

Perception, awareness, and practice among patients seeking orthodontic treatment toward maintenance of periodontal health and factors affecting the same among patients visiting dental clinics in Patna

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ABSTRACT

Background: During the orthodontic treatment, maintenance of periodontal health is of utmost importance; hence, this study was conducted to explore the perception and awareness of patients seeking orthodontic treatment toward maintenance of periodontal health and factors affecting the same. **Materials and Methods:** It was a cross-sectional descriptive questionnaire study conducted among 134 patients seeking orthodontic treatment from 16 private clinics in Patna. The study was conducted in the month of June 2019. The city was divided into four directions east, west, north, and south and four clinics were selected from each direction randomly. A close-ended questionnaire was prepared consists of demographic details and questions regarding their perception, awareness, and practice to maintain periodontal health from the start of orthodontic treatment. **Results:** Majority of study participants {74 (55.22%)} were between the age group of 11 and 15 years. Among all study participants, females {81 (60.45%)} were more than males. It was determined that 112 (83.58%) of patients were using tooth brush and tooth paste/powder for cleaning teeth. There was moderate awareness, negative perception, and fair practice of majority of study participants seeking orthodontic treatment toward maintenance of periodontal health. Awareness of study participants was significantly (P -value $\leq 0.05^*$) associated with practice. **Conclusion:** There was moderate awareness, negative perception, and fair practice of majority of study participants seeking orthodontic treatment toward maintenance of periodontal health. Education of study participants was significantly associated with awareness and practice regarding maintenance of periodontal health. There is further need to educate the orthodontic patients toward maintenance of periodontal health.

Keywords: Awareness, dentistry, orthodontic treatment, perception

Introduction

Orthodontics is a claim to fame of dentistry that manages the conclusion, avoidance, and adjustment of mispositioned teeth and

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Received: 14-09-2019

Revised: 16-09-2019

Accepted: 26-09-2019

Published: 15-11-2019

Access this article online

Quick Response Code:



Website:
www.jfmpc.com

DOI:
10.4103/jfmpc.jfmpc_773_19

jaws. It can likewise concentrate on altering facial development known as dento-facial orthopedics.^[1] Any dental or facial anomaly affects the oral wellbeing. Malocclusion or mal-arrangement of teeth (swarming, turn of teeth, crossbite, open chomp, dividing, affected teeth, and constricted arches) is a noteworthy inclining element to plaque accumulation. Fixed orthodontic

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How to cite this article: Sawai DS, Singh P, Tushar, Dogra M, Sultana R, Khan SA. Perception, awareness, and practice among patients seeking orthodontic treatment toward maintenance of periodontal health and factors affecting the same among patients visiting dental clinics in Patna. J Family Med Prim Care 2019;8:3695-9.

appliances additionally act as an increment retention sites for plaque growth and maturation. All these inclining elements make self-cleaning and oral cleanliness support troublesome. Along these lines, the fundamental standard of orthodontic treatment is to address any dental or facial abnormality, for example, tooth and jaw position and subsequently by implication improving the strength of periodontium and toughness of teeth.^[2] According to past examinations, there is a quick fall in oral cleanliness consistency after the underlying holding, and the machine favors plaque develop and it is a block to the cleanliness practice like tooth brushing and flossing.^[3] This can even prompt gum disease. Lacquer decalcification may happen because of plaque development around the section base. Orthodontic patients are encouraged to wash two times each day with 20 mL of Listerine as an aide to brushing and flossing.^[4] The periodontal complexities related with orthodontic treatment for the most part incorporate gum disease, periodontitis, gingival retreat or hypertrophy, alveolar bone misfortune, dehiscences, fenestrations, interdental crease, and dim triangles.^[5-8]

It has been archived that improvement of oral cleanliness consistence and adequacy during orthodontics can be accomplished with expert guidance and monitoring.^[2,9] Before the start of orthodontic treatment, patients ought to be told about the significance of ordinary oral cleanliness maintenance.^[10] It is important to show to patients the right procedure and recurrence of tooth brushing. They have to find out about the correct toothbrushes, interdental, and orthodontic brushes, just as the assistant gadgets for oral cleanliness maintenance.^[11]

Little is thought about periodontal wellbeing discernment and knowledge among patients looking for orthodontic treatment and what are the factors that affect their knowledge regarding periodontal health. Therefore, main aim of this study was to explore the perception and awareness of patients seeking orthodontic treatment toward maintenance of periodontal health and factors affecting their practice.

Materials and Methods

This study is a cross-sectional descriptive questionnaire study conducted among patients seeking orthodontic treatment from private clinics in Patna city (09/04/2019). The study was conducted in the month of June 2019.

The city was divided into four directions: north, south, east, and west. From each direction, four dental clinics were selected randomly. Those dental clinics were selected in which orthodontic treatment was done either by visiting dentist or from the dentist himself or herself. In selected clinics, consent was availed from both owner and patients and those given consent were included in the study. If a GDP (general dental practitioners) refuse to give his or her consent, other clinic was included in the study. If at the time of survey due to patient appointment, he or she does not take up the survey, the questionnaire was given to patients to be filled and collected later. The survey was conducted among 136 patients.

A pilot survey was conducted, before the main survey on 10% of the total study participants to test the validity and reliability of questionnaire. Reliability of the questionnaire was determined by using test-retest and the values of measured Kappa (k) = 0.77 Weighted Kappa (k_w) = 0.81. Internal consistency of questionnaires was measured by applying Cronbach's-Alpha (α) and the value of α = 0.80 was measured. Those questions with less validity and reliability were removed.

In this study a close ended interview schedule was prepared to perception and practice of patients. It consists of four parts. First part consists of demographic details of patients which includes age, gender, and socioeconomic status (education, occupation, and income).

Second part consists of seven questions related to awareness of patients regarding oral hygiene, duration of orthodontic treatment, various gum diseases patient had suffered from, do they have plaque or calculus in their mouth, do they have swollen gums, do they have gingival irritation or pain, do they have mobile teeth in your mouth, do they have bleeding gums.

Third part consists of questions regarding perception of patients regarding maintenance of Periodontal health that include seven questions such as poor oral hygiene during orthodontic treatment effects health of gums, poor oral hygiene during orthodontic treatment cause swollen gums, and poor oral hygiene during orthodontic treatment causes gingival irritation or pain. Orthodontic treatment makes cleaning of teeth difficult. Straight teeth are easier to clean. It is difficult to follow oral hygiene instruction given by dentists to maintain oral hygiene.

Fourth part consists of eight questions regarding practice for maintenance of oral hygiene: *Do you follow the oral hygiene instruction given by the dentists, Is brushing increased after the treatment started, Do you follow method of tooth brushing and type of tooth brush, tooth paste used according to instructions of your dentist, are you using any other oral hygiene aid such as mouthwash, interdental brushes etc.*

Awareness of patients was checked by patient record and examination of oral cavity by using mouth mirror and explorer. On each correct answer, 1 point is given and 0 for wrong answer or don't know. The score for awareness ranges from 0 to 7 with 0–2 poor awareness, 3–5 fair awareness, and 6–7 good awareness. Perception of study participants measured on likert scale. Starting from 4 - strongly disagree, 3 - disagree, 2 - agree, and 1 - strongly agree. The score for perception ranges from 7 to 28 with 1–9 negative perception, 10–19 Neutral perception, and 20–29 positive perception. Practice score were measured as 0 to answer given No and 1 to answer given Yes, practice scores ranges from 0 to 8 with 0–3 poor practice, 4–6 fair practice, and 7–8 good practice.

Statistical analysis

After entering data in Microsoft excel 2014, SPSS version 21.0

is used to analyze the data. Descriptive statistics is used to determine demographic details and perception, awareness, and practice of study participants toward maintenance of periodontal health. Correlational analysis is used to determine association between perception, awareness, and practice of study participants. Chi-square test is used to find the association between demographic details and perception, awareness, and practice of study participants.

Results

Table 1 shows that majority of study participants {74 (55.22%)} were between the age group of 11 and 15 years. Among all study participants, females {81 (60.45%)} were more than males. Majority of the study participants belonged to high socioeconomic status group.

Table 2 shows oral hygiene maintenance by study participants. It was determined that 112 (83.58%) of patients were using tooth brush and tooth paste/powder for cleaning teeth. Most of study participants {101 (75.37%)} use horizontal method of cleaning teeth. Combination of other hygiene aids such as dental floss, mouth wash, and interdental brushes was used by 65 (48.50%) of the study participants. Most of the study participants clean {61 (45.52%)} their teeth twice daily. Among the study participants who uses tooth brushes, 73 (65.71%) of them use medium tooth brush bristles to clean their teeth. Majority of them change their brushes once in a month.

Table 3 shows awareness, perception, and practice scores of patients seeking orthodontic treatment. It was reported that 67 (50%) of patients had moderate awareness about oral hygiene during orthodontic treatment. Perception of 68 (50.74%) study participants was negative toward maintenance of periodontal health, while the practice of 57 (42.53%) study participants was fair in maintenance of oral hygiene.

Table 4 shows that on applying Pearson's correlation, perception of study participants toward maintenance of periodontal health was significantly (P -value $\leq 0.05^*$) associated with practice

in maintaining periodontal health, while awareness of study participants was significantly (P -value $\leq 0.05^*$) associated with practice.

Table 5 shows that there was significant ($P = 0.01^{**}$) correlation between age group, gender, and perception of study participants, while education of study participants was significantly associated with awareness and practice regarding maintenance of periodontal health.

Discussion

This study was conducted to explore perception, awareness, and practice of patients seeking orthodontic treatment. In this study, majority of the patients seeking orthodontic treatment mainly belonged to the age group of 11–15 years. Same results were seen in study by Al-harbi *et al.*^[12] in which majority of study subjects were <18 years. In a study conducted by Baheti *et al.*,^[2] it was reported that 60% of study participants belonged to the age group of 13–20 years. This may be due to the fact as given by The American Academy of Orthodontics (AAO) the best phase of seeking phase 2 orthodontic treatment is between 11 and 14 years.^[13]

In this study, among all study participants, female patients were more than male patients. Same results were seen in study by Al-harbi *et al.*,^[12] Sharma,^[14] and Alhajja *et al.*^[15] in which females were more than males to take up orthodontic treatment. This may be due to the fact that females were conscious about their looks. Contrasting results were shown in study by Shah *et al.*^[16] in which males seeking orthodontic treatment were more than females.

In this study, about 112 (83.58%) of study participants uses tooth brushes and 105 (78.35%) uses other oral hygiene aids for cleaning teeth and of them maximum patients uses combination of these oral hygiene aids, whereas in study by Shah *et al.*,^[16] all 100% uses tooth brushes to clean their teeth. In a study by Al-harbi *et al.*,^[12] 67% uses other oral hygiene aids, whereas in study by Shah *et al.*,^[16] all 100% of study participants uses other oral hygiene aids. In a study conducted by Baheti *et al.*,^[2] only 25.3% of study participants used other oral hygiene aids. In this study, majority of patients uses medium consistency bristles for cleaning teeth. Same results were seen in study by Baheti *et al.*,^[2] whereas different results were seen in study by Shah *et al.*,^[16] in which most of study participants used soft bristles tooth brush. In this study, most of the study participants uses clean their teeth twice daily. Same results were seen in study by Shah *et al.*,^[16] Baheti *et al.*,^[2] and Al-harbi *et al.*^[12] with most orthodontic patients brush teeth twice daily. In this study, most of the study participants replace their tooth brush in <1 month. Same results were seen in study by Baheti *et al.*^[2]

In this study, there was moderate awareness, negative perception, and fair practice of majority of study participants seeking orthodontic treatment toward maintenance of periodontal health. Same results were reported in study by Al-harbi *et al.*^[12]

Table 1: Demographic details of study participants (n=134)

Demographic Variables		Number (n)	Percentage
Age in years	5-10 years	10	7.46
	11-15 years	74	55.22
	16-20 years	38	28.35
	>20 years	12	8.97
	Total	134	100
Gender	Male	53	39.55
	Female	81	60.45
	Total	134	100
Socioeconomic class	Upper	76	56.71
	Middle	37	27.61
	lower	21	15.68
	Total	134	100

Table 2: Oral hygiene maintenance by patients seeking orthodontic treatment

Oral hygiene maintenance		Number (n)	Percentage
Oral hygiene cleaning aids used	Tooth brush and tooth paste/powder	112	83.58
	Finger and tooth paste/powder/Charcoal	07	5.52
	Miswak stick	15	10.9
	Total	134	100
Method of tooth brushing used	Horizontal	101	75.37
	Circular	08	5.97
	Vertical	9	6.72
	Combined	16	11.94
	Total	134	100
Other oral hygiene aids used	Dental Floss	07	5.22
	Mouth wash	32	23.88
	Interdental brushes	01	0.74
	Combination of above aids	65	48.50
	Not using	29	21.66
	Total	134	100
How many times a day does you clean your teeth	Once daily	53	39.55
	Twice daily	61	45.52
	More than twice	20	14.93
	Total	134	100
What type of toothbrush do you use?	Soft	27	24.10
	Medium	73	65.17
	Hard	12	10.73
	Total	112	100
How often do you change your toothbrush?	Once in 1 month	87	77.67
	Once in 2 months	17	15.17
	Once in >2 month	08	7.16
	Total	112	100

Table 3: Awareness, perception, and practice scores among study participants seeking orthodontic treatment regarding maintenance of periodontal health

Variables	Number of subjects	Percentage of subjects, n (%)
Awareness	0-2 (low)	29 (21.64)
	3-5 (moderate)	67 (50.00)
	6-7 (high)	38 (28.36)
	Total	134 (100)
Perception	1-9 (negative)	68 (50.74)
	10-19 (neutral)	45 (33.58)
	20-28 (positive)	21 (15.68)
	Total	134 (100)
Practice	0-3 (poor)	43 (32.08)
	4-6 (fair)	57 (42.53)
	7-8 (good)	34 (25.39)
	Total	134 (100)

Table 4: Correlation analysis of awareness, perception, and practice among study participants seeking orthodontic treatment regarding maintenance of periodontal health by using Pearson's correlation

	Perception		Awareness		Practice	
	R	P	R	P	r	P
Perception	-	-	-	-	-1.601	2.34
Awareness	1.003	1.01	-	-	1.001	0.23
Practice	-1.222	0.01*	0.078	0.03*	-	-

P-value $\leq 0.05^*$

in which majority of study participants had moderate awareness. In a study conducted by Alhajja *et al.*,^[15] majority of the study participants had high level of awareness toward maintenance of periodontal health.

In this study, education of study participants was significantly associated with awareness ($P = 0.05^*$) and practice regarding maintenance of periodontal health. Same results were shown in study by Borg *et al.*^[17]

The periodontal wellbeing during orthodontics treatment is of most extreme significance as it counteracts backslide and life of the dentition moreover. The sufficient knowledge, perception, and practice on during and after orthodontic treatment forestall the complexities and improve the life span of the teeth.

Conclusion

From above it was concluded that females were more than males seeking orthodontic treatment. Patients were mainly belonged to the age group of 11–15 years. Most of the patients brush twice daily. There was moderate awareness, negative perception, and fair practice of majority of study participants seeking orthodontic treatment toward maintenance of periodontal health. Education of study participants was significantly associated with awareness ($P = 0.05^*$) and practice regarding maintenance of periodontal health.

Table 5: Correlation analysis of demographic variables with awareness, perception, and practice among study participants seeking Orthodontic treatment regarding maintenance of periodontal health by using χ^2 test

Demographic variables	Awareness		Perception		Practice	
	χ^2	P	χ^2	P	χ^2	P
Age group	1.001	1.00	3.901	0.01**	0.777	1.07
Gender	1.034	0.19	0.406	0.00***	2.061	0.22
Education	5.029	0.05*	0.871	3.01	2.701	0.00***
Occupation	0.102	0.29	1.099	2.11	0.091	3.09
Income	1.401	1.56	0.450	0.87	5.621	0.56

P-value $\leq 0.05^*$, P value $\leq 0.01^{**}$, P value $\leq 0.00^{***}$

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient (s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

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