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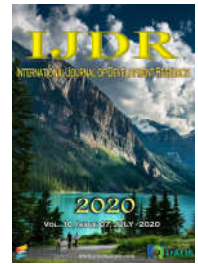
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## A LONGITUDINAL STUDY TO EVALUATE SELF-PERCEPTION OF PATIENTS AFTER NON-SURGICAL PERIODONTAL TREATMENT

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### ABSTRACT

**Background:** Patient's positive perception after periodontal treatment is one of the main factors for the success of the periodontal therapy. The aim of this longitudinal study was to investigate the perceptions of subjects regarding nonsurgical periodontal treatment over a period of 1 year. **Materials and methods:** Twenty-five subjects ( $42.14 \pm 4.65$  years) with moderate to severe periodontitis completed a questionnaire at two different times after a nonsurgical periodontal treatment: 30 days and 390 days. The questionnaire included 40 questions which were divided into three parts: 1-perception of subject regarding changes in clinical signs of periodontal disease, 2-psychological aspects of the subject regarding their oral health status, and 3-satisfaction with the treatment. Each response was scored on the Likert scale initially ranging from 1 to 5 points. The results for each question were dichotomized into 1 or 0, respectively, showing if the subject was favourable or unfavourable to treatment. A descriptive data analysis was performed, assessing the agreement of the results in T1 and T2 (Kappa). **Results:** The results generally showed a favourable perception related to the treatment and continued satisfaction over time. The exceptions were in regards to gingival recession, persistent bleeding and bad breath, and difficulty in performing the mechanical control imposed by the professional. **Conclusion:** It was concluded that the therapy used was satisfactory to the subjects and that a favourable perception was maintained after 1 year of follow-up.

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### INTRODUCTION

Until very recently, clinical research focused mainly on the course of periodontal disease, its diagnosis, development of appropriate treatments, as well as its clinical response. In this context, the due importance has not been given to the perceptions and satisfaction of patients in relation to the treatment. However, in recent years, this topic has gradually gained attention in studies on dental health (Lee IC et al., 2007). Recently, an interesting review showed that the periodontitis is defined not only by clinical signs, but it also includes the impact on general health and quality of life (Papapanou PN et al., 2017). According to the World Health Organization recommendations, all actions and practices devoted to health promotion should approach not only the disease but the patient as well, considering him an inseparable bio-psycho-social being within society.

Thus, self-care and self-management are defined by the World Health Organization in its model of Care for Chronic Conditions as a behaviour in which the individual acts autonomously in order to establish and maintain his health while preventing and dealing with the disease. A greater understanding about the consequences of periodontal disease, as well as its therapeutic response, is important in many aspects: in understanding the perception of patients concerning the impact of their oral health in their own lives; in periodontal care planning, which addresses the needs of patients and their main concerns; in evaluating the results of periodontal treatment from the perspective of patients; and in calling attention to the importance of periodontal care in society (Locker D, 1988). In this case, the communication between patient /dental practitioner is of crucial importance for a successful treatment. Some studies have been developed to analyze the patient's quality of life and perception after

periodontal treatment (Lee IC et al., 2007) (McGrath C et al.1999). These studies are still limited in number. On the other hand, these studies do not report if subjects perceive the immediate results over time. In this sense, the purpose of this study was to evaluate if and how immediate results of nonsurgical therapy are perceived by subjects, and whether this perception is maintained over the time of one year.

## MATERIALS AND METHODS

A longitudinal study was conducted at a government dental hospital in Jammu in which all the participants received strictly nonsurgical periodontal treatment, and were followed for a period of 1 year. The study was approved by the institutional ethical Committee, and a written informed consent was obtained from each subject. 25 subjects diagnosed with moderate to severe periodontitis were treated by a periodontist. The characteristics of subjects before and after treatment are presented in [Table 1]. During the experimental period, subjects attended preventive maintenance appointments and oral hygiene instructions every 3 months.

**Table 1. Characteristics of the population before and after periodontal treatment**

Subjects (mean±SD)	Before treatment	After treatment
Age (years)	42.14 ± 4.65 years	42.14 ± 4.65 years
Gender	14 females, 11 males	14 females, 11 males
Smoking status (%)	65%	65%
Visible plaque index (%)	78.6±0.34	8.5±0.36
Gingival bleeding index (%)	23±0.60	1.5±0.12
Bleeding on probing	78.23±2.56	22.34±2.34
Probing pocket depth (mm)	4.16±0.12	2.45±0.10

A printed questionnaire to assess perceptions of the subjects was filled by a trained interviewer at T1 (30 days after the nonsurgical periodontal treatment) and T2 (390 days after nonsurgical periodontal treatment). The study was conducted from March 2018 to April 2019. The questionnaire used in this study contained 40 questions in English, formulated from clinical observations and opinions of specialists in Periodontics. These questions were divided into three domains: Domain 1 (D1): Changes of clinical signs of periodontal disease (items 01–08); Domain 2 (D2): Psychological aspects of the patient regarding his oral health status (items 09–20); and Domain 3 (D3): Patient satisfaction with the performed treatment (items 21–40). The answers were marked based on ordinal Likert scale and contained alternatives ranging from “completely agree” to “strongly disagree.” Each item response from the Likert scale was initially scored from 1 to 5. After that, these scores were dichotomized to 1 or 0, respectively, if they were favorable or unfavorable to the treatment results. A descriptive analysis of the data was performed. Internal consistency of the questionnaire was tested by Cronbach's alpha value, and interpreted according to Bland and Altman. The correlation of results between T1 and T2 was measured by Kappa index. The interpretation of the concordance of the scale was performed according to Landis and Koch. SPSS (version 20.0) and Microsoft Excel software were used to carry out the statistical analysis of the data.

## RESULTS

The present survey involved 25 individuals composed of 14 women and 11 men (42.14 ± 4.65 years; 65% smokers). The internal consistency of the questionnaire was considered

satisfactory. In relation to D1, the results showed, in general, a favorable perception of the subjects in both T1 and T2. Patients related decreased mobility of the teeth (85% of patients in T1 and 94% in T2) and dental sensitivity after treatment (86% in T1 and 94% in T2). The items that caused dissatisfaction to patients were related to increased gingival recession (item 3, 29% of patients in T1 and 56% in T2), persistent bleeding (item 7, none of the patients in T1 and 4% in T2), and bad breath (item 8, 4% of patients in T1 and 18% in T2). Table 2 shows the correlation for D1, between T1 and T2. With the exception of items 3, 7 and 8, a positive increment in favorable perception between T1 and T2 was observed. It is possible to observe that, although there was an increase in the percentage of unfavorable response to treatment as measured by items 7 and 8, the high values of agreement between T1 and T2 show only a little increase of this unfavorable perception, meaning stability over time. In contrast, the low level of agreement observed for item 3, showed that, although already present in T1, the recession had increased and caused further dissatisfaction in T2.

**Table 2. Kappa index of agreement for domain 1 (perception of the patient for clinical signs of periodontal disease) between the two administrations of the questionnaire (T1 and T2)**

Item	κ
1	0.786*
2	0.735*
3	0.485*
4	0.871*
5	0.682*
6	0.686*
7	0.936*
8	0.740*

\*p<0.001

Table 3 shows the correlation between the two moments of the interview for D2. Interestingly, 100% of the subjects in both T1 and T2 reported that they had learnt about the causes of gum disease and its prevention. This perception is somewhat corroborated by the data showing that 93% and 100% of the patients, respectively in T1 and T2, reported that gum disease is caused mainly by dental plaque. Some patients reported the belief that periodontal disease will return, regardless of self-care: 7% and 23% in T1 and T2, respectively. However, although there has been an increase in this percentage in T2, it was not significant since the rate of agreement between exams was high (kappa = 0.66,  $P < 0.001$ ), showing a small change.

**Table 3. Kappa index of agreement for the domain 2 (psychological aspects of the patient in relation to his oral health status) between the two administrations of the questionnaire (T1 and T2)**

Item	κ
9	0.598*
10	0.632*
11	1.020*
12	0.935*
13	0.719*
14	0.686*
15	0.518*
16	1*
17	0.430*
18	1*
19	1.002*
20	1*

\*p<0.001

Considering the same domain (D2), it was observed that a significant number of patients were not able to understand the importance of removing plaque versus brushing their teeth several times a day (item 17, 58% of patients in T1 and 69% in

T2). This data expresses a significant increment in this perception as shown by a low correlation rate [Table 3], (Kappa 0.430). After 1 year of follow-up, the perception that the treatment was painful increased from 20% in T1-24% in T2. Although the agreement was significant, the expressed value of 0.59 [Table 3] underscores a moderate agreement, inferring that it probably had a reduced impact. With the exception of items 9, 14 and 17, the other items remained unchanged or showed a positive increment in the perception regarding the treatment in T2. Similarly, the D3 showed a subtle improvement in the perception of the subjects after 1 year of treatment. However, subjects reported that treatment time was longer than expected (52% of patients in T1 and 58% in T2), that the mechanical biofilm control directed by the dentist required a very long time (43% of patients in T1 and 78% in T2) and it was difficult to perform (4% of patients in T1 and 13% in T2). [Table 4] contains values of agreement in response between the two moments of the interview. Except for those, the other items remained unchanged or even showed a positive increase in the favorable perception of the treatment.

**Table 4. Kappa index of agreement for domain 3 (patient satisfaction with treatment performed) between the two administrations of the questionnaire (T1 and T2)**

Item	$\kappa$
21	1.04*
22	0.859*
23	1*
24	1.02*
25	0.929*
26	1.01*
27	1*
28	0.579*
29	0.680*
30	0.562*
31	0.591*
32	0.798*
33	0.872*
34	0.856*
35	0.809*
36	0.690*
37	0.790*
38	1*
39	0.564*
40	0.681*

\* $p < 0.001$

## DISCUSSION

The present study was undertaken to evaluate the perception of patients after nonsurgical periodontal treatment immediately after (30 days) and 1 year later (390 days). Overall, the results showed that the patients perceived the treatment as favorable and that this perception was maintained after a longitudinal evaluation. However, negative aspects, such as recession, were also present and reflect unfavorable aspects of the periodontal treatment. This study has a reduced sample ( $n = 25$ ), compared to the sample expressed in the other study by Lee *et al.*,  $n = 948$  though it has comparable sample related to the study conducted by Stadler AF *et al.*,  $n = 19$ . However, it is worth noting that the goal of the present investigation was not to estimate the prevalence of the perceptions, but to identify and verify the maintenance of the perception over time. In general, instruments for assessing the perception of patients are less. There is a growing need for qualitative studies to analyze the perception of patients in relation to a given treatment. We used a questionnaire containing 40 items. According to Luiz *et al.*, a questionnaire must have some fundamental characteristics: it

has to be simple, understandable, reproducible, consistent and of low cost. It is believed that the present instrument has these characteristics. The questions of this questionnaire were grouped in three domains: D1 considered the perception of changes in clinical signs of periodontal disease (items 01–08); D2 covered the psychological aspects of the patients regarding their oral health status (items 09–20); and D3 included questions related to the patient satisfaction with the treatment (items 21–40). Fardal *et al.*, through a cross-sectional study, identified a very low degree of discomfort after periodontal treatment, showing favorable immediate results. In a study by Stadler AF *et al.*, 100% of patients reported feeling comfortable with the treatment. In our study also, 100% of patients reported feeling comfortable with the treatment. Similarly, Matthews and McCulloch, reported lower pain and dental sensitivity after nonsurgical treatment as compared to surgical therapy. In general, in our study most of the subjects reported an improvement in self-perception considering both T1 and T2. Among the unfavorable outcomes, recession was shown as impacting on 29% of subjects in T1 and 56% in T2. It was also shown that this perception increased significantly over time [Table 2]. It should be noted, however, that this is an expected and inherent outcome of periodontal therapy and even though this represents an unfavorable result it infers reduction or cessation of the periodontal inflammation. In the present study a low percentage of individuals reported that mechanical biofilm control was difficult (4% of patients at T1 and 13% in T2). On the other hand, patients reported this control as time consuming (43% in T1) and this perception became greater in T2 (78%). The fact that 95% of patients reported following the guidelines exactly as provided by the dentist, suggests that the study reached a high degree of adherence. The clinical findings from this sample showed low levels of plaque and gingivitis (average reduction of 78%) and maintenance during the experimental period corroborated that the study achieved a high compliance among patients. It is known that patient compliance is critical to the success of any medical or dental intervention.<sup>9</sup> Likewise, the implementation, by a team, of frequent periodontal preventive maintenance is essential.

## Conclusion

It was concluded that the therapy used was satisfactory to the subjects and that a favourable perception was maintained after 1 year of follow-up.

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