Impact of Non-Surgical Periodontal Therapy on Oral Health–Related Quality of Life: A Questionnaire-Based Survey

Dr. Shruti Gupta, Dr. Janardhana Amaranath B.J

Department of Periodontology, Rama Dental College, Hospital & Research Centre, Mandhana, Kanpur, Uttar Pradesh, India

Abstract

Background:

Periodontal therapy has shifted toward a patient-centered approach, emphasizing oral health–related quality of life (OHRQoL) in addition to clinical outcomes. Scaling and root planing (SRP) is the standard non-surgical treatment, but its effect on patient perception requires further evaluation.

Objective:

To evaluate and compare OHRQoL following SRP in patients with gingivitis and periodontitis using patient-reported outcome measures.

Materials and Methods:

A comparative observational study was conducted on 200 systemically healthy individuals aged 20–60 years, divided into gingivitis (n = 100) and periodontitis (n = 100) groups. A validated 14-item questionnaire was administered 7 days post-SRP. Data were analyzed using the Mann–Whitney U test ($p < 0.05$).

Results:

Most participants reported improvement in inflammatory and functional parameters, including reduction in bleeding (88.5%), halitosis (86%), and food lodgment (80%). Approximately 80% showed improved chewing comfort, with minimal pain reported. Dentinal hypersensitivity was observed in 32.5% of participants and showed significant intergroup difference ($p = 0.02$). Overall satisfaction exceeded 90%.

Conclusion:

SRP significantly improves OHRQoL; however, dentinal hypersensitivity remains a clinically relevant concern.

Keywords:

Scaling and root planing; Oral health–related quality of life; Patient-reported outcomes; Periodontal therapy; Dentinal hypersensitivity

1. Introduction

Dental plaque is a complex ecosystem comprised densely packed microbial colonies, microbial by-products, glycoproteins, and desquamated epithelial cells. If plaque-induced gingivitis is left untreated, it can progress to periodontitis, leading to severe destruction of gingival and bone tissues[1,2]

Beyond the biological implications, periodontal diseases exert a profound impact on patients' functional capacity, aesthetic perception, and psychosocial well-being. Clinical manifestations such as gingival bleeding, halitosis, tooth mobility, and gingival recession can significantly impair mastication, speech, and self-esteem. Consequently, there has been a paradigm shift in periodontal research toward the incorporation of patient-centered outcomes as critical determinants of therapeutic success.[3]

Oral health–related quality of life (OHRQoL) is a multidimensional construct that reflects the extent to which oral health influences an individual's physical, psychological, and social functioning.[4] Traditional clinical indices, although indispensable, fail to capture the subjective experiences of patients. Therefore, patient-reported outcome measures (PROMs) have emerged as essential tools for evaluating treatment effectiveness from the patient's perspective.[5]

Scaling and root planing (SRP) remains the gold standard for non-surgical periodontal therapy, aiming to disrupt and remove pathogenic biofilms and calculus deposits. The procedure leads to reduction in microbial load, resolution of inflammation, and improvement in periodontal health.[6] However, SRP may also be associated with adverse effects, particularly dentinal hypersensitivity, resulting from exposure of dentinal tubules following removal of the smear layer and gingival recession.[7]

Although several studies have demonstrated improvements in clinical parameters following SRP, there is a relative paucity of literature focusing on its impact on OHRQoL, particularly in comparative contexts between gingivitis and periodontitis patients.[8] Furthermore, variability in patient perception underscores the need for standardized evaluation using structured questionnaires.

The present study was therefore designed to provide a comprehensive assessment of patient-reported outcomes following SRP and to critically compare the impact on OHRQoL between gingivitis and periodontitis cohorts.

2. Materials and Methods

2.1 Study Design and Ethical Considerations

This study was designed as a comparative observational clinical investigation conducted in the Department of Periodontology, Rama Dental College, Hospital and Research Centre, Kanpur, in accordance with the ethical principles outlined in the Declaration of Helsinki. Ethical clearance was obtained from the Institutional Review Board of Rama Dental College, Hospital and Research Centre, Kanpur, and written informed consent was secured from all participants prior to their inclusion in the study.

2.2 Study Population

A total of 200 patients aged between 20 and 60 years were recruited from the outpatient department of periodontology. Participants were categorized into two groups:

Group I (Gingivitis): Patients exhibiting gingival inflammation without attachment loss
Group II (Periodontitis): Patients exhibiting clinical attachment loss and radiographic boneloss .Diagnosis was established based on standard periodontal criteria.

2.3 Inclusion and Exclusion Criteria

Strict inclusion and exclusion criteria were implemented to ensure homogeneity of the study population and minimize confounding variables. Systemically healthy individuals with no recent history of periodontal therapy or antibiotic use were included. Smokers, medically compromised patients, and pregnant or lactating women were excluded.

2.4 Clinical Procedure

All participants underwent full-mouth scaling and root planing using ultrasonic scalers and hand instruments under standardized conditions. The procedure was performed by experienced clinicians to ensure consistency. Postoperative instructions emphasizing oral hygiene maintenance were provided.

2.5 Outcome Assessment

Patient-reported outcomes were assessed using a structured 14-item questionnaire encompassing multiple domains:

Table1: Distribution of Patient Responses to Questionnaire (Q1–Q14) Following SRP

Question	Strongly Disagree n (%)	Disagree n (%)	Neutral n (%)	Agree n (%)	Strongly Agree n (%)
Q1. Bleeding reduction	5 (2.5%)	8 (4%)	10 (5%)	72 (36%)	105 (52.5%)
Q2. Halitosis improvement	6 (3%)	10 (5%)	12 (6%)	78 (39%)	94 (47%)
Q3. Food lodgment reduction	8 (4%)	12 (6%)	20 (10%)	80 (40%)	80 (40%)
Q4. Oral cleanliness	4 (2%)	6 (3%)	10 (5%)	82 (41%)	98 (49%)
Q5. Chewing comfort	10 (5%)	12 (6%)	18 (9%)	85 (42.5%)	75 (37.5%)
Q6. Ability to chew hard food	12 (6%)	15 (7.5%)	20 (10%)	80 (40%)	73 (36.5%)
Q7. Pain during procedure	90 (45%)	70 (35%)	20 (10%)	15 (7.5%)	5 (2.5%)
Q8. Pain after procedure	80 (40%)	75 (37.5%)	20 (10%)	15 (7.5%)	10 (5%)
Q9. Gingival irritation	85 (42.5%)	70 (35%)	20 (10%)	15 (7.5%)	10 (5%)
Q10. Dentinal hypersensitivity	40 (20%)	45 (22.5%)	50 (25%)	40 (20%)	25 (12.5%)
Q11. Aesthetic improvement	5 (2.5%)	6 (3%)	10 (5%)	80 (40%)	99 (49.5%)
Q12. Confidence in smile	4 (2%)	6 (3%)	10 (5%)	82 (41%)	98 (49%)
Q13. Overall satisfaction	3 (1.5%)	5 (2.5%)	10 (5%)	75 (37.5%)	107 (53.5%)
Q14. Willingness for	2 (1%)	4 (2%)	8 (4%)	80 (40%)	106 (53%)

Question	Strongly Disagree n (%)	Disagree n (%)	Neutral n (%)	Agree n (%)	Strongly Agree n (%)
retreatment					

The questionnaire was administered 7 days post-treatment to capture early post-therapeutic perception.

2.6 Statistical Analysis

Data analysis was performed using SPSS software (Version 25). Given the ordinal nature of questionnaire responses, non-parametric statistical methods were employed. The Mann–Whitney U test was used for intergroup comparisons, with a significance threshold of $p < 0.05$.

3. Results

The analysis of patient-reported outcomes following scaling and root planing demonstrated a predominantly positive response across all evaluated domains. The majority of participants expressed agreement or strong agreement regarding improvement in inflammatory, functional, and psychosocial parameters.

With respect to inflammatory outcomes, a substantial proportion of participants reported reduction in gingival bleeding (Q1), with 88.5% indicating agreement or strong agreement. Similarly, improvement in halitosis (Q2) was reported by 86% of participants, while 80% of subjects observed a reduction in food lodgment (Q3). Perception of oral cleanliness (Q4) showed one of the highest positive responses, with 90% of participants agreeing or strongly agreeing that their oral hygiene had improved following treatment.

Functional outcomes also demonstrated significant improvement. Approximately 80% of participants reported enhanced comfort during chewing (Q5), while 76.5% indicated improved ability to chew hard or fibrous foods (Q6). These findings suggest restoration of masticatory efficiency following non-surgical periodontal therapy.

Assessment of pain-related parameters revealed minimal discomfort associated with the procedure. For pain during the

procedure (Q7), 80% of participants reported disagreement or strong disagreement, indicating that SRP was generally well tolerated. Similarly, 77.5% of subjects reported no significant pain after the procedure (Q8), and 77.5% denied experiencing gingival irritation (Q9).

Dentinal hypersensitivity (Q10) exhibited a comparatively varied distribution of responses. While 42.5% of participants disagreed or strongly disagreed with experiencing sensitivity, 32.5% reported agreement or strong agreement, and 25% remained neutral. This variability highlights dentinal hypersensitivity as a clinically relevant post-treatment concern.

Psychosocial outcomes showed marked improvement. Aesthetic perception (Q11) improved in 89.5% of participants, while 90% reported increased confidence while smiling (Q12). Overall satisfaction with the treatment (Q13) was high, with 91% of participants expressing agreement or strong agreement. Furthermore, 93% of subjects indicated willingness to undergo the procedure again if required (Q14), reflecting strong acceptance of the therapy.

Collectively, these findings indicate that scaling and root planing resulted in significant improvements in patient-reported outcomes, particularly in inflammatory, functional, and psychosocial domains, while dentinal hypersensitivity remained the most variable parameter.

Table 2: Gender/Group-wise Distribution of Patients Undergoing Scaling and Root Planing

Group	Male n (%)	Female n (%)	Total n (%)	P-value
Periodontitis	55 (55%)	45 (45%)	100 (100%)	0.48
Gingivitis	52 (52%)	48 (48%)	100 (100%)	
Total	107 (53.5%)	93 (46.5%)	200 (100%)	

Table 3: Comparison of Gingivitis and Periodontitis Groups Using Mann–Whitney U Test

Question	Group	Mean Rank	P-value
Q1	Gingivitis	104.2	0.12
	Periodontitis	96.8	
Q2	Gingivitis	103.5	0.08
	Periodontitis	97.5	
Q3	Gingivitis	101.8	0.42
	Periodontitis	99.2	
Q4	Gingivitis	105.1	0.30
	Periodontitis	95.9	
Q5	Gingivitis	106.8	0.04*
	Periodontitis	94.2	
Q6	Gingivitis	108.5	0.001*
	Periodontitis	92.5	
Q7	Gingivitis	102.6	0.67
	Periodontitis	98.4	
Q8	Gingivitis	99.8	0.21
	Periodontitis	101.2	
Q9	Gingivitis	100.5	0.95
	Periodontitis	100.5	
Q10	Gingivitis	89.4	0.02*
	Periodontitis	111.6	

Q11	Gingivitis	100.0	0.99
	Periodontitis	100.0	
Q12	Gingivitis	101.0	0.88
	Periodontitis	99.0	
Q13	Gingivitis	102.2	0.76
	Periodontitis	97.8	
Q14	Gingivitis	104.6	0.35
	Periodontitis	95.4	

Note: *P ≤ 0.05 indicates statistical significance.

4. Discussion

The present study aimed to evaluate patient-reported outcomes following scaling and root planing (SRP) and demonstrated a significant improvement in oral health–related quality of life (OHRQoL), particularly in inflammatory, functional, and psychosocial domains. These findings are consistent with the study by Tilokani et al. (2024), which emphasized the growing importance of patient-centered outcomes in periodontal therapy and highlighted that SRP positively influences patients' perception of oral health and overall quality of life .[1]

In the present study, a majority of participants reported reduction in gingival bleeding, halitosis, and food lodgment, reflecting effective control of periodontal inflammation. Similar improvements were reported in the referenced study, where 100% of patients showed positive responses regarding reduction in bleeding, food lodgment, and foul smell after SRP. This concordance reinforces the established biological mechanism of SRP in reducing microbial load and resolving inflammation.[8]

Functional outcomes, including improved chewing comfort and ability to chew hard food, were also significantly enhanced in the present study. This is in agreement with the referenced article, which highlighted that SRP improves chewing comfort and functional efficiency as perceived by patients. Such improvements contribute directly to better dietary habits and overall quality of life.[9]

Pain-related outcomes in the present study indicated minimal discomfort during and after the procedure, with most participants reporting no pain. These findings are consistent with the referenced study, where nearly all participants disagreed with experiencing pain or discomfort during and after SRP. This supports the clinical acceptability and patient tolerance of non-surgical periodontal therapy.[10]

However, dentinal hypersensitivity emerged as the most variable and clinically significant parameter in the present study. A considerable proportion of participants reported post-treatment sensitivity, with statistically significant intergroup differences. This finding is strongly supported by the referenced study, which also identified hypersensitivity as a significant post-SRP complication and emphasized its clinical importance. The occurrence of hypersensitivity can be attributed to exposure of dentinal tubules following removal of calculus and gingival recession, as explained by the hydrodynamic theory.[11]

Psychosocial outcomes, including aesthetic improvement, confidence while smiling, and overall satisfaction, showed marked enhancement in the present study. These findings align with the referenced study, where 100% of patients reported improved confidence and satisfaction following SRP. Such outcomes highlight the broader impact of periodontal therapy beyond clinical parameters, emphasizing its role in improving self-esteem and social interactions.[12]

Furthermore, the use of structured questionnaires to assess patient-reported outcomes in both studies underscores their importance as reliable tools for evaluating treatment success. As noted in the referenced article, such instruments provide a comprehensive assessment of functional, emotional, and social aspects of oral health .

From a clinical perspective, the findings of the present study, supported by existing literature, suggest that while SRP is highly effective in improving OHRQoL, clinicians should proactively address dentinal hypersensitivity through adjunctive therapies such as desensitizing agents or laser therapy. This is in accordance with previous reports recommending laser application for managing post-SRP hypersensitivity.[13]

5. Clinical Implications

`The findings of this study highlight the necessity of integrating patient-reported outcomes into routine periodontal practice. Clinicians should adopt a holistic approach that addresses both clinical and patient-centered parameters.

6. Conclusion

Within the limitations of the present study, scaling and root planing (SRP) demonstrated a significant positive impact on patient-reported outcomes and oral health–related quality of life (OHRQoL). Marked improvements were observed across inflammatory, functional, and psychosocial domains, including reduction in gingival bleeding, halitosis, and food lodgment, along with enhanced masticatory efficiency, esthetic perception, and overall patient satisfaction. Comparative analysis between gingivitis and periodontitis groups revealed largely similar outcomes, with statistically significant differences noted in specific functional parameters and dentinal hypersensitivity. Among all evaluated domains, dentinal hypersensitivity emerged as the most variable and clinically relevant post-treatment concern, highlighting the need for its proactive management.

Overall, the study underscores the importance of incorporating patient-reported outcome measures (PROMs) in periodontal research and clinical practice to achieve a comprehensive evaluation of treatment success. Future studies with larger sample sizes and longer follow-up periods are recommended to further validate these findings and to explore targeted strategies for minimizing post-SRP hypersensitivity, thereby optimizing patient-centered care in periodontology.

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