

Dental Neglect Score amongst Orthodontic Braces patients in Punjab Dental Hospital

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ABSTRACT

Background: Dental Neglect refers to ones attitudes and behavior that cause harmful consequences in oral health. Subjects with greater dental negligence are linked with more caries, lesser remaining teeth, irregular visits to the dentist and are more likely to have prolonged time duration between their dental appointments.. The Dental Neglect Scale (DNS) is valued as a reliable measure of dental negligence in various samples of children, adolescents and adults. Maintenance of conscientious practice related to oral health is key to success in orthodontic patients. This is because orthodontic appliances facilitate the accumulation of plaque by making cleaning difficult over the teeth. Failure to keep up the proper oral hygiene measures can lead to accumulation of plaque. This causes gingival inflammation and damages periodontal health.

Aim: To determine dental negligence score among orthodontic patients with braces and assess their associated oral hygiene practices.

Study Design: Cross sectional study

Place and duration of the study: This study took 6 months to complete and was conducted in Punjab Dental Hospital, Lahore, Pakistan.

Methodology : 104 orthodontic patients willing to participate and who had given informed consent were chosen for the study. Questionnaires were distributed and data was analyzed using SPSS 2020.

Results: Before starting orthodontic treatment only 14% of respondents went regularly to the dentist and majority 64% had never been to a dentist before. However, after starting the orthodontic treatment 88% of the respondents became regular in their visits. This shows their dental negligence before and after starting the orthodontic treatment. Percentage of respondents brushing twice daily are around 70 %, using soft tooth brush are 77%, combining horizontal and vertical technique of brushing are 64%. Interdental brush is used by 66% of the respondents. However, other oral hygiene and dental care measures are inadequately maintained by orthodontic patients at home. This is especially true with regards to use of floss which is done by only 4% of the respondents.

Conclusions: Dental neglect results in numerous harmful effects to the oral health. This study has shown variation in oral hygiene practices among responding patients. Orthodontist should encourage different practices that enhance oral hygiene in patients. Patients should also understand the increased need to maintain oral hygiene with use of braces and hence apply all the preached dental care and oral hygiene measures.

Keywords: Dental negligence scale, orthodontic patients with fixed appliances, braces, oral hygiene

INTRODUCTION

Dental Neglect refers to ones attitudes and behaviour that cause harmful consequences in oral health¹. In other words we can consider dental neglect as failure to properly maintain oral cavity despite the known knowledge of oral health care².

Studies show that dental neglect is associated with substandard oral health, tendency to miss routine check-ups, and prolonged time duration since the last dental appointment. The Dental Neglect Scale (DNS) has proved to be a valid form of dental neglect in samples of children, adolescents as well as adults.³ Dental neglect is also related to undervaluing ones oral health. Research show that dental neglect is associated with poor aspects of oral health in both children and adults such as toothache, low indices of caries, and greater number of lost teeth **Error! Reference source not found.**^{2,4}. Further dental neglect is correlated with limitations of oral functions, physical and social disabilities⁵. A study also demonstrate that when dental neglect is related to avoiding professional care, individuals have inferior perception of their general quality of life⁶. Therefore it can be said that dental neglect is associated with negative outcomes in overall functioning as well as oral health.

The Dental Neglect Scale (DNS) assesses cardinal factors such as the extent to which one looks after his/her teeth, obtains professional dental care, and considers oral health to be significant.

Greater dental negligence in adults is linked with more caries, lesser remaining teeth^{1,7,8}, irregular visits and respondents are likely to have prolonged time duration between dental appointments^{1,8,9}. Adults with higher DNS scores also have poor

general wellbeing, with regards to their social lives and their inclination to avoid speech⁷.

Maintenance of conscientious practices related to oral health are cardinal factors in orthodontic patients as failure to keep up oral hygiene can lead to accumulation of plaque over orthodontic appliances. This in turn leads to gingival inflammation and later hampers patients' periodontal health¹⁰.

White spot lesions and gingivitis occur in fifty to seventy percentage of patients treated with fixed orthodontic appliances. In USA alone such consequences represent an annual expenditure of five hundred million dollars. Initial oral hygiene enlightenment and motivation of patients depend firstly on practical professional prophylactic measures and secondly on patients' education. Patients' education effectiveness in turn is dependent upon technique of communication, its frequency as well as its nature. In our knowledge the present study is the first study to date that is done to assess dental negligence scale among orthodontic patients in Pakistan. This study assesses DNS and oral hygiene practises of patients with fixed orthodontic appliances.

METHODOLOGY

This present study was done amongst 104 patients undergoing fixed orthodontic treatment of Punjab Dental Hospital. Ethical approval was taken from the concerned committee before commencing the study. This cross sectional study's exclusion criterion was any dental or medical student undergoing fixed orthodontic treatment to avoid the bias in the study. All the respondents were healthy and had their orthodontic treatment started at least 6 months back from the time they provided

information for this research. Dental negligence scale of the responding patients was assessed along with other oral hygiene and dietary habits using closed ended questionnaire. Data was entered and analysed using SPSS Version 20.

RESULTS

Total 104 patients responded to this present survey. Age of patients ranged from 13 years to 30 years and mean age was 19.5 years (SD 3.5). 73.5% of the respondents were female and 26.5% were males. Before starting their orthodontic treatment only 14% had regular dental visits and majority 64% had rarely been to a dentist. However, after starting orthodontic treatment 88% became regular in their visits to the dentist. This shows their dental negligence before stating the orthodontic treatment. It also coincides with the finding in the dental negligence scale where cumulative 81% of the patients regarded positively to the fact that their dental health is important. 30% of the patients strongly agreed that they brush as well as they should and 25% agreed to it. When asked about brushing in the study most of the respondents adopted correct brushing characteristics. 69 % of the responding patients brushed twice daily, 77% used the right type of tooth brush (soft), 64% used combined brushing technique and 55% brushed for 2 minutes. Table 1 below summarises brushing characteristics of the responding patients to the survey and findings of dental negligence scale are seen in table 2.

Table 1: Brushing Characteristics of Respondents

Frequency of brushing daily	Once daily	Twice daily	Thrice daily
Percentage of respondents	22%	69%	9%
Duration of brushing	Less than 1 minute	Around 1.5 minute	2 minutes
Percentage of respondents	17%	28%	55%
Technique of brushing	horizontal	vertical	Combined
Percentage of respondents	28%	8%	64%
Type of brush	soft	hard	Never noticed
percentage of respondents	77%	5%	18%

Table 2: Response to Dental Negligence Scale

	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
I maintain my home dental care	50%	18%	23%	5%	4%
I obtain dental care as i should	27%	34%	21%	14%	4%
I need dental care but i postpone it	20%	27%	21%	22%	10%
I brush as well as i should	30%	25%	21%	14%	10%
I consider my dental health to be important	59%	22%	14%	2%	4%

Most of the patients (87%) believed that it is very important to seek information and follow oral hygiene measures but this was not consistent with their practical measures at home. Only around half of the respondents (52%) reported rinsing the mouth frequently after eating the meal. 45% of the patients were regular cleaners of their tongue and only 35% used mouth wash on daily basis. 29% of patients had hardly cleaned their tongue and and 36% reported that they hardly use mouthwash. Practices related to mouthwash, cleaning tongue and rinsing between meals amongst patients is shown below:

50% strongly agreed, 18% agreed that they maintain their dental home care. Dental home care is reflected in part by the frequency of sugary food and fizzy drinks intake between or with

the meal. 66% report that they hardly intake and 23% occasionally intake soft drinks between or with meal. 55% report that they hardly intake and 31% report frequent intake of sugary food. Table 3 below shows dietary patterns of sample patients. Despite claiming maintaining home dental care majority 96% don't use floss and only 66% use interdental brush. Pie chart below reflects percentage of sample using interdental aids.

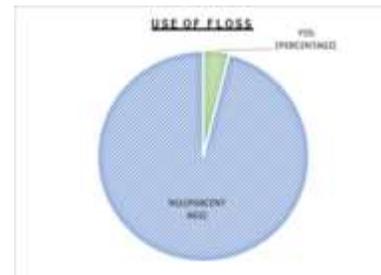
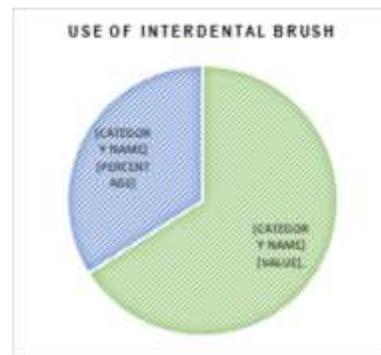
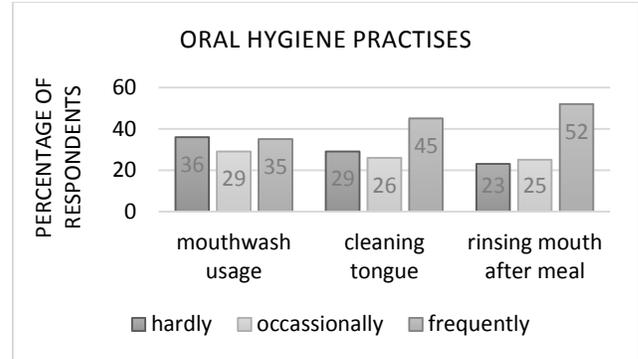


Table 3: Comparison of Dietary Habits Related to Dental Health in Fixed Orthodontic Patients

	Consumption of soft drinks between meal or with meals	Consumption of junk food	Consumption of sugary food
Hardly	66%	51%	55%
occasionally	23%	18%	14%
frequently	11%	30%	31%

DISCUSSION

In our knowledge the present study is the first one that is conducted to determine the Dental Neglect Scale in orthodontic patients with braces in Pakistan. Despite the fact that orthodontic treatment also enhance oral health and self-esteem, appliances used in it can have potential harmful effects if certain precautions are not taken. It is therefore prerequisite for all the orthodontic patients to know the risks associated with the treatment so that they are conscious of their responsibilities during the treatment phase^{11,12}. One study in the neighbouring country revealed that

orthodontic patients with fixed appliances had high dental negligence. DNS gives idea of person's concern towards his or her oral health. Acharya et al¹³ showed good reliability of Indian translation of DNS to measure oral health neglect in sample women. It is well known that orthodontic treatment facilitates the accumulation of food specks within the teeth and appliances. Fixed appliances obstruct adequate cleaning of patient's teeth and therefore enhance plaque formation. A research concludes that the commonly occurring adverse effects in absence of implementing preventive programs are enamel decalcification and gingivitis around the fixed orthodontic appliances¹⁵. The major causes responsible for periodontal complications are related to periodontal health before starting the treatment, increased vulnerability due to orthodontic treatment, and bad oral hygiene¹⁶.

The present study found that 69% of the respondents brushed twice daily, 22% brushed once a day and 9% brushed thrice daily. Percentage of patients brushing twice daily was much higher than the ones reported in other studies done on orthodontic patients with braces. Results of a study in the neighbouring country found that 63% of the patients with braces brushed once, 26% brushed two times, and only 11% brushed three times daily¹⁰. Bardal et al.¹⁴ revealed in his study that amongst patients undergoing fixed orthodontic treatment around 44% brush their teeth thrice a day, 30% patients reported brushing twice daily and only 4% brush once every day.

It is orthodontist duty to recommend the patients with braces to brush as well as floss after their meals. Patients should be instructed to use soft toothbrush and do proper flossing by position the floss below the wire attaching the orthodontic brackets together¹⁵. Results of the present study showed that only 4% of the patients with braces use floss. This finding can also be compared with another study done previously amongst students enrolled in dentistry program of De'Montmorency College of Dentistry Lahore where only 7.2% of the respondents flossed daily¹⁶.

When advocating plaque removal by manual tooth brushing, orthodontist should highlight the importance of applying appropriate pressure while brushing so that plaque removal can be effective. Chlorhexidine mouthwashes when used help to control inflammation of gingiva. Fluoride mouthwashes cause marked reduction in the amount of decalcification in enamel when used in patients undergoing fixed orthodontic treatment¹⁷. Bardal et al.¹⁸ showed in his study that only 11% of the subjects undergoing fixed orthodontic therapy used soft end tufted tooth brushes and interdental brushes. Study in the neighbouring country also inferred that one-fourth of the subjects were using soft brush, 42% used mouth wash and only 9% used interdental aids¹⁰. Comparing results from the present study, it can be seen that 66% of the patients from this study used interdental brush and 35% used mouthwash frequently.

Plaque is a key etiologic factor for gingivitis. Studies done on animals have concluded that orthodontic forces and movements don't result in gingivitis when plaque is absent. However similar forces with plaque can cause angular bone defects and attachment loss with intruding and tipping tooth movements. Forgoing data hence concludes that the chief factor responsible for periodontal diseases is the existence of plaque¹⁹. It can be therefore said that periodontic and orthodontic branches of dentistry have synergistic relation²⁰.

Orthodontist are held responsible to educate patients about oral hygiene measures such as correct brushing techniques and aids for interdental cleaning²¹. The present study shows the dental negligence of orthodontic patients with fixed appliances and the associated oral hygiene practises.

Results of this study can be used to modify the education of orthodontic patients. Stress can be given to eliminate deficiencies in oral hygiene practises revealed by this study. This in turn will make oral cavity healthier and enhance the effectiveness of

orthodontic therapy. Both education and good attitude are key considerations for sound oral health.²¹

The present study had limitations such as the subjects were conveniently selected and belonged to one geographic area. Further studies with patients enrolling from various socioeconomic groups, both private and government institutes and with bigger sample size in orthodontic patients must be carried to infer conclusions.

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