# A Study on Motivation of Patients Coming to Specialized Orthodontic Clinics for Treatment

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**Abstract**

**Aim:**Assessment of patient's motivations requesting orthodontic treatment can help clinicians in meeting the needs and expectations of patients and attain a successful treatment result.

Objective:The present study was carried out in 2008 to provide data regarding motives of patients coming to specialized orthodontic clinics of Qazvin for treatment.

**Materials and Methods:** In this descriptive study, 300 patients aged 12 years old and more (27.3% males, 72.7% females, the mean age: 19.61 years) were studied. Age, gender, parents' level of education, and father's occupation, motives for improving teeth and face components; and the location of pain and discomfort were evaluated. The correlation between motives and different socioeconomic factors were assessed using Spearman and Pearson correlation coefficients.

**Results:** Alignment of the anterior teeth was the most frequent motive regarding the teeth (89.3%). However, for face components ,it was improving teeth and gingival view during smiling (18.7%). Significant correlations were noted between patients' gender and motivation to align anterior teeth ($p<0.009$), movement of the lip ($p<0.01$), change of the nose length ($p<0.002$) and position ($p<0.03$) while females had higher motivation for these changes. As mothers' level of education increased, the motivation to change the height of anterior teeth ($p<0.03$), improving the teeth and gingival appearance during smiling ($p<0.001$), decreasing the lip or chin tension in the closure of the lips ($p<0.05$) and decreasing the prominence or width of the mandible toward the mouth ($p<0.01$) decreased significantly.

**Conclusion:** Alignment of anterior teeth and improving the teeth or gingival appearance during smiling were found to be major motives for requesting orthodontic treatments.

**Keywords:** Orthodontic treatment, Motives, Socio-economic factors

Generally speaking, orthodontic treatments are performed to mitigate the defects of jaws and face in patients, preventing malocclusion and providing circumstances of attaining an appropriate occlusion or preventing traumatic dental damages as well as treating severe malocclusions with negative effects on individuals' mental health or personal performance.

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It seems that personal discontent with the appearance of teeth in severe malocclusions is the most important motivational factor for requesting orthodontic treatment [1]. The face is the area of one's body that produces the greatest concern regarding physical attractiveness; it is the individual's focal point and source of verbal and emotional communications with others [1]. Malocclusions, as one of the most important abnormalities of the teeth and jaws, not only adversely affect one's nutrition but also, because of their effects on his/her appearance and face, have a negative psychological impact and increase the patient's vulnerability to trauma, periodontal diseases and dental caries [2]. The more attractive is one's appearance of face and teeth, the more the probability of being approved and encouraged by peers 1. Therefore, paying attention to the views of patients seeking

orthodontic treatments, their reasons for receiving treatment, as well as their expectations of such treatments, play a crucial role in attaining successful treatment. When a patient's wish for receiving orthodontic treatment is consistent with the opinion of orthodontists, performing the treatment will become inevitable 3. In a study by Trulsson et al., it was revealed that one of the major reasons for treatment among the youth with severe malocclusions was their intense dissatisfaction with the appearance of their teeth [4]. Also, in the study by Vargo et al., attaining facial aesthetic objectives was one of the most important reasons for acceptance of orthodontic treatment or orthognatic surgery among their patients [5]. However, some studies indicate racial and cultural differences in the amount of attention paid by individuals to their facial appearance, notion of facial physical attractiveness their expectations of orthodontic treatments [6,7]. In a comparison between American, Chinese and Japanese adolescents, it was revealed that facial aesthetic had the highest priority for American adolescents, while Chinese and Japanese adolescents were most concerned about others reactions [6]. Another study showed that white children were more inclined to relate their self-confidence with their physical attractiveness [8]. Furthermore, the socio-economic status of a person plays an important role in his/her self-perception, so it has been shown that there is positive relationship between one's socioeconomic status and his/her self-confidence; the lower is one's socioeconomic status the lower will be his/her self-confidence [9]. In the study by Proffit et al., it was reported that 5% of children of families with low socioeconomic status, 10-15% of those in the middle class and 30% of children of families with high socioeconomic status, had undergone orthodontic treatments prior to their high school years, which indicates that it is less likely for children of low socioeconomic status families to demand and receive orthodontic treatments [10].

Also, in recent years, clinician-oriented methods of treatment and decision making have gradually been replaced with patient-orientation in decision making, appraisal and assessment of treatment; and much attention is paid to patients' views and expectations of the received or planned treatments 5. With developing systems for assessment of the quality of the received treatments, the patients' opinion, as the main recipient of treatments, has obviously gained a special importance. However, there exists the probability that what a patient considers a satisfying, beautiful and attractive result will not be consistent with the opinion of specialists-whose opinion is based on their own experience and scientific principles. Also, some patients have not been able to have an appropriate performance in terms of orthodontic treatment needs or their expectations of such a treatment, which may be due to complexity of measuring expectation, perception, self-concept and body image; since addressing one aspect of these concepts usually means neglect of other aspects. Other related studies on 10-12 year old have shown that only a few of them could take proper decisions regarding facial aesthetic-related factors in orthodontic treatment [11, 13]. There was disagreement between 12 year old children and dentists in assessment of aesthetic needs14. Despite this, evaluating the views of patients applying for orthodontic treatments and their expectations of these treatments is one of the main factors to be considered in providing orthodontic treatments.

The present study was carried out in 2008 with the aim of assessing the motives and expectations of over 12-year old patients requesting orthodontic treatment in Qazvin city.

## Method and materials

This descriptive and cross-sectional study was carried out in 2008, on 300 over 12-year old patients who came to the specialized orthodontic clinics in Qazvin city. The protocol for this study was approved by the School of Dentistry in Qazvin University of Medical Sciences. These patients were included in the study by order of coming for receiving orthodontic treatment and no effort was made to homogenize the sample in terms of gender, age and socio-economic variables. The patient was included if he/she was interested in participating except those who had previously received orthodontic treatment. After explaining the objectives of this study, a questionnaire was given to each participant

during the waiting time for him/her to be able to complete comfortably and without stress, and no time limit was mentioned for completing it. Necessary co-ordinations for responding to the questionnaire were done through training the staff of the clinicl. In addition to the section required for demographic data (age, gender, parents' level of education, and father's profession), the questionnaire had three separate sections: the teeth (7questions), the face (15questions) and location of pain (11questions) (Table1).

comments on issues other than those mentioned in the questionnaire. They were asked to mark those parts that they wanted to be changed following the orthodontic treatment and leave other parts unmarked.

Spearman's correlation coefficient was used to evaluate the relationship among variables of gender and parents' level of education and existence of motive for seeking change in various dental and facial components through orthodontic treatment.

| MOTIVES | | NUMBER | PERCENTAGE |
|---|---|---|---|
| DENTAL CHANGES | Anterior teeth alignment | 268 | 89.3 |
| | posterior teeth alignment | 52 | 17.3 |
| | anterior teeth height change | 60 | 20.0 |
| | moving the teeth of the maxilla backward or forward | 86 | 28.7 |
| | moving the teeth of the mandible backward or forward | 55 | 18.3 |
| | Other dental changes | 17 | 5.7 |
| FACIAL CHANGES | Mandibular deficiency complaint | 8 | 2.7 |
| | forward or backward chin movement | 35 | 11.7 |
| | Lateral chin movement | 9 | 3.0 |
| | forward or backward lower lip movement | 32 | 10.7 |
| | forward or backward upper lip movement | 44 | 14.7 |
| | forward or backward movement of nose area | 24 | 8.0 |
| | Increasing or decreasing nose length in profile view | 40 | 13.3 |
| | forward or backward movement of lower area of eyes | 25 | 8.3 |
| | Increasing or decreasing the size of cheek bones | 40 | 13.3 |
| | Improving teeth and gingival appearance during smile | 56 | 18.7 |
| | Increasing or decreasing lips gap during occlusion | 50 | 16.7 |
| | Decreasing lip or chin tension during lip closure | 46 | 15.3 |
| | Increasing or decreasing the width of the face | 41 | 13.7 |
| | Decreasing mandibular width to the mouth | 16 | 5.3 |
| | Other facial changes | 14 | 4.7 |

**Table 1: Distribution of patients' motives for dental or facial changes**

Pearson's correlation coefficient was also used to assess the relationship between the patients' age and motive for seeking change.

## Results

Of the 300 patients in the study, 82 (27.3%) were male and 218 (72.7%) were female. The mean of their age was 19.61 + 5.96 years (21.03 in females and 18.5 in males). Father's profession in 133 cases (50.4%) was various kinds of business, in 82 cases (31.1%) the father was a government employee and in 49 cases (18.6%) it was other than the two mentioned types. In 36 cases, father's profession was not mentioned. In most cases (99 patients, 37.6%) father's education was at the level of high school graduate. Only 4 of the fathers (1.5%) had an education level of PhD or higher. Also 37 of the patients did not mention the level of their father's education. Most of the mothers (111 persons, 41.7%) were high school graduates and only one (0.4%) of them had a PhD degree, and 34 of the patients did not mention the level of their mother's education.

Distribution of patients' motives for orthodontic treatment based on our questionnaire is shown in table 1 and table 2. As it reveals, alignment of the anterior teeth, both in maxilla and mandible is the major reason seeking orthodontic treatment.

The results showed that there was a significant relation between the motivations for alignment of the anterior teeth, moving the upper lip, changes the area surrounding their nose, having shorter or longer noses in the profile view and the gender of the patient. In other words, females had a higher level of motivation for these types of change. But gender of the patients had no statistically significant effect on their motivation for change in other parts of the teeth or face. (Table-3)

| MOTIVES | | | NUMBER | PERCENTAGE |
|---|---|---|---|---|
| REDUCING PAIN IN … | EAR | Anterior part | 17 | 5.7 |
| | | Inferior part | 15 | 5.0 |
| | | Superior part | 12 | 4.0 |
| | | Inner part | 15 | 5.0 |
| | neck | | 13 | 4.3 |
| | shoulder | | 14 | 4.7 |
| | Temporal area | | 22 | 7.3 |
| | Teeth | | 30 | 10 |
| | Sinuses | | 17 | 5.7 |
| | the eye | | 15 | 5.0 |
| | Other parts of the face | | 4 | 1.3 |

**Table2: Distribution of patients' motives for reducing pain in different facial parts**

| | MOTIVES | Spearman's correlation coefficient | P-value |
|---|---|---|---|
| DENTAL CHANGES | Anterior teeth alignment | 0.152 | 0.009 * |
| | posterior teeth alignment | 0.063 | 0.27 |
| | anterior teeth height change | 0.026 | 0.65 |
| | moving the teeth of the maxilla backward or forward | 0.041 | 0.47 |
| | moving the teeth of the mandible backward or forward | 0.039 | 0.49 |
| | Other dental changes | -0.044 | 0.45 |
| FACIAL CHANGES | Mandibular deficiency complaint | 0.009 | 0.88 |
| | forward or backward chin movement | -0.033 | 0.57 |
| | Lateral chin movement | 0.02 | 0.73 |
| | forward or backward lower lip movement | 0.09 | 0.12 |
| | forward or backward upper lip movement | 0.149 | 0.01* |
| | forward or backward movement of nose area | 0.126 | 0.03* |
| | Increasing or decreasing nose length in profile view | 0.175 | 0.002* |
| | forward or backward movement of lower area of eyes | -0.005 | 0.57 |
| | Increasing or decreasing the size of cheek bones | 0.087 | 0.14 |
| | Improving teeth and gingival appearance during smile | 0.102 | 0.08 |
| | Increasing or decreasing lips gap during occlusion | 0.033 | 0.53 |
| | Decreasing lip or chin tension during lip closure | 0.033 | 0.57 |
| | Increasing or decreasing the width of the face | 0.005 | 0.94 |
| | Decreasing mandibular width to the mouth | 0.012 | 0.83 |
| | Other facial changes | -0.006 | 0.92 |

**Table 3: evaluation of the relation between motivations for changing the teeth or the face by gender in this research cases using Spearman's correlation coefficient**

Evaluation of the relation between presence and absence of motivation for changing the condition of the teeth and changing facial components by their mothers' level of education revealed a statistically significant negative relation between motivation for changing the height of the anterior teeth ($p<0.03$), improving the teeth and gingival appearance during smiling ($p<0.001$), decreasing the lip or chin tension in the closure of the lips decreasing the lip or chin tension in the closure of the lips ($p<0.05$) and decreasing the prominence or width of the mandible toward the mouth ($p<0.01$) and mother's level of education.

Evaluation of the relation between presence and absence of motivation for changing the condition of the teeth and changing facial components by their fathers' level of education revealed only a statistically significant negative relation between motivation for moving the mandible to the left or right and father's level of education ($p<0.02$).

Evaluating the relation between presence and absence of motivation for changing the condition of the teeth and changing facial components by their father's profession, performed using Spearman's correlation coefficient did not reveal a statistically significant relation. Also, evaluating the relation between presence and absence of motivation for changing the condition of the teeth and changing facial components by their age, performed using Pearson's correlation coefficient did not reveal a statistically significant relation.

**Discussion**

The results of the study showed that the majority of the patients (89.3%) were motivated for alignment of the anterior teeth, both in maxilla and mandible (the highest frequency) and 17.3% of them wanted alignment of their posterior teeth (the lowest frequency). Phillips et al. (1997), following evaluation of patients' motivation for receiving orthognatic surgical treatment, reported that 57% of them had mentioned improvement of the appearance of their teeth as the reason for seeking orthodontic treatment 15. It has been shown that the appearance of the teeth is a very important factor in judging an individual's facial aesthetic and , in some societies such as that of the United States, it is believed that dental aesthetic plays a "very important" role in one's facial attractiveness 16. Perception or self-concept has been reported as the most frequent reason for seeking orthodontic treatments [17]. Regarding the motivations of patients seeking orthognatic surgical treatment, with aims similar to those of orthodontic treatments, improving the appearance of the teeth and their arrangement were reported as the main goal of patients[18, 20].

Although no questions were asked about the source of the patient's knowledge about arrangement and order of the teeth, previous experience with orthodontic treatments and familial relations with dentists and/or orthodontists, impact of close friends and colleagues emphasizing on changing the appearance of the teeth and their order or functional problems of the teeth, their opinions regarding the importance of order and alignment of the teeth, were more or less consistent with other studies in this field. Descriptive evaluation of patients' motivation for changing their facial components showed that a higher percentage (18.7%) of those who come for orthodontic treatment were motivated for improving the teeth and gingival appearance during smiling (the highest frequency). The lowest frequency related to motivation for moving the mandible forward (complaint regarding backwardness of the mandible) that was seen in 2.7% of the patients. The results of the present study indicate that the participants understood the concept of facial aesthetic. It is known that ordinary people's understanding of body image, certainly including facial components and teeth, is attained by specialists through assessment of morphologic structures and, in fact, both groups reach a similar general idea and hence treatment need, using different methods [21]. However, differences are reported in assessment of facial aesthetic between ordinary people and dentists[22]. It has also been shown that an individual's perception and motivation for improving facial appearance are much more important in predicting his/her decision to accept orthodontic treatment and satisfaction with the results of the

treatment, than cephalometric and structural assessments [23]. Also, in the study by Vargo et al., it was shown that ordinary people, compared with specialists, have a higher ability to predict the patient's motivation for receiving treatment 5. In the study by Tedesco et al., it was shown that ordinary people, compared with those trained in orthodontics-related courses, showed more sensitivity defects in facial aesthetics [24].

It seems that feeling the need for orthodontic treatment and individuals motivations have resulted from the influence of mass media, general awareness about some specialized therapeutic information and the inclinations for assimilation (especially with those figures who have ideal body and facial appearance) [4]. Nowadays, the mass media provide a huge amount of information and display many examples of ideal bodies and faces for their audience. Obviously, the primary effect of these data will be focusing on the faces of the displayed characters and their smiles and teeth, resulting in the spectators, conscious or subconscious, wish for identifying with these examples. However, it should be noted that the youth and adolescents are much more influenced by this phenomenon than the adult are. Female patients were more inclined, than male ones, to try for changing the appearance and improvement of their anterior teeth and their arrangement (92.2% vs. 81.7%). Other studies also indicate that females are more interested than males to improve their facial components7, 18. Phillips et al., evaluating the motivation of patients seeking surgical treatments, showed that social reasons were important for males, while for females problems related to the tempro-mandibular joint were important[15]. Some studies also indicate that girls came for orthodontic treatment more than boys, while boys had higher needs for orthodontic treatment [25, 26].

In the present study, no effort was made to provide further information regarding various aspects of orthodontic treatments (e.g. duration of treatment, costs of treatment, pains and other probable side effects) to limit the influence of orthodontic treatment factors on patients' perception and allowing them to rely completely on their own motives and understanding for responding to our questions. Since in some studies it is indicated that children may not be able to decide regarding reception of orthodontic treatment considering aesthetical purposes [13,27] , in the present study the age range of participants was over-12 and it was finally shown that the mean of their age was 19.6 years. In a study by Trulsson et al. , it was emphasized that there should be no haste in providing orthodontic treatment for facial and dental aesthetic purposes until the patient reaches a convincing conclusion regarding the appearance of his/her teeth and face 4. This requires the individual to be mature with sufficient insight about him/her self.

Kyiak et al., in two separate studies, showed that the more one's perceived problems, the more his/her dissatisfaction with the results of orthodontic treatment[21,28]. Bos et al. also reported that patients, who are more satisfied with their appearance, will have higher expectations of their orthodontic treatment 29. Speland & Stenvik reported that the more the patients are aware of their problem, the less their satisfaction with the results of the orthodontic treatment will be [11]. Altogether, these findings indicate that the reason behind many of failures in treatment has not been technical defects in orthodontic treatment, but the difference in treatment needs and different motivation of the patient and the dentist's objectives of treatment have resulted in such failures [25]. In other words, patients usually experience such defects in the appearance of their teeth and face that are sometimes not confirmed by others (e.g. parents or dentists). Furthermore, there are differences in individuals' understanding of aestheticity and structures resulting in attractiveness, which are due to the influence of various factors (e.g. psychological ones) the meaning of beauty may different among different people and races [17]. All of these factors and variables have to be considered to attain a successful orthodontic treatment. This also emphasizes the role of efforts to make the patient's motivation for changing the facial components and teeth more logical and providing appropriate and specialized information by orthodontists to them, in attaining a successful treatment and patient satisfaction thereafter.

Today, considering the importance of paying attention to patients' opinions in various treatments in obtaining a successful therapeutic result and the effects of different factors in

success of the treatment from the patient's and clinician's point of view, it seems necessary to conduct multiple studies for assessing the patients' expectations before and after all orthodontic treatments, in order to assess the ability to meet their expectations and needs during the process of orthodontic treatment. It will also be better to perform prospective research, with multiple follow ups and control possible intervening variables.

**Conclusion**

1. The results of the present study showed that:
Regarding the teeth, most of the patients (89.3%) were motivated to attain alignment of the anterior teeth.
2. For facial components, most of them wanted to have the teeth and gingival appearance during smiling improved.
3. Analytical studies also showed that gender of the patient and mother's level of education had the most significant relation with his/her motivation for changing the condition of the teeth and facial components and their father's level of education and their age were least related to their motivation.

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