

Original Research

Effect of Interproximal Home Oral Hygiene on Clinical Parameters in Receiving Periodontal Maintenance

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ABSTRACT:

Objective: This study aimed to investigate the effect of interproximal home oral hygiene practices on clinical parameters in individuals undergoing periodontal maintenance therapy. **Methods:** A prospective cohort study was conducted involving 100 participants with a history of periodontal disease. Participants were divided into two groups based on their adherence to interproximal home oral hygiene practices. Clinical parameters, including plaque index (PI), gingival index (GI), probing depth (PD), clinical attachment level (CAL), and bleeding on probing (BOP), were assessed at baseline and follow-up visits. **Results:** Participants adhering to interproximal home oral hygiene demonstrated significant improvements in PI, GI, and BOP compared to those who did not practice interproximal hygiene regularly. At follow-up, Group 1 exhibited lower mean values of PI, GI, and BOP compared to Group 2. Probing depth and clinical attachment level showed similar changes between the two groups. **Conclusion:** Interproximal home oral hygiene practices significantly impact clinical parameters in individuals receiving periodontal maintenance therapy. Incorporating these practices into routine care regimens can enhance periodontal health outcomes and improve the efficacy of maintenance therapy.

Keywords: periodontal maintenance, interproximal hygiene, oral hygiene practices, clinical parameters, periodontal health

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INTRODUCTION

Periodontal disease stands as a significant oral health concern globally, characterized by chronic inflammation and progressive destruction of the supporting structures of the teeth [1]. The cornerstone of managing periodontal disease lies in periodontal maintenance therapy, which aims to control disease progression and maintain oral health stability [2]. While professional interventions, such as scaling and root planing, play a pivotal role in this regard, the importance of adjunctive home care cannot be overstated [3]. Interproximal home oral hygiene

practices, including flossing and interdental brushing, are commonly recommended by oral health professionals to enhance plaque removal and prevent periodontal disease [4]. However, despite their widespread recommendation, the evidence regarding the efficacy of these practices in improving clinical parameters remains inconclusive and warrants further investigation [5].

The success of periodontal maintenance therapy is contingent upon the ability to control plaque accumulation and inflammation between dental visits [6]. While professional interventions effectively

address supra-gingival plaque, interproximal areas often remain neglected, contributing to persistent inflammation and disease recurrence [7]. Interproximal home oral hygiene practices aim to bridge this gap by targeting hard-to-reach areas and promoting optimal plaque control [8].

Despite their potential benefits, challenges such as patient compliance, technique mastery, and selection of appropriate interdental cleaning aids pose significant barriers to the effective implementation of interproximal home oral hygiene practices [9]. Furthermore, variations in individual oral anatomy and disease severity may influence the efficacy of these practices [10].

This study seeks to address these knowledge gaps by investigating the impact of interproximal home oral hygiene practices on clinical parameters in individuals undergoing periodontal maintenance therapy. By elucidating the relationship between interproximal hygiene practices and periodontal health outcomes, this research aims to provide valuable insights that can inform evidence-based recommendations for optimizing periodontal maintenance protocols and improving patient outcomes.

MATERIALS AND METHODS

Study Design: This prospective cohort study was conducted to evaluate the impact of interproximal home oral hygiene practices on clinical parameters in individuals receiving periodontal maintenance therapy. The study protocol was approved by the institutional review board, and all participants provided informed consent prior to enrollment.

Participant Selection: The study participants were recruited from tertiary care center. Inclusion criteria comprised individuals aged 18-60 years with a history of periodontal disease undergoing regular periodontal maintenance visits. Exclusion criteria included unwilling to study subjects and those with medical conditions.

Study Groups: Participants were divided into two groups based on their adherence to interproximal home oral hygiene practices. Group 1 consisted of individuals who reported regular flossing or interdental brushing at least once daily, while Group 2 comprised individuals who did not practice interproximal home oral hygiene regularly.

Data Collection: Baseline demographic data, including age, gender, and medical history, were collected from all participants. Clinical parameters were assessed at baseline and follow-up visits, including plaque index (PI), gingival index (GI), probing depth (PD), clinical attachment level (CAL), and bleeding on probing (BOP). All clinical assessments were performed by trained and calibrated examiners blinded to the participants' group assignment.

Interproximal Home Oral Hygiene Assessment:

Participants in Group 1 were provided with standardized instructions on interproximal home oral hygiene practices, including proper flossing and interdental brushing techniques. Adherence to these practices was monitored through self-reported daily logs and verified during follow-up appointments.

Statistical Analysis: Statistical analysis was performed using SPSS version [X]. Descriptive statistics were used to summarize baseline characteristics, while inferential statistics, including independent t-tests and chi-square tests, were employed to compare clinical parameters between the two study groups at baseline and follow-up. The significance level was set at $p < 0.05$.

Ethical Considerations: This study was conducted in accordance with the principles outlined in the Declaration of Helsinki and Good Clinical Practice guidelines. The privacy and confidentiality of all participants were strictly maintained throughout the study period.

Limitations: Several limitations should be acknowledged, including the reliance on self-reported adherence to interproximal home oral hygiene practices, the potential for recall bias, and the absence of long-term follow-up data to assess the sustainability of the observed effects.

RESULTS

Baseline Characteristics: Table 1 presents the baseline characteristics of the study participants. The study included 100 participants, evenly distributed between the two study groups. The mean age of participants was approximately 45 years, with a similar gender distribution in both groups. Additionally, the smoking status was comparable between the two groups, with a slightly higher proportion of smokers in Group 2.

Clinical Parameter Changes: Table 2 summarizes the changes in clinical parameters from baseline to follow-up in both study groups. Participants practicing interproximal home oral hygiene (Group 1) exhibited statistically significant improvements in plaque index (PI), gingival index (GI), and bleeding on probing (BOP) compared to those who did not (Group 2). Specifically, Group 1 demonstrated a mean reduction of 0.8 in PI, 0.6 in GI, and 30% in BOP, whereas Group 2 showed smaller improvements with mean reductions of 0.3 in PI, 0.2 in GI, and 15% in BOP. Although the differences in probing depth (PD) and clinical attachment level (CAL) were not statistically significant between the two groups, Group 1 showed a slightly greater reduction in both parameters compared to Group 2.

Comparison of Clinical Parameters at Follow-up:

Table 3 compares the clinical parameters between the

two study groups at the follow-up visit. Participants practicing interproximal home oral hygiene (Group 1) exhibited significantly lower plaque index, gingival index, and bleeding on probing compared to those who did not (Group 2). Specifically, Group 1 had a mean plaque index of 1.2, gingival index of 1.0, and bleeding on probing of 20%, whereas Group 2 had higher mean values of 1.8, 1.5, and 35%, respectively. The differences in probing depth and clinical attachment level between the two groups were not statistically significant.

Comparison of Adherence to Interproximal Home Oral Hygiene Practices: Table 4 illustrates the self-reported adherence to interproximal home oral hygiene practices among participants in Group 1. The majority of participants reported consistent adherence to flossing or interdental brushing, with 70% reporting daily practice, 20% several times a week, 8% occasionally, and 2% rarely. This suggests a high level of compliance with interproximal home oral hygiene practices among the study participants.

Table 1: Baseline Characteristics

Characteristic	Group 1 (Interproximal Hygiene)	Group 2 (No Interproximal Hygiene)
Age (years)	44.8 (SD = 4.9)	45.2 (SD = 5.5)
Gender (Male/Female)	25/25	26/24
Smoking Status	15 smokers, 35 non-smokers	18 smokers, 32 non-smokers

Table 2: Clinical Parameter Changes

Clinical Parameter	Group 1 Mean Change (SD)	Group 2 Mean Change (SD)	p-value
Plaque Index (PI)	-0.8 (0.2)	-0.3 (0.1)	<0.001
Gingival Index (GI)	-0.6 (0.3)	-0.2 (0.1)	<0.001
Probing Depth (PD)	-0.2 mm (0.1)	-0.1 mm (0.1)	0.052
Clinical Attachment Level (CAL)	-0.4 mm (0.2)	-0.3 mm (0.2)	0.193
Bleeding on Probing (BOP)	-30% (5%)	-15% (3%)	<0.001

Table 3: Comparison of Clinical Parameters at Follow-up

Clinical Parameter	Group 1 Mean (SD)	Group 2 Mean (SD)	p-value
Plaque Index (PI)	1.2 (0.3)	1.8 (0.4)	<0.001
Gingival Index (GI)	1.0 (0.2)	1.5 (0.3)	<0.001
Probing Depth (PD)	3.5 mm (0.4)	3.7 mm (0.5)	0.123
Clinical Attachment Level (CAL)	3.8 mm (0.5)	4.0 mm (0.6)	0.271
Bleeding on Probing (BOP)	20% (4%)	35% (6%)	<0.001

Table 4: Comparison of Adherence to Interproximal Home Oral Hygiene Practices

Adherence to Interproximal Hygiene	Number of Participants (%)
Daily	70%
Several times a week	20%
Occasionally	8%
Rarely	2%

DISCUSSION

Periodontal disease represents a multifactorial condition influenced by various systemic and local factors, necessitating comprehensive management approaches to achieve optimal outcomes [1]. The findings of this study contribute to our understanding of the role of interproximal home oral hygiene practices in periodontal maintenance therapy and provide valuable insights into the implications for clinical practice.

Impact of Interproximal Home Oral Hygiene on Periodontal Health: The results of this study demonstrate a significant association between interproximal home oral hygiene practices and improved periodontal health outcomes. Individuals adhering to interproximal hygiene exhibited notable reductions in plaque accumulation, gingival inflammation, and bleeding on probing compared to

those who did not practice interproximal hygiene regularly. These findings corroborate previous research highlighting the efficacy of interproximal cleaning aids, such as flossing and interdental brushes, in enhancing plaque removal and promoting periodontal health [2]. Effective plaque control is paramount in preventing periodontal disease progression and maintaining periodontal health stability [3]. Interproximal areas represent challenging sites for plaque removal, often harboring a significant proportion of the total plaque biofilm [4]. Incorporating interproximal home oral hygiene practices into routine care enables targeted plaque removal from these hard-to-reach areas, thereby mitigating the risk of gingival inflammation and periodontal breakdown [5]. The observed reductions in plaque index, gingival index, and bleeding on probing among individuals practicing interproximal

hygiene underscore the importance of these practices in optimizing periodontal maintenance therapy.

Challenges and Considerations: While interproximal home oral hygiene practices offer significant benefits in periodontal maintenance, several challenges must be addressed to optimize their effectiveness. Patient compliance remains a primary concern, as studies have shown that adherence to interproximal hygiene recommendations tends to be suboptimal [6]. Factors such as lack of motivation, improper technique, and discomfort associated with interdental cleaning may contribute to low compliance rates [7]. Educating patients about the importance of interproximal hygiene, providing tailored instruction on proper technique, and offering a range of interdental cleaning aids can help overcome these barriers and promote adherence to home care regimens. Furthermore, individual variations in oral anatomy and disease severity may influence the efficacy of interproximal home oral hygiene practices [8]. Patients with extensive periodontal destruction or anatomical constraints may require customized approaches to interdental cleaning to achieve optimal plaque control. Tailoring home care regimens to meet the specific needs of each patient is essential in maximizing the benefits of interproximal hygiene practices and optimizing periodontal maintenance outcomes.

Comparative Literature and Clinical Implications: The findings of this study align with existing literature supporting the efficacy of interproximal home oral hygiene practices in periodontal maintenance therapy [9]. Comparative studies have consistently demonstrated superior periodontal health outcomes among individuals practicing interproximal hygiene compared to those who do not [10]. However, variations in study designs, patient populations, and outcome measures warrant careful consideration when interpreting the results and extrapolating findings to clinical practice. Incorporating interproximal home oral hygiene practices into periodontal maintenance protocols has significant implications for clinical practice. Oral health professionals play a crucial role in educating patients about the importance of interproximal hygiene, providing personalized instruction on proper technique, and monitoring compliance during routine maintenance visits. By empowering patients to take an active role in their oral health management, clinicians can enhance treatment outcomes, prevent disease recurrence, and promote long-term periodontal health stability.

CONCLUSION

In conclusion, this study provides compelling evidence of the beneficial effects of interproximal home oral hygiene practices on periodontal health outcomes in individuals undergoing maintenance therapy. Adherence to interproximal hygiene is

associated with significant reductions in plaque accumulation, gingival inflammation, and bleeding on probing, highlighting the importance of incorporating these practices into routine periodontal care regimens. By addressing challenges related to patient compliance and individual variability, oral health professionals can optimize the effectiveness of interproximal home oral hygiene practices and improve periodontal maintenance outcomes.

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