

## Patient Satisfaction towards Non-Surgical Periodontal Therapy

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### Abstract

**Objective:** This study aimed to evaluate the patient satisfaction towards non-surgical periodontal therapy.

**Methods:** This cross-sectional study included 102 patients (> 20 years old) who were visiting the dental hospital at King Abdul-Aziz University, Jeddah, Saudi Arabia. Patients answered the 13-item satisfaction questionnaire on periodontal therapy via electronic and manual survey. Scores were analyzed using descriptive statistics, independent t-test, and One-way ANOVA with Least Significant Difference.

**Results:** Most of the participants had thought of professional cleaning as highly efficient. And they have experienced minimal gum bleeding, pain, teeth pressure, sensitivity, absence of gagging, and minimal inconvenience brought by sounds during professional cleaning session. The overall mean satisfaction score of participants was  $22.79 \pm 4.4$  (n = 102, min = 8, max = 30), suggesting a very good level of satisfaction experienced by them concerning non-surgical periodontal therapy. Furthermore, significantly higher mean satisfaction score was found for patients with gingivitis having bachelor's degree of education (score =  $24.67 \pm 3.4$ ; n = 36) compared to those High School graduates with gingivitis (score =  $21.27 \pm 4.6$ ; n = 11). This implies a favorable treatment experience for bachelor's graduates having gingivitis Compared to High School graduates with the same condition.

**Conclusion:** Mapping the patient-based outcomes of non-surgical periodontal treatment through assessment of their satisfaction is important in evaluating the effectiveness of such therapy, which consequently helps in the enhancement of strategies, patient safety, and limitations related with non-surgical treatment of periodontal condition.

**Keywords:** Professional Cleaning; Gingivitis; Non-Surgical Periodontal Therapy; Patient Satisfaction; Periodontitis

### Introduction

The periodontium health of humans is often compromised through chronic inflammatory condition, making it a prime public health issue. The oral health inflammatory condition, periodontitis, has been characterized with gingival recession, and tooth drifting or loss [1-3], and has shown to be associated with risk factors such as alcohol diet, and smoking [1,4,5]. This oral disease affects 25 to 30% of population globally [1,6,7]. Not only in physical functioning, but periodontitis has also been shown to have negative effect on psychological and social aspects of patients [1,8]. Periodontal therapy is known way to treat periodontal-related cases, having the periodontal condition

measured by parameters among which include clinical attachment level, pocket depth, and bleeding on probing [9]. Non-surgical type of periodontal therapy has been regarded as an effective treatment in the removal of periodontium-related dental plaque biofilm, thereby improving oral health by decreasing the possibility of halitosis, pain, complications, as well as enhancing quality of life [1,10]. When it comes to instrumentation of the therapy, hand and power-driven-types can be employed. Studies reported that the combination of hand and machine-driven instrumentations have produced the same and significant enhancement on periodontal parameters for clinical practice [11,12]. The study of Drisko and others (2000) [13] mentioned that the American Academy of Periodontology stated that since the attitudes toward specific mechanical therapy techniques may influence patient compliance with prescribed treatment regimens, patient acceptance of ultrasonic scalers versus hand instruments is important. Though reported to be of much effective in improving the patient's quality of life compared to surgical approach [1], non-surgical approach may still impose possible side effects such as sensitivity, pain, and even quality of life [11].

As the quality of life is mentioned, the periodontal disease also involves studies on psychological and sociological aspects since the behavior, quality of life, and perception of patients having the condition are also important to consider [9,14]. However, the effect of periodontal intervention on the well-being of the patients is commonly not prioritized [1]. Studying the perception and patient-based outcomes, including the quality of life and patient satisfaction, is said to help in generating important information which is needed in the enhancement of strategies related to treatment, and patient safety [1,11,15].

### Aim of the Study

This cross-sectional study aimed to assess the patient satisfaction towards non-surgical periodontal therapy in Jeddah, Saudi Arabia.

### Materials and Methods

#### Selection criteria

One-hundred and two patients, aged at least 20 years old and visiting the dental hospital at King Abdul-Aziz University in Jeddah, were included in this cross-sectional study. This study was conducted in 2019 - 2020 via electronic and manual survey. Ethical approval was obtained from the Ethical Committee in the Faculty of Dentistry, King Abdul-Aziz University (KAUFD), Jeddah, Saudi Arabia.

Each participant was consented and subjected to either sonic or hand scaling by a dental hygienist in KAUFD. Each patient had answered a pre-validated questionnaire comprised of 13 questions ranging from various aspects of measuring patient satisfaction in terms of non-surgical periodontal scaling. The pre-validated questionnaire has been adapted from the study of Croft., *et al.* [16] and has been translated to Arabic language, modified and reviewed by a statistician. The questionnaire was distributed electronically using Google Forms.

The inclusion criteria included healthy patients with no systemic disease (ASA I) and non-smoker that at least performed non-surgical periodontal scaling in at most 2 months ago with a hygienist to full mouth with calculus but with no mobility nor fremitus. Radiographs/ dental charting of the included sample were reviewed and interpreted.

#### Statistical analysis

Statistical analyses were performed with SPSS software version 23 (IBM Corp., Armonk, NY, USA) and visually presented by using GraphPad Prism version 8 (GraphPad Software, Inc., San Diego, CA, USA). Satisfaction score for each question was added and used as main variable for comparison to the sociodemographic data and professional cleaning indicators. Assuming normal distribution, independent t-test was used for comparison of variables with two groups while one-way ANOVA with Least Significant Difference (LSD) as a post hoc test was utilized for groups with more than 2 variables. Statistical significance was set at  $p < 0.05$ .

**Results and Discussion**

A total of 102 participants took part in this study, with the majority belonging to 20 - 40 years old (79.4%), females (86.3%) and obtained a bachelor’s degree (59.8%). Most of the participants agreed to strongly agreed that professional cleaning as highly efficient and cleaned their teeth well (99%, n = 101). This is evident in certain aspects, such as minimal gum bleeding and pain, teeth pressure and sensitivity, absence of gagging, and minimal inconvenience brought by sounds during professional cleaning session, as provided in figure 1. Aside from that, about 55% of the participant had mentioned that professional cleaning does not take a lot of time. The overall mean satisfaction score of participants was found to be  $22.79 \pm 4.4$  (n = 102, min = 8, max = 30), suggesting a very good level of satisfaction experienced by the participants concerning non-surgical periodontal therapy. The relationship between patient satisfaction scores and professional cleaning was then assessed as shown in table 1. Results revealed that despite majority of the participants were interviewed on the actual day of professional cleaning, it did not significantly affect the overall patient satisfaction when compared to those who had their teeth cleaned before 7 - 14 days and after 1 - 2 months prior to the interview (p > 0.05). In terms of diagnosis of patients, findings showed higher mean satisfaction scores of patients having gingivitis (score =  $23.92 \pm 3.8$ ) than those with periodontitis (scores =  $22.29 \pm 3$ ), though the difference was not significant based on the treated sample size (p = 0.075). On the other hand, significant difference in the mean satisfaction scores was observed with respect to type of professional cleaning session (p = 0.028). More specifically, significantly higher patient satisfaction score was obtained for patients who underwent supra-type of professional cleaning session (score =  $23.82 \pm 3.7$ ; n = 65) as compared to those who experienced sub-type (score =  $21.25 \pm 3.2$ ; n = 12). However, no significant differences (p > 0.05) in patient satisfaction were observed with respect to frequency of professional cleaning, type of tools and instrument used [power ( $22.95 \pm 4.3$ ) vs hand ( $22.11 \pm 4.8$ )]. Figure 1 shows the distribution of average patient satisfaction scores obtained by the participants and figure 2 shows the patient satisfaction scores for each type of the professional cleaning session.

	N	Min	Max	Mean	SD
Overall Satisfaction score	102	8	30	22.79	4.4
Variables	Total	Patient Satisfaction Score		p-value	
When did you do your last the Professional cleaning?	Today	92	$22.73 \pm 4.5$		0.409
	Before 7 - 14 days	4	$21.25 \pm 3.3$		
	Before 1 - 2 months	6	$24.83 \pm 3.8$		
How often do you clean your teeth at dental office (Professional cleaning)?	6 months	26	$22.62 \pm 5.8$		0.349
	1 year	36	$23.56 \pm 3.7$		
	2 years	12	$20.92 \pm 5.0$		
	More than 2 years	28	$22.79 \pm 3.4$		
	Hand	24	$23.00 \pm 4.7$		
What is the diagnosis of the patient?	Periodontitis	24	$22.29 \pm 3.3$		0.075
	Gingivitis	53	$23.92 \pm 3.8$		
Type of the professional cleaning session?	Supra	65	$23.82 \pm 3.7$		0.028 <sup>a</sup>
	Sub	12	$21.25 \pm 3.2$		
Type of instrument used by examining dentist	Power	83	$22.95 \pm 4.3$		0.451
	Hand	19	$22.11 \pm 4.8$		

<sup>a</sup>: Significant using Independent t-test @<0.05 level.

**Table 1:** Relationship between patient satisfaction scores and professional cleaning characteristics (N = 102).



Figure 1: Average patient satisfaction score for each question on professional cleaning.

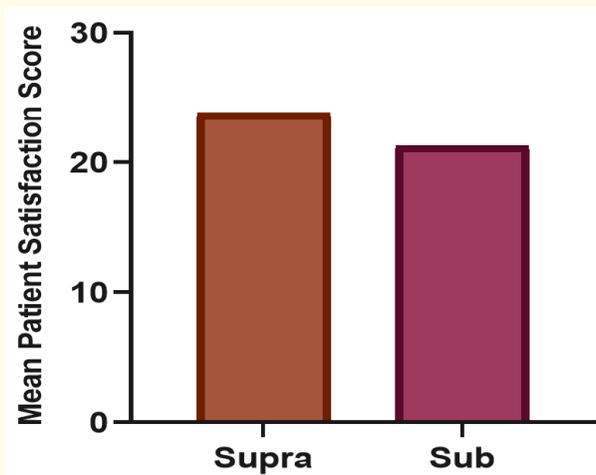


Figure 2: Average patient satisfaction score obtained for each type of the professional cleaning session.

The patient satisfaction scores, were then compared with respect to each sociodemographic characteristic, as shown in table 2. No significant differences in the mean satisfaction score were observed relative to 20 – 60 years old age group ( $p > 0.05$ ), while  $> 60$  years old age group was not analyzed for any correlation due to inadequate sample size. In terms of educational background, analysis revealed significant difference in the mean satisfaction scores of patients relative to bachelor’s degree educational level ( $p = 0$ ) according to One-Way ANOVA Test at 0.05 level. More specifically, significantly higher mean satisfaction score was found for patients with gingivitis having

bachelor’s degree of education (score = 24.67 ± 3.4; n = 36) compared to those High School graduates with gingivitis (score = 21.27 ± 4.6; n = 11). This implies a favorable treatment experience for bachelor’s graduates having gingivitis that those High School graduates with the same condition. No significant differences (p > 0.05) in the mean satisfaction scores were observed with respect to participants with periodontitis regardless of education levels, as well as for gender.

Demographics	Periodontitis		Patient Satisfaction Score		
	N	Mean ± SD	N	Mean ± SD	
Total		24		53	
Age	20 - 40	10	21.10 ± 3.3	49	23.92 ± 3.9
	41 - 60	9	23.33 ± 3.4	4	24.00 ± 2.9
	60 more	5	22.80 ± 2.7	0	0.00 ± 0.0
p-value		0.319		0.968	
Gender	Male	5	22.60 ± 2.1	6	25.83 ± 3.1
	Female	19	22.21 ± 3.6	47	23.68 ± 3.9
p-value		0.818		0.199	
Educational level	Intermediate and below	6	22.67 ± 3.3	6	24.33 ± 3.1 <sup>AB</sup>
	High school	9	22.89 ± 3.4	11	21.27 ± 4.6 <sup>A</sup>
	Bachelor	9	21.44 ± 3.4	36	24.67 ± 3.4 <sup>B</sup>
p-value		0.631		0.033 <sup>a</sup>	

a: Significant using One-Way ANOVA Test @<0.05 level.

**Table 2:** Relationship of patient satisfaction scores on professional cleaning against socio-demographic factors.

Furthermore, the consistency in the patient satisfaction scores on professional cleaning was then assessed across different socio-demographic factors (Table 3). Findings showed no significant differences in the patient mean satisfaction scores on either supra- or sub-type professional cleaning relative to socio-demographic factors such as age, gender, and educational background (p > 0.05) according to Independent t-test.

Demographics	Supra		Patient Satisfaction Score		
	N	Mean ± SD	N	Mean ± SD	
Total		65		12	
Age	20-40	52	23.83 ± 3.9	7	20.57 ± 3.5
	41-60	9	24.33 ± 3.1	4	21.75 ± 2.9
	60 more	4	22.50 ± 3.0	1	24.00 ± 0.0
p-value		0.718		0.601	
Gender	Male	8	25.25 ± 2.8	3	22.00 ± 2.6
	Female	57	23.61 ± 3.8	9	21.00 ± 3.4
p-value		0.246		0.658	
Educational level	Intermediate and below	9	23.89 ± 3.1	3	22.33 ± 3.8
	High school	16	22.31 ± 4.5	4	20.75 ± 1.5
	Bachelor	40	24.40 ± 3.4	5	21.00 ± 4.2
p-value		0.164		0.817	

**Table 3:** Relationship of patient satisfaction scores on professional cleaning against socio-demographic factors.

## Discussion

In the present study, most of the participants who underwent non-surgical periodontal therapy had thought of professional cleaning as highly efficient which was evident in certain aspects, such as minimal gum bleeding and pain, teeth pressure and sensitivity, absence of gagging, and minimal inconvenience brought by sounds during professional cleaning session. The work of Aslund and colleagues (2008) [11] on patients subjected to non-surgical periodontal therapy described the possible side effects of root instrumentation (non-surgical) to involve gingival recession, sensitivity, or pain. Despite this, the possible effect of utilization of mechanical device for periodontal disease (mild to moderate) was also generally tolerated by the patients. In the observational study of Vatne and Others (2015) [9] on the 158 Norwegian patients, pain perception was also observed to be low after non-surgical periodontal therapy. Patient comfort was also studied by Quaranta and others (2012) [17] together with periodontal healing. According to the study, minimal pain was felt by the patients, accompanied with higher compliance to therapy. Despite lower instrumentation for power-driven devices, similar pattern of healing was observed for both instrumentations. Most of the patients complied to non-surgical periodontal treatment despite the type of instruments chosen by clinician. In a study by Croft and co-workers (2003) [16], intensified preference for power-driven devices was observed due to lower levels of pain and lower messiness during operation. This can substantially influence compliance and satisfaction among patients with periodontal maintenance. Regardless of the scaler used, both types of instrumentations exhibited similar efficacy. However, higher risk can be associated to sonic devices in terms of spatter formation. Other studies mentioned that dealing with operator of understanding and sympathy as well as the patient having confidence, the anxiety and pain expectation of the patient may be reduced [9,15,18]. It is very important to engage with the patients in empathic approach prior to treatment, especially in delivering realistic expectations on possible pain and results [9].

The overall mean satisfaction score of participants was found to be  $22.79 \pm 4.4$  (min = 8, max = 30), suggesting an above half level of good satisfaction experienced by the participants concerning non-surgical periodontal therapy. This is in agreement with the result of the randomized clinical trial study conducted by Ribeiro and co-workers (2011) [19] in which supportive periodontal therapy was reported to be of very satisfactory level among 29 patients with intrabony defects after both (minimally invasive) non-surgical (92.30%) and surgical (92.85%) therapies. The study also emphasized the advantage of non-surgical approach when it comes to significant decrease in chair-time treatment compared to surgical technique ( $p < 0.05$ ). The observational study also of Vatne and others (2015) [9] mentioned the positive impact of treatment with periodontal treatment on satisfaction of 152 Norwegian patients. In this work, patients were reported to have high level of compliance (short and long term) and desirable patient-centered outcomes level based on assessment after 1 year of treatment, and majority (95%,  $n = 144$ ) had good satisfaction with treatment result with 96% ( $n = 146$ ) mentioning to have wish treating the same approach again when needed. Another study by Aslund and colleagues (2008) [11] also reported a good mean satisfaction scores (using visual analog scale) of 59 patients having periodontitis (mild to moderate) after treating with nonsurgical periodontal therapy using curets ( $n = 29$ ) and piezo-ceramic ( $n = 30$ ). More specifically, this work that the utilization of periodontal therapy among patients facilitated a small but statistically significant enhancement in both groups, and that it exhibits positive impact to oral health-related quality of life. The recent systematic review conducted by Khan and co-workers (2020) [1] supports the current findings in which periodontal treatment-related outcomes (assessed through Oral Health Impact Profile 14) obtained from studies between January 1977 and January 2019 revealed that non-surgical periodontal therapy is effective in improving patient-reported outcomes.

With regards to the type of professional cleaning, Cobb (2002) [10] highlighted the need for supragingival plaque control for early and moderate onset of disease. Comparing the obtained results of this research, higher patient satisfaction scores were obtained for supragingival therapy. This may attribute to fewer complications upon disease onset in comparison to subgingival therapy.

The oral health-related quality of life is said to be negatively affected by periodontal diseases. Comparing non-surgical versus surgical periodontal therapy, Shanbhag and colleagues [20] observed that lower quality of life was observed for those who had surgical periodon-

tal therapy. They mentioned that adults with periodontal diseases can reasonably improve their oral health via non-surgical therapy in a routinely manner.

For a successful outcome of treatment with periodontal therapy, especially the long-lasting ones, 'compliance' is one of the essential ingredients [9,21]. However, compliance and satisfaction are often overlooked, and not usually attained when it comes to non-surgical periodontal treatment [1,22,23]. It is reported in some studies that people tend to comply with treatment provided that they believe they are capable to do it and if it will give them positive health impacts [9,24]. Mapping the patient-based outcomes of non-surgical periodontal treatment will help in evaluating the effectiveness of such therapy, which will consequently help in the enhancement of safety, discomfort and other limitations related with the periodontitis [1]. The development of a validated, reliable, widely-culture applicable, single patient-based outcome measure may help in the determination of oral health-related quality of life measure, which consequently helps in predicting outcomes associated with health economics [1,25].

Limitation of this study include a small sample size. Conducting further studies on a larger population may provide a bigger picture on various aspects of patient satisfaction following treatment with non-surgical periodontal therapy.

### Clinical Relevance

Compliance with periodontal maintenance continues to be a challenge for the periodontists. Patient satisfaction is one factor that is often overlooked when it comes to non-surgical periodontal therapy. This shapes the willingness of the patient to pursue therapy in a periodic manner.

### Conclusion

Mapping the patient-based outcomes of non-surgical periodontal treatment through assessment of their satisfaction is important in evaluating the effectiveness of such therapy, which consequently helps in the enhancement of strategies, patient safety, and limitations related with non-surgical treatment of periodontal condition.

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### Conflict of Interest

The authors declare that there is no conflict of interest.

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