

Assessment of Patients Perception and Reaction towards Orthodontic Treatment

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Abstract

Aim: To evaluate the perception and reaction of general patients and ongoing orthodontic treatment cases based on a questionnaire survey.

Materials and Methods: The study included two groups of patients; walk in patients who had reported to the Department of Orthodontics for treatment and on-going orthodontic cases. A total of 260 patients aged between 12–25 years were evaluated and divided into 2 groups of 130 patients each. Each patient was required to fill a questionnaire. To create relevant questions, a qualitative method for assessing patient's opinion about orthodontic treatment was done. The final questionnaire comprised of 10 questions, each having multiple choice answers. The questions were modified from previous studies and the occlusal index known as IOTN developed by Brook and Shaw in 1989. This index was used to assess the need for orthodontic treatment.

Result: Proportional differences in treatment needs of patients with different perceptions for wearing braces was found to be statistically significant ($p = 0.021$). In treatment needs of patients with different opinions, on evaluation of their dental appearance with their peers was found to be statistically significant ($p < 0.001$). All new orthodontic patient irrespective of the perception for wearing braces required treatment.

Conclusion: It may be concluded that results of this study showed that all new orthodontic patients irrespective of their perception, mentioned that wearing orthodontic braces would be difficult. Both the group patients compared the appearance of their teeth with their peers. Subjects undergoing orthodontic treatment showed the highest percentage.

Keywords: Orthodontic treatment; Patient perception; Questionnaire

Introduction

Malocclusion is a common phenomenon which affects the physical, social and psychological well being of any individual. It can also affect the quality of life including function, appearance and interpersonal relationships. [1] Oral health related quality of life relates to the

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impact of dental esthetics on social acceptance and self concept. Malocclusion may cause patient to develop low self-esteem as their facial appearance is affected and thus they feel left out in Society. Some people are happy with a severely deranged occlusion while others can be particular about minor irregularities. [2] Speech problems can be related to malocclusion, but normal speech is possible in the presence severe anatomic distortion. [3] Tongue tie, severe jaw discrepancies, habits and cleft lip, palate can lead to difficulty in speech and pronunciations. Speech difficulties in a child, therefore, are likely to be solved by orthodontic treatment.

The Index of Orthodontic Treatment Need (IOTN), developed in the UK by Brook and Shaw⁴ consists of two parts: estimation of aesthetics [Aesthetic Component, (AC)] and estimation of the severity of the malocclusion [Dental Health Component, (DHC)]. The DHC was developed to reduce the subjectivity in measurement, by using well-defined cut-off points. The malocclusions are divided into 5 different groups ranging from very great need to no treatment need. [5] Evans and Shaw [6] did a preliminary evaluation of an illustrated scale for rating dental attractiveness. They developed a simple 10 point rating scale (SCAN) which was illustrated by representing dental photographs across a range of values.

They found that high inter-judge correlations were seen for orthodontists, parents and children using this scale and, children who underrated their own dental attractiveness had a low score for their general self-esteem. Mandell, *et al.* [7] found that the index of orthodontic treatment need could be weighted by using consumer based socio-dental measures to predict the uptake of orthodontic services. They also stated that socio-dental indicators did not accurately predict the uptake of orthodontic services. Feldmann, *et al.* [8] studied and evaluated the reliability of a questionnaire that assessed the expectations and experiences of adolescent patients about orthodontic treatment.

They found that a majority of the questions exhibited acceptable test-retest reliability and the composite scores yielded excellent reliability for all domains. Kong, *et al.* concluded that the majority of patients were satisfied with their treatment results, there is still a need to improve on the standard of care to address the issues of the minority who were not satisfied with the treatment outcome. [9] To overcome the lacuna of the previous studies and to bring clarity to patient perception for orthodontic treatment, the present study was undertaken to evaluate the perception and reaction of general patients and ongoing orthodontic treatment cases based on a questionnaire survey.

Material and Method

This study was conducted in the Department of Orthodontics and Dentofacial Orthopedics, Saraswati Dental College, Lucknow. The study included two groups of patients; walk in patients who had reported in the department and on-going orthodontic cases. A total of 260 patients aged between 12-25 years (mean age 15 years) were evaluated and divided in 2 groups of 130 patients each. Each patient was required to fill a questionnaire.

Questionnaire

To create relevant questions, a qualitative method for assessing patient's opinion about orthodontic treatment was done. The final questionnaire comprised of 10 questions, each having multiple choice answers (APPENDIX). The questions were modified from previous studies. [8,10-16] Based on the questionnaire 2 groups were made; Group A – New patient who entered the department (Male-67, Female-63, mean age-16 years) and Group B–On-going orthodontic patients (Male - 72, Female - 58, mean age-14 years). The new patients from Group A who started orthodontic treatment were not included in the on-going orthodontic patients Group B.

Occlusal Index [4]

Occlusal index known as IOTN developed by Brook and Shaw in 1989 was used to assess the need for orthodontic treatment. The Dental Health Component (DHC) of IOTN has five grades: Grade 1-No Need, Grade 2- Mild/Little Need, Grade 3- Moderate/Borderline Need, Grade 4-Severe Need and Grade 5- Extreme Need.

Methodology

Consecutive new patients were asked to fill the questionnaire when they came to the department for checkup. They were examined intra orally for malocclusion by the same operator. On-going orthodontic patients were chosen at random and were asked to fill the same questionnaire. Information on perception of malocclusion and satisfaction with personal dental appearance was obtained from 10 questions. The patient's occlusions were objectively assessed by using the DHC of IOTN index in all the groups. All components of the index were assessed by the same operator.

Statistical Analysis

The statistical analysis was done using SPSS (Statistical Package for Social Sciences) Version 15.0 statistical Analysis Software. Chi square test was used for comparison of data. P Value > 0.05 was taken to be statistically significant.

Results

The results showed that out of 130 new orthodontic patients, 56 (43.08%) found it difficult to wear braces while 64 (49.23%) did not find any difficulty in wearing braces and 10 (7.69%) could not judge whether wearing braces is difficult or not. All new orthodontic patient irrespective of the perception for wearing braces required treatment. Proportional differences in treatment needs of patients with different perceptions for wearing braces was found to be statistically significant ($p = 0.021$). (Table 1)

Out of 130 on-going orthodontic patients, 88 (67.69%) compared their teeth appearance with that of their peers and 41 (31.54%) did not compare the same. Only 1 (0.77%) patient could not decide whether he/she would be comparing the same or not. A statistically significant difference in treatment needs of patients with different opinions on evaluation of their dental appearance with their peers was found to be statistically significant ($p < 0.001$). (Table 2)

Orthodontic Treatment Need	Difficult (n = 56)		Not difficult (n = 64)		Can't say (n = 10)	
	No.	%	No.	%	No.	%
No need	0	0.00	0	0.00	0	0.00
Mild/Little need	8	14.29	18	28.13	3	30.00
Moderate/Borderline need	33	58.93	29	45.31	4	40.00
Severe Need	12	21.43	17	26.56	1	10.00
Extreme Need	3	5.36	0	0.00	2	20.00

$\chi^2 = 14.912$; $p = 0.021$ (Significant)

Table 1: Evaluation of Treatment Need in New Orthodontic Patient (Group A) and Response (Difficulty in wearing braces) (N = 130).

Orthodontic Treatment Need	Compare (n = 88)		Don't compare (n = 41)		Can't say (n = 1)	
	No.	%	No.	%	No.	%
No need	1	1.14	0	0.00	0	0.00
Mild/Little need	36	40.91	18	43.90	0	0.00
Moderate/Borderline need	34	38.64	19	46.34	0	0.00
Severe Need	11	12.50	4	9.76	0	0.00
Extreme Need	6	6.81	0	0.00	1	100.00

$\chi^2 = 21.242$; $p < 0.001$ (Significant)

Table 2: Evaluation of Treatment Need in On-going Patient (Group B) and Response (Comparison of appearance your teeth with peer) (N = 130).

Discussion

This study was carried out in the Department of Orthodontics and Dentofacial Orthopedics Saraswati Dental College Lucknow India. 260 patients were asked to fill a questionnaire to evaluate their perception and reactions towards orthodontic treatment. The questionnaire was made by modifying questionnaires from previous studies. Each question and its response has been discussed below. Two parameters had a statistically significant difference from the questionnaire. Due to this they have been mentioned in the result and have been discussed.

In question no. 1 the subjects were asked whether it was their own decision to undergo orthodontic treatment. Patients were aware and conscious regarding orthodontic treatment as it was needed. In present study new orthodontic patients, 77.69 % patients seeking treatment were self referred (own decision) and 22.31 % patients were referred by dentist, relative and friends. Rajagopal B., *et al.* [14] found that 32.7% patients were self decisive for orthodontic treatment. Similar studies were done by Breece., *et al.* [17] and they found similar results. From the responses of on-going orthodontic patients (Group B) in our study, it was found that majority of the patients 77.69% themselves have felt the need of orthodontic treatment, only 22.31% were taking treatment on the advice of other family/ society members and dentist.

In question no. 2 the subjects were asked whether wearing braces was going to be difficult. In our study new orthodontic patients (Group A) 43.08%, found it difficult to wear braces while 49.23% did not find any difficulty in wearing braces and 7.69% could not judge whether wearing braces was difficult or not. All new orthodontic patient irrespective of the perception for wearing braces required treatment. The perception of wearing braces depends upon certain factors for example age, sex, type of malocclusion, type of appliance etc. On-going orthodontic patients (Group B), 47.69% found it difficult to wear braces while 51.54% felt no difficulty in wearing braces and only 0.77% could not decide whether wearing braces is difficult or not.

In question no. 3 the subjects were asked whether they avoided smiling to hide their teeth. In the present study, in the ongoing patients, majority hesitated to smile because of irregularly placed teeth before the orthodontic treatment. In a study done by Badran A¹³, it was found that the patients who avoided smiling to hide their teeth were the ones who had a great normative treatment need as measured by the AC and DHC of the IOTN. Although the results were statistically significant, correlation values were low, which may lead us to question whether the results are clinically significant. However, the psychosocial effects of malocclusion should never be underestimated no matter how small and one should believe that having straight teeth improves ones popularity and success in life. Rajagopal., *et al.* [14] concluded that the smile is the most important feature in determining facial aesthetics.

In question no. 4 the subjects were asked whether they were teased about the appearance of their teeth. Hamdan¹⁰ found that 40 % of the sample had been teased about the appearance of their teeth. Of those who have been teased, 63 % initiated the orthodontic treatment. The subjects indicated that teasing played a role in the initiation of orthodontic treatment. It appears that malocclusion and an unattractive dental appearance have a negative social impact on an individual. Mostly buck teeth and midline diastema was seen to attract the most amount of teasing due to this the subjects appearance was perceived as abnormal. Badran [13] reported that subjects being teased about the appearance of their teeth were those who had a definite treatment need as measured by the AC and DHC of the IOTN. They were also greatly dissatisfied with the appearance of their teeth and placed themselves at the least attractive end of the AC scale, perceived a great need for treatment, and suffered from low self-esteem. Other studies reported that children with a normal dental appearance are judged to be better looking, more desirable by friends while those with a poor appearance are more subjected to teasing and harassment. [13]

In question no. 5 the subjects were asked whether they were worried about how they were going to look with braces on. This question was taken from the study done by Feldmann.m., *et al.* [8], for this question they showed that ICC (i.e. 0.88), indicates excellent reliability. In our study new orthodontic patients and on-going orthodontic patients were worried about their looks before and after placements of the braces (56.92%, 66.92%). Patients feared that they would be ridiculed and made fun of as they would find it difficult

to adjust in the society. Adult patients feared that their professional life may get hampered because of the braces. Adolescent patient feared that they would look funny and they would be teased about their braces. It is the responsibility of the orthodontist to educate and counsel the patients about the braces. They need to explain to the patient that orthodontic treatment will benefit them greatly in the long run.

In question no. 6 the subjects were asked whether they considered well-aligned teeth important for their overall facial appearance. In our study majority of the patients were of the opinion that well aligned teeth are important for overall facial appearance. This result was similar to previous studies. In the study of Malik, *et al.* [15], subjects were asked whether well aligned teeth were important for overall facial appearance, 83.7% answered as very important, 15.7% as important and 0.7% were grouped as not important. This reveals that the subjects consider aligned teeth as very important parameter for their overall facial appearance.

In question no. 7 the subjects were asked whether they considered the appearance of their teeth to be better than the teeth of their peers. In our study we found out that new orthodontic patients and on-going orthodontic patients (55.38%, 67.69%) compared their appearance of teeth with peers. Subjects in Group B (undergoing orthodontic treatment) showed the highest percentage. This shows as that these subjects were aware of their appearance with braces and were keen to compare their teeth with subjects who did not undergo orthodontic treatment. Malik V, *et al.* [15] showed that in reply to this question 17% patient could be grouped as 'among the best', 66% 'better than average', 16.6% 'below average', and 0.3% 'among the poorest'. This reveals their mild attitude towards their appearance compared to their peers. It also shows a highly significant correlation between IOTN components and self perception of subjects regarding their looks and acceptance in society.

In Question no. 8 the subjects were asked that while having braces, did they need to change their dietary habits. Eating hard food stuff is not advised as it can damage the appliance. Eating sticky food stuff is difficult to clean and this may lead to plaque and calculus accumulation. Excellent oral hygiene is necessary for successful orthodontic treatment. Breakage of this appliance at times leads to prolonged orthodontic treatment and this may demoralize the patient. In the present study both group of patients were in majority there was a need to change their dietary habits because of braces. Bos., *et al.* [18] found that change in dietary habit is required while wearing braces, Sayers, *et al.* [19] and Rajagopal B., *et al.* [14] mentioned that orthodontic treatment produces problems while eating. Salam., *et al.* [16] showed that orthodontic treatment has an impact on the daily lives of the patients. This is because that the patient have to be very careful not to damage or break the appliance and at the same time to maintain adequate oral hygiene. Failure to do so may lead to a compromised treatment and periodontal damage.

In question no. 9 the subjects were asked whether they felt that it was absolutely necessary to care more for their oral hygiene while they were wearing braces. Proper oral hygiene during orthodontic treatment cannot be overemphasized.

Children naturally miss their brushing duties, even without appliance in place. This requires the combined effort of orthodontists, dentist, hygienist and parents to establish a proper routine. If this is not done, problems like decalcification, caries, frequent loose bands and soft tissue damage as well as halitosis are likely to occur. Even the simplest orthodontic appliances can become a large foci for the buildup of bacteria due to accumulation of food and debris. Due to this patient have to take extra care for their oral hygiene. In the present study new orthodontic patients and on-going orthodontic patients (94.62% and 95.38% respectively) had the opinion that oral hygiene is absolutely necessary while wearing braces. These results was similar to Rajgopal B., *et al.* [14] who found that in new orthodontic patients 41.8% patients had difficulty in maintaining oral hygiene after having braces and 89.1% patients had difficulty in maintaining oral hygiene after having braces in on-going orthodontic patients.

In question no. 10 the subjects were asked whether they thought/heard that orthodontic treatment is a painful procedure. Perception towards pain caused by orthodontic treatment had a wide range of individual response, reflecting the subjectivity of the pain response. This difficulty could be due to discomfort caused by foreign attachments on the surface of teeth and the tenderness on activation of the arch wire. Practitioners should therefore attempt to control post adjustment orthodontic pain via several means such

as dietary restrictors (soft diet) and non steroidal anti inflammatory agents such as aspirin and ibuprofen in patients who experience repeated post adjustment pain. In the present study the new orthodontic patients and on-going orthodontic patients (36.92%, 40.77%) had the opinion that orthodontic treatment would be painful. Study done by Sayers., *et al.* [19] showed that orthodontic treatment was very painful in new orthodontic patients as compared to on-going patients. The on-going patients get used to the appliance and experience less pain. This result was similar to study by Rajagopal B., *et al.* [14].

This study provided information on patient's expectation and perception about orthodontic treatment in new patients and on-going patients. It could be used as an aid for consent and treatment planning. It helps to improve the quality of orthodontic treatment as it bridges the gap between expectations and experience of it. It also helps us to predict different reactions of patients which may be seen during the orthodontic treatment. Further literature and research is required in this aspect to properly understand, perceive and assess the orthodontic patient's perception towards treatment.

Conclusion

- All new orthodontic patients irrespective of their perceptions mentioned that wearing orthodontic braces would be difficult.
- Both the group patients compared the appearance of their teeth with their peers. Subjects undergoing orthodontic treatment showed the highest percentage.

Appendix

1. Is/was it your own decision to undergo orthodontic treatment?
2. Do/did you think it is/was going to be difficult to wear braces?
3. Do/did you avoid smiling to hide your teeth?
4. Has/had malocclusion affected your personal and social life?
5. Have/had you ever been teased about the appearance of your teeth?
6. Do/did you consider well – aligned teeth important for overall facial appearance?
7. Do/did you consider the appearance of your teeth better than the teeth of your peers?
8. Do/did you feel/expect that when you wear braces, you need to adjust your dietary habits?
9. Do/did you feel/expect that it is absolutely necessary to care more for your oral hygiene when you are wearing braces?
10. Do/did you think/ heard orthodontic treatment is a painful procedure?
A. Yes B. No C. Don't know

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