Research Article

Significance of Providing Index-based Accurate Treatment Time Estimates to Patients Before Orthodontic Treatment

Dr. Shama Samreen[1], Dr. Purva Joneja[2]

[1]PG Student, Dept. of Orthodontics and Dentofacial Orthopedics, Bhabha College of Dental Sciences, Bhopal, (M.P)
[2]Professor and HOD, Dept. of Orthodontics and Dentofacial Orthopedics, Bhabha College of Dental Sciences, Bhopal, (M.P)

Corresponding author: Dr. Shama Samreen; Email: shamasamreen2496@gmail.com

ABSTRACT

Introduction: Orthodontic treatment duration has always been a topic of concern to patients and one of the aims of orthodontic treatment is to minimize the overall treatment time.

Aim and Objective: To determine the benefits of providing index-based accurate treatment duration to patients before orthodontic treatment in practice management.

Materials and Method: A cross-sectional questionnaire survey was the chosen method of research. A multiple choice and dichotomous question questionnaire was structured with 15 relevant questions to be filled in by the respondents to deduce the required information. The survey was circulated to 100 postgraduate students and orthodontists using various social media platforms who responded to the survey.

Result: In general, young adults (51.0%) demanded the approximate treatment time before treatment and 50% of the clinicians provided an accurate estimate of treatment time to the patients before treatment. For simple orthodontic cases, PAR Score was the index of choice and for complex orthodontic cases, ABO-DI index was preferred.

Conclusion: Accurate estimation of treatment duration before treatment resulted in highly motivated, happy and satisfied patients. It also saved the time and resources of orthodontists.

KEYWORDS: ABO discrepancy index, Orthodontic indices, Orthodontic treatment, PAR score, Treatment duration.

INTRODUCTION

One of the goals of orthodontic treatment is to complete what needs to be done for patients as quickly as possible.[1] A longer treatment time can have serious negative consequences such as increased caries risk and root resorption.[2,3]

Accurate treatment duration may be of value when discussing expectations and goals for patient treatment duration and outcomes. Estimated duration helps in gaining patients' trust and motivation and orthodontists can schedule their appointments accordingly which helps in practice management. Simple clinical strategies can contribute to the control and shortening of orthodontic treatment time.[4]

One of the main reasons for patient dissatisfaction is non-compliance with the treatment time initially proposed.[1] Therefore, once treatment goals have been set, it is important to make a precise and individual estimate of the time required for the intended correction.[5] A more accurate estimate for orthodontic treatment time can help give a more realistic estimate of treatment costs, in addition to minimizing risks of iatrogenesis, as well as increasing success rates and patient satisfaction.[5,6]

Many orthodontically accepted Indices like ABO-DI index[5] and PAR Score[6] can be used to determine the estimated treatment duration. PAR Score is a reliable and valid measure of orthodontic treatment outcome.[6,7,8] The ABO Discrepancy Index (DI)[9] has shown a positive association with orthodontic treatment time. Cases with DI > 15 were significantly longer (30 months) than cases with DI ≤ 15 (22 months). Should DI be greater

than 15, treatment time is expected to last more than 22.1 months in 85% of cases. ABO-DI is a useful tool to predict treatment time in addition to other factors, such as appointment timing, type of appliance, compliance, and treatment modality.[5,9]

The Index of Orthodontic Treatment Need (IOTN) has proved to be a reliable and reproducible index due to its simplicity and the objective nature of its application. The IOTN index is used to prioritize the treatment need of malocclusion.[10] The objective of this study was to determine the benefits of providing index-based estimated treatment duration to patients before orthodontic treatment in practice management.

MATERIALS AND METHODS

The study was conducted after obtaining permission from the Institutional Ethics Committee. This was a cross-sectional questionnaire survey with 15 multiple-choice and dichotomous validated questions which were filled in by the respondents to deduce the required information. The questions were related to the duration of treatment of the orthodontic fixed mechanotherapy using the MBT technique only. All other treatment modalities including removable, myofunctional and other techniques were not assessed by the questionnaire. The survey was circulated to 100 postgraduate students, academicians and practising orthodontists using various social media platforms. There was a 100% response to the survey. The data of the responses of participants was collected on the Google form application and the Chi-square test was used to find the difference among the responses for every question in the questionnaire.

NAME: QUALIFICATION:

1. Which is the targets patient who demand to know approximate treatment time?
   a. Children/ their parents
   b. Young adults (18-25) yrs.
   c. Adults (25 above) yrs. of age
2. Do you give an accurate estimate treatment time to the patients prior to treatment?
   a. Yes
   b. No
3. which index do you use for evaluation of simple orthodontic cases treatment time?
   a. ABO DI Index
   b. PAR Score
   c. Self-assessed approximate treatment time
   d. Any other specify...
4. which index do you use for evaluation of complex orthodontic cases treatment time?
   a. ABO DI Index
   b. PAR Score
   c. self-assessed approximate treatment time
   d. Any other specify...
5. by evaluating the estimate time does it become more efficient to use time and resources?
   a. Yes
   b. No
6. Does it help you to keep a check on longer than necessary treatment on dental health like resorption, periodontitis, mobility etc.
   a. Yes
   b. No
7. what is the patient response if estimate treatment time goes right
   a. Neutral
   b. Satisfied
   c. Happy and complementary
   d. Other please specify...
8. Does your pretreatment estimate time and actual treatment time match?
   a. Total match
   b. minute variation (1 weeks -2 weeks)
   c. Minor variations (2 weeks- 4 weeks)
9. Reason for variation in estimated treatment time and post treatment time?
   a. Missing appointments
   b. Debonding Brackets
   c. Uncooperative patients
10. How do you deal with uncooperative patients to finish cases closer to the time estimate
    a. Motivating patients
    b. Counselling parents
    c. Punishments
    d. Mild change in Mechanics
    e. All the Above
11. Do you use IOTN for prioritizing the malocclusion needing treatment and correlate with any other index to determine the precise treatment time
    a. Yes
    b. No
12. If you give a self-assessed approximate estimate time, what is it based on?
    a. Clinical examination
    b. Only on model
    c. Only on Cephalogram
    d. Both on model and Cephalogram
13. If you don't give estimate treatment time, how do you manage complexity and time challenge?
    a. Treatment Priority index (TPI)
    b. Schedule Appointment
    c. Aiding Speedy orthodontics, minor surgical procedure
14. If you don't give an accurate estimate time, what do you say to patient, how much is the error as per experience?
    a. 1-4 months
    b. 4-6 months
    c. More than 6 months
15. Kind of patient reaction if estimated time goes wrong
    a. Agitated
    b. Disappointed
    c. Neutral
    d. Supportive
    e. Other please specify...

Fig: 1 Questionnaire form

RESULTS

In general, young adults (51.0%) demanded the approximate treatment time before treatment and 50% of the clinicians provided an accurate estimate of treatment time to the patients before treatment. PAR score (51%) was the index of choice for the evaluation of simple orthodontic cases and ABO-DI (51.0%) was the index of choice for complex cases. 92% of clinicians thought that the estimation of treatment time enhanced efficiency and helped to keep a check on prolonged treatment duration and associated side effects such as resorption, periodontitis and mobility. 58% of the respondents used IOTN for prioritizing the malocclusion needing treatment and correlated it with any other index to determine the precise treatment time. When the treatment duration was within the estimated time the patients were happy and motivated (50%) and satisfied (42%) and when the treatment duration was prolonged the patients were disappointed (68%) (Table 1).

Table 1: Descriptive statistics of the responses to the questionnaire and assessment of the difference between the responses

Questions		Count	Column N %	Chi-square	P value
Q1	Children/ their parents	17	17.0%	17.42	<0.001**
	Young adults (18-25) yrs	51	51.0%		
	Adults (25 and above) yrs of age	32	32.0%		
Q2	Yes	50	50.0%	0.00	1.0
	No	50	50.0%		
Q3	a. ABO DI Index	16	16.0%	18.38	<0.001**
	b. PAR Score	51	51.0%		
	c. Self-assessed approximate treatment time	33	33.0%		
Q4	a. ABO DI Index	50	51.0%	17.42	<0.001**
	b. PAR Score	17	17.0%		
	c. Self-assessed approximate treatment time	33	32.0%		
Q5	Yes	92	92.0%	70.56	<0.001**
	No	8	8.0%		
Q6	Yes	92	92.0%	70.56	<0.001**
	No	8	8.0%		
Q7	a. Neutral	8	8.0%	29.84	<0.001**
	b. Satisfied	42	42.0%		
	c. Happy and motivated	50	50.0%		
Q8	a. Total match	9	9.0%	27.02	<0.001**
	b. minute variation (2 weeks -4 weeks)	43	43.0%		
	c. Minor variations (1 month – 2 months)	48	48.0%		
Q9	a. Missing appointments	74	74.0%	75.38	<0.001**
	b. Debonding Brackets	17	17.0%		
	c. Uncooperative patients	9	9.0%		
Q10	a. Motivating patients	8	8.0%	21.84	<0.001**
	b. Counseling parents	26	26.0%		
	c. punishment	0	0.0%		
	d. Mild change in Mechanics	25	25.0%		
	e. All the Above	41	41.0%		
Q11	Yes	58	58.0%	2.56	0.110
	No	42	42.0%		
Q12	a. Clinical examination	25	25.0%	39.12	<0.001**
	b. only on model	17	17.0%		
	c. only on cephalogram	8	8.0%		
	d. Both on model and Cephalogram	50	50.0%		

Questions		Count	Column N %	Chi-square	P value
Q13	a. Treatment Priority index (TPI)	24	24.0%	57.92	<0.001**
	b. Schedule Appointment	68	68.0%		
	c. Aiding Speedy orthodontics, minor surgical procedure	8	8.0%		
Q14	a. 1-4 months	16	16.0%	13.52	0.001**
	b. 4-6 months	42	42.0%		
	c. More than 6 months	42	42.0%		
Q15	a. Agitated	16	16.0%	100.32	<0.001**
	b. Disappointed	68	68.0%		
	c. Neutral	8	8.0%		
	d. Supportive	8	8.0%		

*Significant, **highly significant (p-value less than 0.05 is significant and less than 0.001 is highly significant)

DISCUSSION

Time is one of our most valuable assets.[1] Thus, estimation of treatment time is very important to our patients[4]. Once treatment goals have been set, it is important to make a precise and individual estimate of the time required for intended correction.[11]

In this study, more than 50% of young adults and above were concerned with the accurate estimated time provided to them. 50% of respondents who provided estimated time were students and freshers with less experience. It was noticed that for simple cases majority use the PAR Score index more than the ABO DI index. However, for complex cases, the majority of respondents used ABO-DI Index for the estimation of accurate treatment duration as mentioned in earlier studies.[5]

Among 33% of self-assessments (without using any indices) - 50% were accurate estimates of treatment duration. This could be due to proper visualization of the treatment plan as per the accurate formulation of the problem list. While 50% were not found to be accurate and this could be because of a lack of visualization of the treatment plan as per the accurate formulation of the problem list or a lack of patient cooperation.

Recent research has reported a typical orthodontic treatment time for MBT fixed appliances to be 15-24 months followed by a retention period.[6,11] With the accurate estimation of treatment time, orthodontists can more efficiently use time and resources to schedule appointments and focus on a greater number of patients.[7,8]

As well as it helps to keep a check on excessively prolonged treatment which has detrimental effects on dental health such as chronic gingivitis, periodontitis, resorption, etc.[2,3] It's been noticed that the patients who are given accurate information regarding treatment duration are highly motivated and satisfied. In addition, satisfied patients are more likely to refer other patients to the office where they have been treated.[12,13]

If orthodontists did not provide patients with an accurate estimated time there were unnecessary delays in the treatment up to more than 4 months according to the respondents because of this patients lose trust in orthodontists and get disappointed and agitated. One of the main reasons for patients' dissatisfaction is non-compliance with the treatment time initially proposed. It is interesting to note that patients' motivation and compliance decrease as orthodontic treatment is delayed as seen in the earlier studies.[14,15]

Further research with more indices and a larger sample size (orthodontists) in different parts of the world would reaffirm and validate the study.

CONCLUSIONS

It was concluded from the study that providing a prior estimated treatment duration improved patients' motivation and cooperation. The time and resources of the orthodontist could be saved. Patients who were

given accurate information regarding treatment time were more likely to be satisfied with the treatment overall and would have more realistic expectations about the treatment outcome. This study also inferred that if patients were not provided with an accurate treatment duration they lost faith in orthodontists. It's worth noting that as orthodontic treatment was postponed, patients' motivation and compliance declined.

The ABO-DI Index was used mainly for the prediction of accurate treatment duration for complex orthodontic cases.

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