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## Original Research Article

# Understanding, acceptance and compliance of patients towards orthodontic treatment: Questionnaire survey on ongoing cases

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## ABSTRACT

**Aim:** To assess the understanding, acceptance and compliance of patient undergoing fixed orthodontic treatment.

**Materials and Methods:** A self-designed closed-ended questionnaire of 15 questions, addressing understanding, acceptance and compliance of patient were distributed to 400 adult patients undergoing fixed orthodontic treatment at MIDSr Dental College, India. Cross-sectional questionnaire survey was conducted. Before participation in the study consent was taken from every patient. The descriptive statistics was used for evaluation of obtained data.

**Results:** A total of 400 participants responded to the survey. The results shows that patient's understanding about necessity of treatment, its duration, and treatment plan for fixed orthodontic treatment was 62.2%. The acceptance rate for treatment selection by orthodontist, for wearing retainer and to convince friends or relatives for fixed orthodontic treatment was 53.52% and they were happy with the treatment. While 69.5% patients were having good compliance for brushing teeth twice daily by using orthodontic toothbrush, for using mouthwash and for modifying diet with the fixed orthodontic treatment.

**Conclusion:** Although many of patients were found to have good understanding of orthodontic therapy but acceptance towards orthodontic treatment and orthodontic treatment protocols was average. Orthodontist still need to work on this aspect to increase the acceptance of treatment among patients. The Compliance of patients was satisfactory as they strictly adhere to dietary restrictions maintained good oral hygiene by using special cleaning aids. The study concludes that the orthodontists need to take an active role in increasing orthodontics-related patient behaviours by improving patient education

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## 1. Introduction

"Beauty lies in the eyes of the beholder." The appearance and self-confidence of a person both are enhanced by properly aligned teeth. Patients who have malaligned teeth frequently experience eating, aesthetic, and psychological issues. Patient's knowledge, motivation, participation, and treatment attitudes are all important components of an

effective orthodontic patient care.<sup>1</sup>

For health-related actions, oral health knowledge is a prerequisite. In addition to restorations and periodontal disorders, aesthetics also plays a significant role in it, and orthodontics is the branch which primarily focuses on aesthetics. But even after 120 years, in 2023, there is still insufficient knowledge about this speciality.<sup>2</sup>

In previously published research, many factors and causes which affect patient's decisions to get orthodontic treatment were described. The patient's attitude towards

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orthodontics has a significant impact on both the patient's compliance and the treatment's outcome. In order to ensure that treatment setup and execution go smoothly, orthodontists must first understand the attitudes of their patients as well as their level of awareness regarding their dental issues and possible treatments.<sup>3</sup>

This study aims to assess patient's understanding, compliance, and acceptability of fixed orthodontic treatment.

## 2. Materials and Methods

Following the institutional research ethics committee's clearance and the patients' consent to participate, data for this questionnaire-based cross-sectional study were collected.

Study was divided into three categories as given (Figures 1, 2 and 3):

Understanding of patient towards fixed orthodontic treatment. Question1(Q1) to Question5(Q5).

Acceptance of Fixed Orthodontic Treatment by patient. Question6(Q6) to Question10(Q10).

Compliance of Patients About Fixed Orthodontic Treatment. Question11(Q11) to Question15(Q15).

### 2.1. Selection criteria

1. Patients receiving fixed orthodontic treatment in the institution.
2. Patients who agreed to take part.

### 2.2. Study design

Self-designed closed-ended questionnaire.

### 2.3. Sample size determination

The formula used for sample size determination was

where,

$$N = \frac{Z^2(1-\alpha) \times PQ}{\delta^2} \quad \frac{2(1.96) \times 0.50 \times (1-0.50)}{(0.05)^2}$$

$$= \frac{3.92 \times 0.25}{0.0025} = 392$$

$Z(1 - \alpha) = 1.96$  (for 95% confidence interval)

$P = 0.50$

$Q = 1 - P$

$\delta$  (margin of error) = 0.05

$N = 392$  rounded off to 400

The sample size  $N = 400$

### 2.4. Study duration

The data was collected from January 1, 2023 to May 10, 2023. A total of 400 filled questionnaires were collected, and the data was assessed.

### 2.5. Data collection

Number of patients receiving fixed orthodontic treatment from the institution was compiled, and samples were chosen using random sampling techniques. Prior to participating in the study, patient consent was obtained. The questionnaire containing 15 questions were distributed to 400 patients.

### 2.6. Statistical analysis

The statistical analyses were carried out using the Statistical Package for Social Sciences [SPSS] for Windows, Version 22.0, issued by IBM Corp., Armonk, NY, in 2013.

## 3. Results

Total of 400 patients answered in this survey.

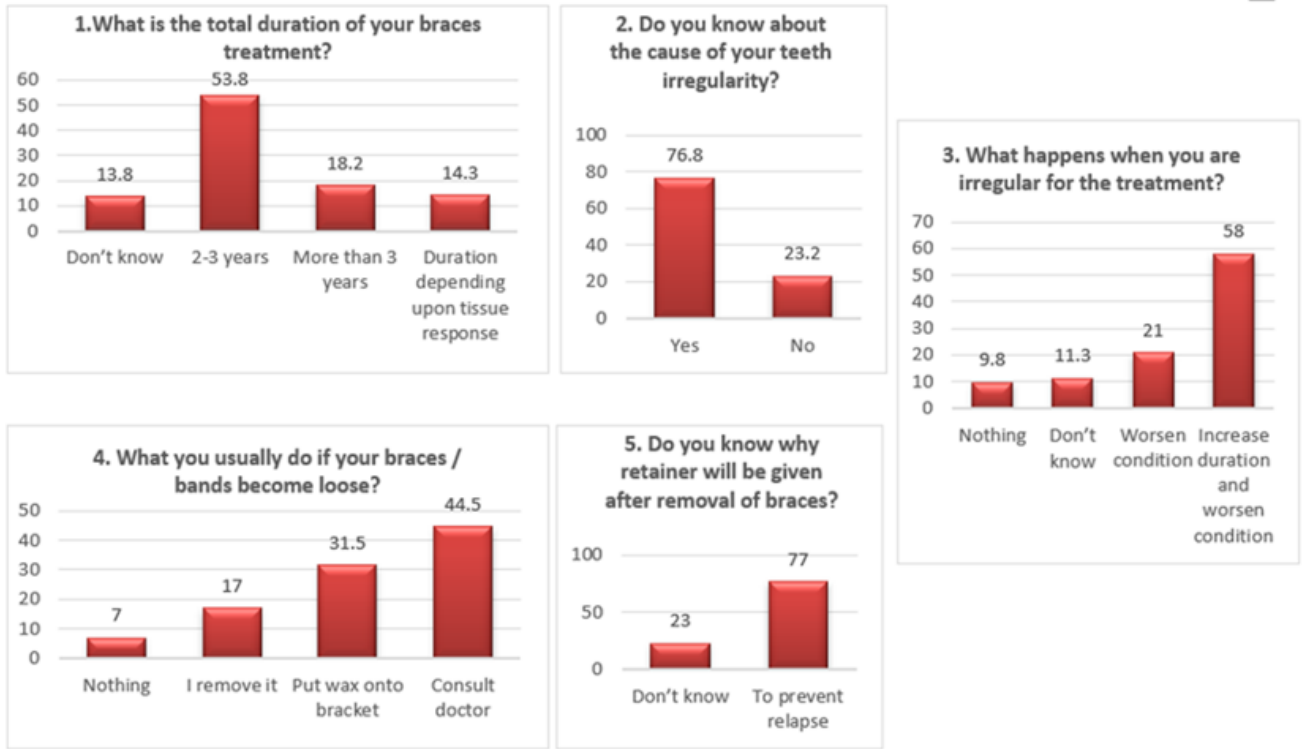
Patients selected for study were mostly in adolescence age (14-22 years). Mean age of participants was  $17.3 \pm 1.50$  years.

### 3.1. Understanding of orthodontic treatment

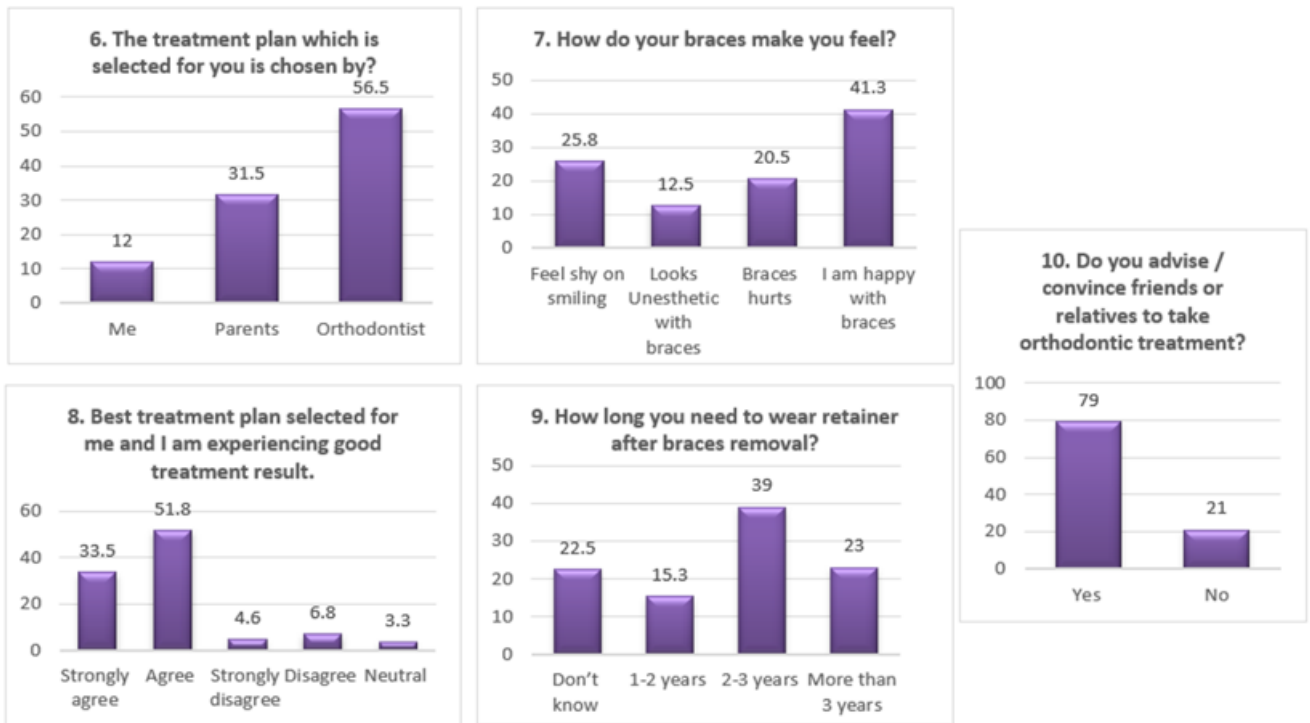
The results regarding patient's understanding of treatment showed that 53.8% patients knows that the total duration of treatment will be 2-3 years, and 14.3% of patients knows that it depends upon tissue response still 13.8% of them are unaware about the duration. 76.8% patients knew the cause of teeth irregularity but 23.2% patients were unaware of cause. 58% patients answered that the treatment duration will increase and it will worsen the condition if they are irregular for treatment, while 11.3% patients were unaware. 44.5% patients consult doctor if braces/ bands become loose and 31.5% patients puts wax onto brackets. Due to better understanding of treatment adult patients consult doctor immediately if band or brackets become loose, and they are more regular for the treatment as they know if they miss appointment their treatment duration will increase and it will worsen the condition. 77% patients knows that retainer will be given to them to prevent relapse but 23% patients had no idea about retainer. So, overall understanding about fixed orthodontic treatment showed that 62.2% of patients understood the necessity of treatment, duration of treatment, and treatment plan. (Descriptive analysis as inFigure 1).

### 3.2. Acceptance of orthodontic treatment

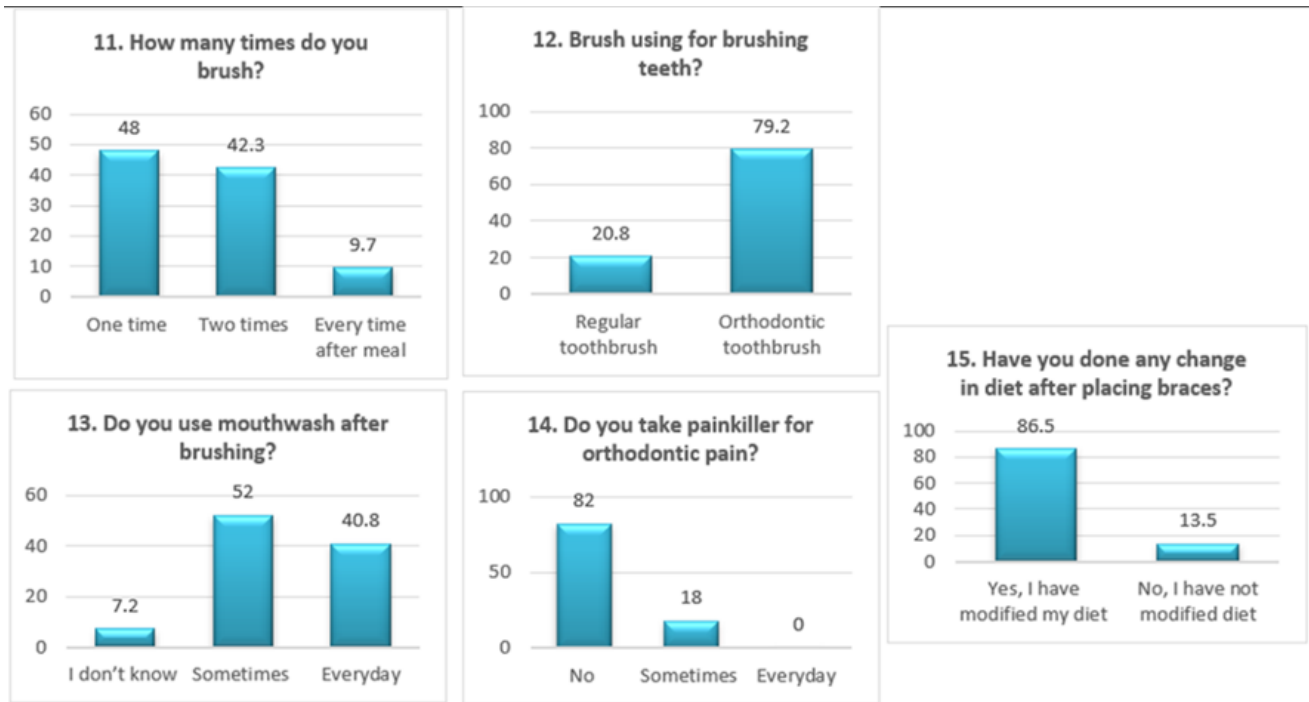
For acceptance of treatment, 56.5% patients chose orthodontist for their treatment plan selection, while 31.5% patient's treatment plan is selected by their parents. Since the younger patients are not decision-making, so their treatment plan is selected by orthodontist and parents most commonly, but in adults, patient choose treatment plan on their own. 41.3% patients were happy with braces but 25.8% patients responded that they feel shy on smiling. 51.8% patients feel that the best treatment plan is selected for them, and they are experiencing good results and 6.8% patients



**Figure 1:** Distribution of responses for the questions regarding understanding about fixed orthodontic treatment



**Figure 2:** Distribution of responses for the questions regarding acceptance of fixed orthodontic treatment



**Figure 3:** Distribution of responses for the questions regarding acceptance of fixed orthodontic treatment

disagreed with this statement. 39% patients know that they need to wear a retainer for 2-3 years, but 22.5% patients had no idea about the duration. 79% of patients answered that they will advise their friends or family members for taking orthodontic treatment while 21% of patients will not recommend orthodontic treatment to others. So, the average acceptance rate for fixed orthodontic treatment was 53.52%. (Descriptive analysis as in Figure 2).

### 3.3. Compliance of patient for fixed orthodontic treatment

48% of patients answered that they brush their teeth one time only and 42.3% of patients brush two times daily. Orthodontic toothbrush is used by 79.2% of patients while 20.8% of patients still use the regular toothbrush. 52% of patients answered that they use mouthwash sometimes only while 40.8% of patients use it every day. As most of the patients were in middle adolescence age (15-17 years), they were aware of the fact that they need to maintain good oral hygiene by using mouthwash and orthodontic toothbrush on a regular basis. But the younger patients were having poor compliance with the maintenance of oral hygiene. 82% of patients do not take any painkiller for orthodontic pain, but 18% of patients take painkillers sometimes. 86.5% of patients have modified their diet after placing braces while 13.5% of patients have not modified their diet. So, 69.5% of patients were having good compliance for the fixed orthodontic treatment. (Descriptive analysis as in Figure 3).

## 4. Discussion

The expertise of the orthodontist and the patient's understanding, acceptance, and compliance with orthodontic treatment are important factors in the effective and efficient delivery of orthodontic services. Therefore, this study was conducted to assess the understanding, acceptance, and compliance of patients regarding orthodontic therapy. This study makes it easier to provide effective orthodontic care and increases patient satisfaction.

### 4.1. Understanding of orthodontic treatment

Most patients answered properly to each of the five questions about their understanding of orthodontic treatment. 53.8% of patients were aware that the course of treatment would last two to three years (Figure 1; Q1). According to a study by Mirzaie et al.,<sup>3</sup> which found that 80% of patients and 84% of parents anticipated an average duration of 1 to 3 years, most patients' expectations fell between the range of 2 and 3 years. But still there are 13.8% of patients who do not know their treatment duration. So, the orthodontist needs to explain the duration of treatment to every patient before starting it. 76.8% of patients know the cause of teeth irregularity (Figure 1; Q2). When patients know the cause, their compliance increases. It is a good sign that patients had an idea about their problem. 58.0% of patients responded that if they are irregular for the treatment, it will increase the treatment duration and will worsen the

condition. That means only 58% of patients were aware about the importance of monthly visit and 9.8% patients feel that nothing will happen if they are irregular for treatment (Figure 1; Q3). In a study by Mendigeri et al, lowest level of knowledge regarding the consequences of incomplete orthodontic treatment was 69.4%. This is an indication that the orthodontic team should include and stress upon the possible risks of incomplete orthodontic treatment during the discussion of the treatment plan with the patients so that the patient is fully aware of consequences and the possibility that dental condition may worsen over time if their orthodontic treatment is not completed, so that patient will understand the need and will be regular for future follow-ups.<sup>4,5</sup>

Interestingly, only 44.5% of patients responded that they consult doctor if braces or bands becomes loose, which correlates with the results of study carried out by Rajesh Gyawali et al<sup>6</sup> which stated that the most of the patients seek for orthodontic appointments when there is the loosening of brackets or bondable buccal tubes, followed by the loosening of bands, but 31.5% patients still put wax onto the bracket. This indicates that, the orthodontist should educate the patients properly that what should be done in such cases and which problems are manageable at home and in which conditions they should consult doctors immediately<sup>7</sup> (Figure 1; Q4). 77% of patients were aware that retainer is needed to prevent relapse after the completion of treatment, but 23% of patients were unaware that retainer will be given to them (Figure 1; Q5). Few previous studies showed that the level of knowledge regarding retainer wearing of retainer on completion of treatment can vary from as 45.7% to 79.9% which correlates with our study results.<sup>8,9</sup>

This suggests that the overall 62.2% of patients had a better understanding of the necessity for treatment, its duration, and treatment plan but orthodontist still needs to explain more about all these factors, so in future the understanding towards the orthodontic treatment will increase.

#### 4.2. Acceptance of orthodontic treatment

When it was asked that who chose treatment plan for you, 56% of the patients said that treatment plan was selected by orthodontist and in 31.5% of patients it was selected by parents (Figure 2; Q6). The recommendation of the orthodontist or the patient's parents or guardians was taken into consideration by the patient when deciding whether to start orthodontic treatment. According to study by Imani MM et al,<sup>10</sup> more paternalistic decision-making paradigm was previously applied in the healthcare industry, where decisions were made by the practitioner on the patient's behalf. However, a collaborative strategy that involves patients in the discussion of treatment alternatives is currently advised, and its results have been found to be favorable.

According to the responses 41.3% of patients were happy with the braces, but 25.8% of patients feel shy on smiling with braces (Figure 2; Q7). So, in such patients orthodontist can provide more esthetic options like lingual orthodontics, ceramic braces or aligners. Next question was how is patient's experience with treatment results here, not only 33.7% of patients who strongly agreed to the statement but 51.8% of patients also agreed that Best treatment plan was selected for them and they were experiencing good treatment result (Figure 2; Q8). Based on the responses, it was evident that the patients were happy when they were involved in the treatment planning process. This result was in accordance to study done by Shrestha et al.<sup>11</sup>

39% patients responded that they have to keep the retainers for at least 2-3 years after braces removal, but 22.5% patients were not having any idea about retention period (Figure 2; Q9). Because most of the patients did not believe they required a retention, the expectations about the duration of retention following orthodontic treatment were significantly unrealistic. As patients were happy with the treatment results and were comfortable with wearing braces 79% patients responded that they will advise / convince friends or relatives to take orthodontic treatment period (Figure 2; Q10).

This suggests that the only 53.52% of patients had a good acceptance level is, and they are happy with the orthodontic treatment. This percentage of acceptance of treatment among patients is on an average.

#### 4.3. Compliance of patient for fixed orthodontic treatment

Regarding the compliance of patients, when patients were asked that how many times they brush, only 42.3% patients responded that they brush twice a day, majority of patients that is 48% responded that they brush their teeth only once in a day (Figure 3; Q11). To answer the second question, 79.2% patients said that they use orthodontic tooth brush for brushing teeth. This is one of the beneficial factor for patient as well as for orthodontist, as using orthodontic toothbrush will help in cleaning around brackets and maintaining good oral hygiene (Figure 3; Q12). 40.8% of patients uses mouthwash after brushing every day, but 52% of patients uses mouthwash sometimes (Figure 3; Q13). A study by Huang J et al suggested that periodic reinforcement of brushing instructions and dietary restrictions during the follow-up appointments are important to improve patient's practices, which will enhance the oral hygiene of patients.<sup>12</sup> 82% patients do not take any painkiller for orthodontic pain, there is one study by Krishnan V<sup>13</sup> to support this indicating that patients gets adapted to continuous pain with the progression of treatment as the sensations ceases (Figure 3; Q14). So, majority of patients do not take any medication for pain relief. Lastly, patients were asked that whether they have

done any change in diet after placing braces or not, for which 86.5% of patients said yes, they have modified diet (Figure 3; Q15). This result was correlating with the results of study performed by Mendigeri V et al.<sup>1</sup> one study by En PL et al,<sup>14</sup> it was found that lollies, apples, and nuts caused problems with fixed appliances more frequently. The orthodontist's reason for avoiding these types of food was chances of appliance breakage, which may lead to pain and sensitivity as well.<sup>13,15</sup>

All these answers explain that 69.5% patients were having good compliance for the fixed orthodontic treatment.

## 5. Conclusions

Through this study, some interesting aspects of how patients understand, accept, and comply with their orthodontic treatment were uncovered. Although most patients were found to have an average understanding of orthodontic therapy but acceptance towards orthodontic treatment and orthodontic treatment protocols were good. The Compliance of patients during their orthodontic treatment was good as they adhere to dietary restrictions and continued treatment without taking any medication. They maintained good oral hygiene by using special cleaning aids. Through improved patient education, the orthodontist can take active role in increasing orthodontics-related patient behaviours. In age related factor patients in middle adolescent age (15 – 17 year) have good compliance towards orthodontic treatment while adult patients have better understanding and awareness of treatment related factors. In case of younger patients' orthodontists need to educate more about treatment related factors to patient as well as to their parents.

Thus, this study can be viewed as an exploratory study to gain a broad understanding of the impact of understanding, attitude, and compliance on patients, which may be helpful in the future to better understand certain patient-related difficulties. This will also help to strengthen the relationship between the patient and the doctor and will improve practice management abilities.

## 6. Source of Funding

None.

## 7. Conflict of Interest

None.


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