross-sectional study was done to assess the extent of agreement between self-assessed and clinical diagnosis of periodontal status. A self-administered questionnaire consisting of 13 questions was distributed among 250 patients attending the outpatient department of Rajarajeswari Dental College and Hospital, Bangalore. 140 males and 110 females participated in the study. Around 78% (195) brush their teeth once daily. Among the participants, 88% (220) patients use vertical motion of the brushing technique. Of the participants, 21.2% (53) patients have noticed “bleeding gums”. Among them, 56% (30) of the patients answered that they have been facing the problem of bleeding gums for 6 months and around 66% (165) of the patients had undergone treatment for gum disease such as scaling and root planning.

Table 1: Self-assessed versus clinically diagnosed gingival bleeding.

Bleeding from gum	Clinically bleeding gum		Total
	Present	Absent	
Yes	43 20.18%	10 27%	53
No	170 79.8%	27 72.97%	197
Total	213	37	250

There was a marked disparity between the self-assessed and clinically diagnosed bleeding gums which shows a sensitivity of 20.18% and a specificity of 72.97%. It

shows large false negative cases (79.8%) and a few false positive cases (27%) (Table 1).

The self-assessed versus clinically diagnosed loose teeth showed a sensitivity of 72.2% and a specificity of 97% that is, there was an agreement of 97% that there was no mobility when it was actually answered no by the patient. However, the false negative score was 27% and a false positive score was 2% (Table 2).

Table 2: Self-assessed versus clinically diagnosed loose teeth.

Mobility	Clinically mobile		Total
	Present	Absent	
Yes	39 72.2%	4 2%	43
No	15 27%	192 97%	207
Total	54	196	250

Table 3: Self-assessed versus clinically diagnosed deposits on teeth.

Mobility	Clinically diagnosed deposits on teeth		Total
	Present	Absent	
Yes	36 22.22%	13 14.7%	49
No	126 77.77%	75 85.2%	201
Total	162	88	250

The self-assessed versus clinically diagnosed deposits on teeth showed a sensitivity of 22.22% and a specificity of 85.2% that is there was an agreement of 85.2% that there were no deposits between teeth when it was actually absent. The table showed a false negative value of 77.77% and a false positive value of 14.7%. Most of the patients were unable to assess the presence of deposits on teeth (Table 3).

Table 4: Self-assessed versus clinically diagnosed swelling of gums.

Swelling of gums	Clinically diagnosed swelling of gums		Total
	Present	Absent	
Yes	4 1.92%	5 11.9%	9
No	204 98%	37 88%	241
Total	208	42	250

Most of the patient were unable to self-assess swelling of gums. The false negative value was 98%. The self-assessed versus clinically diagnosed swelling of gums

showed a very low sensitivity, i.e. 1.92% and a specificity of 88%. The false positive value was 11.9% (Table 4).

Table 5: Self-assessed versus clinically diagnosed receding gums.

Receding gums	Clinically diagnosed receding gums		Total
	Present	Absent	
Yes	11 25%	0 0.00	11
No	33 75%	206 100%	239
Total	44	206	250

The self-assessed versus clinically diagnosed gingival recession showed a sensitivity of 25% and a specificity of 100%. This shows that 25% of the patients were actually able to assess the gingival recession. The table showed a false negative value of 75% (Table 5).

Table 6: Shows the percentages of self-assessed and clinically diagnosed periodontal health status.

Periodontal health	Self-assessed (%)	Clinically diagnosed (%)
Gingival bleeding	21	85.2
Mobility	17	21.6
Gingival swelling	3.6	83.2
Recession	4	17.6
Sensitivity	8.8	17.2
Deposits	19.6	64.8

The self-assessed versus clinically diagnosed sensitivity showed that there was an agreement of 46.5% between self-assessed versus clinically diagnosed sensitivity whereas the specificity shows the value of 99%. The table showed a false negative value of 53.4%.

There was a marked discrepancy between the two values of self-assessed and clinically diagnosed periodontal health status. This shows that the self-assessed periodontal tool was a poor indicator of the periodontal health status (Table 6).

DISCUSSION

Periodontal diseases are the most common inflammatory diseases affecting the oral tissues and result after bacterial attacks and colonization which is followed by host response to bacterial invasion.⁹ The common signs and symptoms of periodontal diseases are swelling, bleeding on probing (BOP), pain, bleeding on brushing, mobility, and loss of function. If left untreated they can lead to advanced destruction of supporting structures and untimely loss of teeth. The treatment of periodontal disease will fail if the individuals are not aware of the

differences between periodontal health and disease. The present study was undertaken to determine the awareness of periodontal health status and compare it with the clinically assessed periodontal health status among patients visiting the outpatient department of Rajarajeswari Dental College and Hospital which is located in the outskirt area of Bangalore city.

In the present study, when the self-reporting of bleeding gums was compared with the clinically diagnosed bleeding gums, it showed a very high specificity (72.97%) but very low sensitivity (20.18%). The reason could be because of the use of blunt instrument to check the bleeding on probing in the clinical examination, detecting minor gingival bleeding which would not be noticed at all by the patients. This study is in agreement with the study conducted by Kallio et al and Tervonen and Knuttila who showed that most of the patients did not notice bleeding from gums and was poorly perceived by the patient.^{10,11}

The presence of calculus is not an indicator of the presence of disease. It indicates poor oral hygiene and facilitates plaque buildup which can be an immediate cause for inflammation. The present study showed low sensitivity (22.22%) and high specificity (85.2%) of the self-assessed versus clinically diagnosed scores for the presence of deposits which was similar to most of the studies.

The self-assessed versus clinically diagnosed gingival disease showed a very low sensitivity of 1.92% and a high specificity of 88% which is in agreement with the study conducted by Heloe where most of the patient said that they had never suffered from gum disease while in clinical examination it was revealed that all subjects showed signs of gingival disease.¹²

The self-assessment versus clinically diagnosed gingival recession showed high specificity of 100% which is in agreement with the study conducted by Nagarajan et al which showed low sensitivity.² The self-assessment of loose teeth showed good sensitivity (72.2%) which is in agreement with the study conducted by Glavind and Attstrom.¹⁴ This means that patients were able to perceive periodontitis as the severity increased and as irreversible changes occurs.

Overall, the result showed a marked disparity between the self-assessed and clinically diagnosed periodontal health status which means that most of the people seem to be unable to recognize whether they are affected by periodontal diseases or not.

The findings reflect a high level of unawareness that may influence an oral health care seeking behavior and utilization of the facilities available. Therefore, there is a need for the patient awareness and motivation for the maintenance of periodontal health.

CONCLUSION

Recognition of health and disease by a person, the knowledge of what to do when a problem occurs and the appropriate response from the health professional are the major factors in prevention and control of chronic inflammatory periodontal diseases. Treatment will fail and in fact will not even start, if individuals are not aware of the differences between periodontal health and disease; the significance of these differences and the part they can play in prevention and control. The results of the present study showed that there is discrepancy between the subjectively and objectively assessed periodontal health status. So as a dentist, we should educate patients so as to increase people's awareness and knowledge of their own dental disorders and to change their attitudes and behavior towards oral health care to improve oral as well as general health.

Funding: No funding sources

Conflict of interest: None declared

Ethical approval: The study was approved by the Institutional Ethics Committee

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Cite this article as: Devi RS, Kumar M, Nongmeikapam R, Rahul B, Sushma SG, Devi P. Self-assessment and clinical diagnosis of periodontal status among patients visiting dental institution in Bangalore city: a cross-sectional study. *Int J Community Med Public Health* 2023;10:4182-6.