

ORIGINAL RESEARCH

IMPACT OF DENTAL NEGLECT SCORE ON ORAL HEALTH AMONG PATIENTS RECEIVING FIXED ORTHODONTIC TREATMENT

Dr. Amit Kumar Khajuria¹, Dr. Parul Singh², Dr. Gaurav Agarwal³

1. MDS, Department of Orthodontics and Dentofacial Orthopaedics, RGUHS, Bangalore
2. MDS, Department of Pedodontics and Preventive Dentistry, RGUHS, Bangalore
3. MDS, Senior Lecturer, Department of Orthodontics and Dentofacial Orthopaedics, Rungta College of Dental Science and Research, Bhilai, Chhattisgarh

Corresponding Author

Dr. Parul Singh, MDS, Department of Pedodontics and Preventive Dentistry, RGUHS, Bangalore

Abstract

Objective: For individuals receiving orthodontic treatment, maintaining strict oral hygiene routines is essential to prevent periodontal health from declining. Thus, using the dental neglect scale (DNS) questionnaire, the current study was started to evaluate dental neglect and oral health condition among individuals receiving orthodontic treatment.

Materials and Methods: The 80 patients receiving fixed orthodontic treatment were the subject of the current cross-sectional study, which was designed and conducted. Two questionnaires were used in the study; one was a closed-ended one that asked about patients' practises for maintaining oral health, and the other was a DNS that was followed by an assessment of oral hygiene status using the Oral Hygiene Index Simplified. Chi square test was performed to statistically examine the data, with $P < 0.05$ being considered a statistically significant value. The data were then subjected to analysis using SPSS version 20.

Results: According to the current study, 63% of the orthodontic patients were daily brushers, 26% were twice daily brushers, and 11% were three times daily brushers. Only 9% of the respondents reported utilising interdental assistance, while about one-fourth of them used a brush with soft bristles. With a P value of < 0.05 , the data showed a positive connection between DNS and the oral hygiene index simplified score.

Conclusion: According to the results of the current study, orthodontic patients' reduced frequency of brushing, mouth washing, and eating sticky and hard food can be ascribed to self-neglect.

Keywords: Brushing, dental neglect, fixed orthodontic treatment, interdental aids, self-negligence

Introduction

Orthodontic therapy makes sure that the teeth are in the right position and enhances the interaction between the occlusal and jaw, which helps with better mastication, speech, and facial aesthetics and improves overall and oral health as well as quality of life. Orthodontic treatment has dangers and consequences in addition to its advantages. The most frequent adverse reaction to orthodontic treatment is observed to be periodontal problems. [1] Because of their braces, orthodontic patients may find it difficult to properly clean their mouths, which may contribute to inflamed gingiva. On the short term, gingivitis and gingival expansion appear to be the most frequent effects of orthodontic procedures on periodontal health. [2]

Patients undergoing orthodontic treatment must maintain strict oral hygiene habits since failing to do so can lead to plaque building up on braces and other orthodontic appliances, inflaming the gingiva, and further deteriorating the health of the periodontium. In order to maintain periodontal health, the orthodontist has a dual duty to advise patients on methods for reducing plaque and to monitor how effectively oral hygiene routines are working. However, despite the orthodontist's recommendations for the right instructions, the majority of patients having orthodontic treatment frequently fail to maintain an acceptable level of plaque control. [3] When Atassi and Awartani[4] looked into the state of oral hygiene among patients receiving fixed orthodontic therapy, they found that many of these patients were not receiving proper oral home care. Low oral hygiene was cited by

Terri [5] as a contributing cause to orthodontic patients' poor tissue status. Therefore, it is crucial for the orthodontist to be able to communicate the importance of oral care practises to patients in order to motivate them to maintain a sufficient level of oral hygiene throughout orthodontic therapy. [3] Thus, using the dental neglect scale (DNS) questionnaire, the current study was started to evaluate dental neglect and oral health condition among individuals receiving orthodontic treatment.

Materials and Methods

The 80 patients (54 female and 26 male) between the ages of 18 and 30 who were undergoing fixed orthodontic treatment and met the study's inclusion criteria and were prepared to take part in the cross-sectional study's planning and execution. The institute's ethics committee granted the project approval. A straightforward random sampling procedure was used to choose study participants. Patients receiving orthodontic therapy for more than three months met the inclusion criteria. This time frame was chosen because patients are typically aware of their treatments when they first begin, but as time goes on, they start to lose interest in them. To prevent bias in the study, any dentistry student receiving fixed orthodontic treatment met the exclusion criteria. Before the trial began, each patient's informed consent was obtained.

Two questionnaires were used in the study: one was a closed-ended one [5] that asked about patients' practises for maintaining oral health [Table 1], and the other was DNS [Table 2][6], which was followed by an assessment of oral hygiene status using the Oral Hygiene Index Simplified (OHIS). Before the start of the main investigation, a pilot study was undertaken to assess the questionnaire's reliability (Cronbach's alpha), and it was discovered to be 0.71 for questionnaire 1 and 0.69 for questionnaire 2. When respondents filled out questionnaires, it was assumed that they understood the questions in their entirety and did not discuss the information with any other respondents. Six assertions, ranging from Definitely Yes to Definitely No, were scored by each participant. The results for the DNS ranged from 6 to 30, with higher scores indicating greater disregard for dental health. SPSS version 20 (IBM SPSS Statistics for Windows, Version 20.0. Armonk, NY: IBM Corp.) was used to evaluate the data that were thus acquired. Chi square test was employed to statistically assess the data, with $P < 0.05$ being regarded a statistically significant value.

Results

In the current study, there were 26 men and 54 women respondents. According to participant responses, [Table 1] 63% of them washed their teeth once daily, 26% brushed twice daily, and 11% brushed three times daily. More over half of the participants, 53%, used brushes with soft bristles, 26% used brushes with harsh bristles, and 21% did not notice the sort of brush they were using. 13% employed a horizontal brushing technique, 17% a vertical brushing technique, 5% a circular brushing technique, and 35% a combination approach. Only 9% of respondents said they regularly used interdental brushes and floss, and 39% of respondents said they regularly cleaned their tongues. 42% of those surveyed reported using mouthwash to rinse their mouth, 24% once daily and 18% twice daily. In terms of eating habits, 31% of respondents avoided fast food, 28% of respondents ate junk or fast food twice a week, 26% occasionally, 16% of respondents ate it once a week, and 56% of respondents consumed hard foods, chewing gum, or soft beverages. 59% of respondents rinse their mouth occasionally after eating, 36% never do, and 5% used to rinse their mouth after eating most of the time. 68 % of them reported gum bleeding.

Table 2 showed that 24% of respondents said they definitely maintain their at-home oral hygiene, 13% said they get the dental care they need, 15% said they need it but put it off, 8% said they brushed properly, only 8% said they definitely refrain from snacking as much as they should, and 21% said they thought their dental health was important. To compare DNS with OHIS, the DNS score was split into two groups: low (DNS score < 15) and high (DNS score > 15).

In the group with lower dental neglect, 15% had good oral hygiene, 12% had fair oral hygiene, and 7% had poor oral hygiene, according to the interpretation of OHIS scores [Table 3], compared to the group with higher lower DNS, where 7% had good oral hygiene, 45% had fair oral hygiene, and 15% had poor oral hygiene. With a P value of < 0.05 , the data showed a positive connection between DNS and the oral hygiene index simplified score.

Table 1: Distribution of participants' response regarding oral hygiene practices (n=80)

Questions	Response (%)
How often do you brush your teeth?	
Occasionally	-
Once daily	63
Twice daily	26
Thrice daily	11
What type of brush do you use?	
Soft	26
Hard	21
Never noticed	53
Which technique do you use for brushing?	
Horizontal	13
Vertical	17
Circular	5
Combined	35
Do you clean your tongue?	
Yes	39
No	61
Do you use interdental aids?	
Yes	9
No	91
Floss	2
Interdental brush	7
Do you use mouthwash?	
Yes	42
Once daily	24
Twice daily	18
How often you eat junk or fast food?	
Daily	-
Once in a week	16
Twice a week	28
Occasionally	26
No	31
Do you use ingest hard foods, chewing gum, or soft drinks?	
Yes	56
No	44
Do you rinse your mouth after eating?	
Yes	64
Most of the time	5
Occasionally	59
No	36
Have you ever noticed your gums bleeding?	
Yes	68
No	32

Table 2: Dental neglect score scale distribution (n=80)

Dental neglect scale	1 (definitely yes) (%)	2 (yes) (%)	3 (in between) (%)	4 (no) (%)	5 (definitely no) (%)	P
I maintain my home dental care	24	34	31	11		0.284
I obtain the	13	21	56	10	-	1.465

dental care I should						
I need dental care, but I postpone it	15	32	23	17	13	0.34
I brush as well as I should	8	13	38	17	24	0.04
I restrain snacking between meals as well as I should	8	11	15	20	46	0.01
I consider my dental health to be important	21	28	35	14	2	1.21

Table 3: Comparison of dental neglect scale and oral hygiene index-simplified score

OHIS	DNS score <15	DNS score >15	Total	P (χ^2)
Excellent				<0.05
Good, %	15 (12)	7(6)	18	
Fair, %	12(10)	50 (40)	50	
Poor, %	-	15 (12)	12	

Discussion

The primary draw for patients to receive orthodontic treatment is dental aesthetics. Orthodontic therapy enhances dental health, aesthetics, and self-esteem, but, if necessary, care is not taken during the treatment phase, appliances used in orthodontic therapy might cause unintended hiccups. The person receiving orthodontic treatment must be made aware of these potential dangers in order for them to understand their duties during the procedure. [7,8] The current study discovered that 73% of the participants had high DNS, which was ascribed to a fair oral hygiene index for 45% of the participants and a poor oral hygiene index for 15% of the respondents. The most crucial component that influences a person's dental health and attitude toward their dentition is their relationship with their dentist, which must be mutually beneficial in order to maintain a healthy oral status. [9]

DNS offers an estimate of how concerned a person is with their dental health. When limited resources prevent the oral examination of the research population, this scale may be a helpful alternative for gathering clinical data in oral health surveys. [10] A study by Acharya et al. [11] among a sample of Indian women to support the DNS's Indian translation was successful in identifying oral health neglect among the study participants. Patients undergoing orthodontic treatment see major changes in their oral health as a result of food particles building up inside their teeth and braces, which increases the production of plaque because fixed equipment make it difficult for the patient to properly clean their teeth. Without the adoption of preventive programmes, gingivitis and enamel decalcification surrounding fixed appliances are regular consequences. [12] Patient variables such as prior periodontal disease, higher vulnerability, and poor dental hygiene are the main causes of these periodontal problems. [13] According to the current study, 63% of the orthodontic patients were daily brushers, 26% were twice daily brushers, and 11% were three times daily brushers. Only 9% of the respondents reported utilising interdental assistance, while about one-fourth of them used a brush with soft bristles. 42% of respondents said they rinsed their mouths with mouthwash, 24% once daily and 18% twice daily.

According to the current study, about half of the participants consumed chewing gum, hard meals, or soft drinks. Self-neglect of patients is to blame for the current situation. To create a healthy practise strategy, it is important to comprehend the numerous reasons that contribute to self-neglect.

These elements typically include insufficient personal and environmental hygiene practises as well as nonadherence to advised health care regimens. [14] In order to prevent breakage of the orthodontic appliances, dentists advise patients undergoing orthodontic treatment to avoid eating hard and sticky foods.

Due to this, it is necessary to undergo scaling as well as a thorough examination of the oral cavity, both of which are done regularly during this phase. Thus, the patient should be given updated oral hygiene recommendations to reduce the likelihood of recession at the conclusion of active orthodontic treatment and after the removal of appliances. As a result, the orthodontist has a duty to advise patients on proper brushing technique and to consider additional interdental cleaning tools such as an oral irrigator, dental floss, and interdental toothbrushes. [1] Therefore, a healthy oral health status depends on having awareness of and a favourable attitude toward oral health. [9]

As patients from high class typically prefer private clinics and poor people cannot afford to spend money on aesthetics, the present study's limitation is that the patients chosen belonged to a single geographical region and most of them were from middle class socioeconomic group. Therefore, additional studies with subjects enrolled from various socioeconomic groups and large sample sizes should be carried out in order to draw conclusions.

Conclusion

According to the results of the current study, orthodontic patients' reduced frequency of brushing, mouth washing, and eating sticky and hard food can be ascribed to self-neglect. Before and during the fixed appliance treatment, dentists must emphasise to patients the significance of maintaining good oral hygiene and controlling plaque, as well as the significance of ensuring patient compliance throughout the course of treatment, to prevent periodontal health from deteriorating.

References

1. Singh G, Batra P. The orthodontic periodontal interface: A narrative review. *J Int Clin Dent Res Organ* 2014;6:77-85.
2. Dannan A. An update on periodontic-orthodontic interrelationships. *J Indian Soc Periodontol* 2010;14:66-71.
3. Sebbar M, Abidine Z, Laslami N, Bentahar Z. Periodontal health and orthodontics. In: Viridi MS, editor. *Emerging Trends in Oral Health Sciences and Dentistry*. 1st ed. China: InTech; 2015. p. 717-32.
4. Atassi F, Awartani F. Oral hygiene status among orthodontic patients. *J Contemp Dent Pract* 2010;11:E025-32.
5. Terri T. Oral health maintenance in orthodontics. *Dimens Dent Hyg* 2014;12:19-22.
6. Jain N, Mitra D, Ashok KP, Dundappa J, Soni S, Ahmed S. Oral hygiene-awareness and practice among patients attending OPD at Vyas Dental College and Hospital, Jodhpur. *J Indian Soc Periodontol* 2012;16:524-8.
7. Sarkar P, Dasar P, Nagarajappa S, Mishra P, Kumar S, Balsaraf S, et al. Impact of dental neglect scale on oral health status among different professionals in Indore City-A cross-sectional study. *J Clin Diagn Res* 2015;9:ZC67-70.
8. Meeran NA. Iatrogenic possibilities of orthodontic treatment and modalities of prevention. *J Orthod Sci* 2013;2:73-86.
9. Vinod K, Reddy YG, Reddy VP, Nandan H, Sharma M. Orthodontic-periodontics interdisciplinary approach. *J Indian Soc Periodontol* 2012;16:11-5.
10. Kumar A, Manjunath PP, Sowmya KR. Dental neglect – A review. *J Dent Sci* 2015;3:1-9.
11. Acharya S, Pentapati KC, Bhat PV. Dental neglect and adverse birth outcomes: A validation and observational study. *Int J Dent Hyg* 2013;11:91-8.
12. Baheti MJ, Toshniwal NG, Bagrecha SD. Oral health in orthodontic treatment: Preventive and innovative approach. *J Dentofacial Sci* 2014;3:39-46.
13. Alfuriji S, Alhazmi N, Alhamlan N, Al-Ehaideb A, Alruwaithi M, Alkatheeri N, et al. The effect of orthodontic therapy on periodontal health: A review of the literature. *Int J Dent* 2014;2014:585048.
14. Ajagannanavar SL, Sequeira PS, Jain J, Battur H. Dental neglect among college going adolescents in Virajpet, India. *J Indian Assoc Public Health Dent* 2014;12:215-8.