



# Self-confidence, psycho-social impact and perceived treatment quality in young and adult patients after orthodontic treatment

## *Evaluación de la confianza personal, impacto psicosocial y calidad de atención recibida de pacientes jóvenes y adultos posterior al tratamiento de Ortodoncia*

José Antonio González Murillo,\* David Rabchinsky Jaet,<sup>§</sup> Ricardo Ondarza Rovira,<sup>||</sup> Roberto Justus Doczi,<sup>¶</sup> Salvador García López\*\*

### ABSTRACT

**Objective:** The aim of this study was to determine in a group of young patients and adults if the perception of their self-esteem, psychosocial development and quality of care improved after orthodontic treatment. **Material and method:** The sample consisted of 60 patients who were divided into four study groups: two groups were composed of 15 teenagers of both genders and the other two, with 15 adult patients of both genders. In all cases, their records and diagnoses were available for selecting patients treated with fixed pre-adjusted orthodontic appliances and who had at least 6 mm of crowding in the upper arch. We implemented a modified survey of psychosocial impact and a dental aesthetics questionnaire (PIDAQ), both instruments in order to assess the perception of self-esteem, psychosocial development and quality of care provided by the residents of the Department of Orthodontics of the Intercontinental University before and after the treatment. **Results:** It was determined that there was no statistically significant difference in the perception of personal confidence and in social skills pre- and post-treatment among young patients and adults. No significant difference was found in self-confidence between male and female patients, or in the perception of the quality of care received between male and female patients. There was no statistically significant difference in the perception of quality of attention received among the young patients and adults. **Conclusion:** The self-esteem caused by the presence of malocclusions is very difficult to assess. It is evident, however, that patients seek orthodontic treatment for aesthetics reasons based on a social aspect that makes them feel better, which was more evident in adult patients.

### RESUMEN

**Objetivo:** El propósito de este estudio fue determinar en un grupo de pacientes jóvenes y adultos si mejoraron la percepción de su *autoestima, desenvolvimiento psicosocial y calidad de atención* posterior al tratamiento de ortodoncia. **Material y método:** La muestra consistió de 60 pacientes que fueron divididos en cuatro grupos de estudio: dos se integraron con 15 jóvenes adolescentes de ambos sexos y los otros dos con 15 pacientes adultos de ambos sexos. En todos los casos se dispuso de sus registros y diagnósticos, para seleccionar pacientes tratados con ortodoncia fija preajustada y que hubieran tenido por lo menos 6 mm de apiñamiento en la arcada superior. Se procedió a aplicar una encuesta de impacto psicosocial con algunas modificaciones y un cuestionario dental estético (PIDAQ), ambos instrumentos con el fin de evaluar la *percepción de autoestima, desenvolvimiento psicosocial y la calidad de atención recibida* por los residentes del Departamento de Ortodoncia de la Universidad Intercontinental tanto antes como después del tratamiento. **Resultados:** Se determinó que no hubo diferencia estadísticamente significativa en la percepción de la confianza personal, tampoco en el desenvolvimiento social previo y posterior al tratamiento entre los pacientes jóvenes y adultos. Tampoco se encontró diferencia significativa en la confianza personal entre los pacientes masculinos y femeninos, ni en la percepción de la calidad de la atención recibida entre los pacientes masculinos y femeninos. Hubo diferencia estadísticamente significativa en la percepción de la calidad de la atención recibida entre los pacientes jóvenes y adultos. **Conclusión:** La autoestima originada por la presencia de maloclusiones es muy difícil de evaluar; sin embargo, es evidente que los pacientes buscan el tratamiento de ortodoncia por motivos de estética basados en un aspecto social que los hace sentir mejor, lo cual fue más evidente en los pacientes adultos.

**Key words:** Self-esteem, social skills, care received, orthodontic treatment, malocclusion.

**Palabras clave:** Autoestima, desenvolvimiento social, atención recibida, tratamiento de ortodoncia, maloclusión.

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\* Former Student of the Orthodontics Masters Program of the Universidad Intercontinental, Mexico City.

§ Orthodontics Professor, Universidad Intercontinental, Mexico City.

|| Research and Statistics Counselor, Universidad Intercontinental, ININ, Mexico City.

¶ Head of Research Department, Universidad Intercontinental, Mexico City.

\*\* Orthodontics Professor, Universidad Intercontinental, Universidad Autónoma Metropolitana, Mexico City.

## INTRODUCTION

Orthodontic treatment aims to provide the patient with a functional, stable and aesthetic occlusion, which may reflect a psychological benefit<sup>1,2</sup> since certain types of malocclusions can affect the patient's self-esteem.<sup>3</sup> Some studies have shown that before correcting certain malocclusions, women generally expressed less satisfaction with the image of their teeth in relation to men.<sup>4</sup> However, it has been shown that satisfaction after treatment is similar in both genders.<sup>5</sup> Some studies focused on the assessment of aesthetics have shown that patients who seek orthodontic treatment considered themselves less attractive than those who do not, which implies the fact that people are aware of their unsightly condition and seek to solve it in order to feel comfortable with their appearance.<sup>6</sup> Males and Caucasians are more overcritical when performing these ratings.<sup>7</sup> On the other hand, smile appearance represents not only an aesthetic problem for the patient but in more severe cases, malocclusions may also be object of mocking and psychological abuse.<sup>8</sup> Although some authors have shown little scientific support linked to children «suffering» psychologically by having teeth in bad position,<sup>8</sup> it can be assumed that the generality of patients who seek orthodontic treatment do so to improve their facial aesthetics regardless of functional and structural considerations.<sup>9</sup> Some studies have recommended interceptive treatment as a way of improving facial aesthetics and dental care.<sup>10</sup> Although orthodontic treatment can improve the patient's self-image, it is not possible to show an improvement in the self-esteem of patients throughout the study.<sup>11</sup> In another study conducted in children treated with fixed appliances, the treatment had little impact on the psychological aspect and quality of life in adulthood.<sup>12</sup>

However, it is clear that orthodontic treatment, dental aesthetics and perceptions have gone hand in hand since the beginning of the specialty. In the beginning, the practice was based on the «Angle paradigm», in which the primary goal of treatment was dental occlusion and the secondary, skeletal relationships. Nowadays, the «soft tissue paradigm» that seeks to obtain the best possible adaptation and proportion of facial soft tissues first and secondly occlusion, prevails. This explicitly recognizes that a major goal of orthodontic treatment—in the majority of patients—is the improvement of facial esthetics. Not only the functional aspects prevail in this philosophy since it reflects the patient's desire to improve their social acceptance and eliminate discrimination based on appearance, which can significantly affect their quality of life.<sup>13</sup>

In recent years, studies have shown that facial aesthetics is a determinant factor in social and self-perception.<sup>14</sup> It has been proven that malocclusion may affect the body image and self-confidence of a person not only in adolescence, but also in adulthood.<sup>15</sup> A malocclusion may also represent a problem in children as it has been shown to be a determining factor in elementary students who are subject to harassment, also known as bullying.<sup>8</sup> In this way, sensitive children tend to take as truth the opinions of those who bully them and perceive themselves as they are criticized.<sup>16</sup> These situations will decrease significantly once the child receives treatment to correct their malocclusion.<sup>17</sup> An optimal facial appearance is desirable for people not only to be considered more attractive, but also to be better accepted socially by friends, teachers and heads of work.<sup>18</sup> There are authors who suggest that a harmonic occlusion gives a picture of greater beauty, intelligence and extroversion, among other benefits.<sup>19</sup> With this we may assume that the search for dental aesthetics, from the beginning of its history, has as aim, the physiological wellbeing of the individual, as well as the psychosocial.

A treatment that is successful in promoting dental aesthetics not only improves the patient's self-esteem. In addition, there is an improvement in non-verbal communication as body language becomes more relaxed and expressive, in addition to a perception of greater health in general.<sup>20</sup> Due to the importance attributed to dental aesthetics in relation to a person's self-esteem, as well as social skills and quality of life in general, we have developed studies that evaluate the level of patient satisfaction with their own dental aesthetics.<sup>21</sup> There are authors who have found a correlation between patient satisfaction at the end of treatment and the quality of the orthodontist-patient relationship.<sup>22</sup> Previous research has studied satisfaction with the attention given by the orthodontist in adolescents and adults; it determined that orthodontic treatment has a positive effect on self-perception of the adolescent patient.<sup>23</sup> During treatment, the adult patient undergoes changes in their quality of life that cause a considerable increase in their self-esteem.<sup>24</sup> However, in the literature, there is not a comparison between these age groups. It has been shown that, prior to orthodontic treatment, women tend to be more dissatisfied with their teeth image than men.<sup>4</sup> Also, there are authors who indicate that satisfaction after treatment between genders is similar.<sup>5</sup>

In this study, we sought to answer and provide information in relation to the following questions: What influence does orthodontic treatment have in the

perception of adolescents compared to adults and, similarly, of men compared to women? In addition: What group shows greater rapport with the orthodontist regarding treatment? Thus, the purpose of the study was to determine if after orthodontic treatment two groups of patients with different age showed a better perception of their self-esteem.

## MATERIAL AND METHOD

### Sample selection

The study sample was made up of 60 patients who came to the Orthodontics Clinic of the Intercontinental University. From this sample, 4 groups of 15 patients each were formed, and variables such as age and gender were set. On this basis, two groups of 15 to 25 years of age, one female and one male, were formed. The other two groups were formed with patients from 25 to 40 years of age; one of them grouped females and other males.

According to the inclusion criteria, we selected patients who had corrective orthodontic treatment at the Orthodontics Clinic of the Intercontinental University with the following characteristics: treated with fixed orthodontic appliances with Edgewise, MBT or Roth prescription; patients who completed orthodontic treatment after the year 2011, and up to six months before the completion of this study; with at least 6 millimeters of crowding; with full possession of their mental faculties and without any systemic disease that would compromise the orthodontic result.

### Survey implementation

For the study, we adapted to the Spanish language the Psychosocial Impact Dental Aesthetics Questionnaire (PIDAQ) developed by Klageset al.<sup>21</sup> The instrument brings together 18 questions divided into three categories that assess personal confidence, psychosocial impact and the attention received, according to how patients perceived it after completion of their treatment in the Department of Orthodontics of the Intercontinental University.

The questions in the category called *personal confidence* (PC) evaluated the importance of dental aesthetics in relation to the emotional status of an individual.

The questions in the category of *psychosocial impact* (PSI) measured the social skills of the patients according to their smile perception, as well as the possibility of an inferiority feeling.

The third category, called *received attention* (RA), assessed the perception of the patient regarding the professional care he or she received, how well he or she was treated and information about the assigned clinician.

Each question was answered in a similar scale of 10 points, where total denial amounted to 0 and 10 to total agreement with regard to the claim in question. The patient answered each question to assign a value at the beginning of treatment and another at the end. The obtained information was captured in a datasheet, and pre- and post-treatment values were then compared to each other.

### Statistical analysis

The data were expressed as mean and standard deviation. To determine the differences between the studied groups, the following tests were used: Fisher, non-parametric test of Tukey and analysis of variance (ANOVA). We used the program Microsoft Excel with automation of formulas to make the analysis. The level of significance was established when  $p < 0.05$ .

## RESULTS

### Self-confidence

During the evaluation of the Personal Confidence aspect, the results showed a statistically significant difference when comparing the pretreatment group (T1) to post-treatment (T2); in the group of women (G2) and men (G1). It was determined that there was a general improvement; however, the difference was slightly higher in men.

On the other hand when comparing the group of adults there was a statistically significant difference before treatment (T1) compared to after treatment (T2) for men (G4) and women (G3). It was noted that the perception of improvement was slightly higher in men than in women (*Table I*).

When comparing personal confidence only in the pretreatment aspect, it was determined that there was a statistically significant difference in both women and men, which was greater in men. However, at post-treatment there was no statistically significant difference for both groups. When comparing by age, there was no statistically significant difference in pretreatment self-confidence of young patients compared to adults. Nor was there a post-treatment difference for these two groups. In pretreatment self-confidence, it was found that there was a statistically significant difference between the group of adult men

(G4), adolescent women (G2) and adult women (G3), since the group of adult men began with a higher rating of self-confidence. At post-treatment there was no difference between the four groups as they reported similar values (Table I).

Upon the analysis of each item of the questionnaire, statistically significant differences were found in adult men (G3) and adult women (G4) before treatment (T1).

The item that showed more difference was: «I like to smile seeing my teeth in the mirror», since there was a statistically significant difference between adolescent males (G1) and adult women (G3), as well as the adolescent women group (G2) and adult women (G3) compared to the group of adult males (G4) since the latter showed greater satisfaction, while the group of adult women (G3) referred the least satisfaction.

With regard to the question «My life will improve as a result of orthodontic treatment», the group of male adolescents (G1) and the group of adult women (G3) were the ones that reported lower expectations of the influence of orthodontic appliances in other areas of their lives. However, the group of male adolescents (G1) showed an improvement in this aspect as well

as the group of adult men (G4), who initially reported higher expectations.

In the analysis of this questionnaire, no statistically significant difference was found for any of the comparisons of the values at the end of treatment (Tables I and II).

**Psychosocial impact**

Both the group of female and male adolescents (G1 and G2) and adults (G3 and G4), showed a statistically significant difference in their perception of the psychosocial impact of orthodontic treatment when comparing pre-treatment (T1) to post-treatment (T2).

In the assessment of pretreatment values, there was a statistically significant difference between women and men, which was shown to be greater in men. However, there was no significant difference at the end of treatment.

Upon comparison by age group, the groups of adolescent men (G1) and women (G2) in relation to the group of adult women (G3) and men (G4), showed no statistically significant difference between pretreatment

**Table I.** Results of the questionnaire regarding self-confidence.

Question	Groups	Adolescent men (G1)		Adolescent women (G2)		Adolescent men (G4)		Adolescent women (G3)		Adult women (G3)		Adult men (G4)	
		T1 Pre	T2 Post	T1 Pre	T2 Post	T1 Pre	T2 Post	T1 Pre	T2 Post	T1 Pre	T2 Post	T1 Pre	T2 Post
I feel proud of my teeth		4.5/3.9	9.3/9.1	4.5/3	9.3/9.3	4.5/6	9.3/8.9	3.9/3	9.1/9.3	3.9/6*	9.1/8.9	3/6*	9.3/8.9
I like to show my teeth when I smile		4.2/3.8	9.2/9.4	4.2/3.2	9.2/8.8	4.2/5.7	9.2/8.7	3.8/3.2	9.4/8.9	3.8/5.7*	9.4/8.7	3.2/5.7*	8.9/8.7
I like to smile watching my teeth in the mirror		4.5/3.5	9.1/9.2	4.5/2.5	9.1/8.2	4.5/5.5	9.1/8.7	3.5/2.5	9.2/8.2	3.5/5.5*	9.2/8.7	2.5/5.5*	8.2/8.7
I feel that my teeth are attractive		4/3.9	9.1/8.4	4/2.5	9.1/8.7	4/5.7	9.1/8.7	3.9/2.5	8.4/8.7	3.9/5.7*	8.4/8.7	2.5/5.7*	8.7/8.7
I feel confident regarding the overall appearance of my teeth		4.5/4.1	9.3/9.1	4.5/2.8	9.3/8.8	4.5/6	9.3/8.9	4.1/2.8	9.1/8.8	4.1/6	9.1/8.9	2.8/6*	8.8/8.9
My life will improve/ has improved as a result of orthodontic treatment		5.7/6.3	9.3/9.3	5.7/4	9.3/8.3	5.7/8.5*	9.3/9.1	6.3/4	9.3/8.3	6.3/8.5*	9.3/9.1	4/8.5*	8.3/9.1

There was a statistically significant difference during the comparison between groups in the aspect of self-confidence. \*p < 0.01.

or post-treatment perception of psychosocial impact (Table II).

In relation to pretreatment values, there was a statistically significant difference between the group of adult men (G4) compared with the groups of adolescent women (G2) and adult women (G3). The difference was greater in the case of adult women. When assessing the post-treatment, no statistically significant difference was observed between the four groups. There was a statistically significant difference for all questionnaires between the group of adult women (G3) and adult men (G4) before treatment (T1).

We found a statistically significant difference between the groups for the questions of «I enjoy showing my teeth when I am in public»; «I have received good comments about my teeth» and «I feel that people accept me more when they see my teeth». The group of adolescent women (G2) reported lower averages for these questions, which obtained the same values as the group of adult women (G3). When comparing the post-treatment (T2), only statistically

significant difference was found in the item «I feel that the people around me accept me more when they see my teeth» between the groups of men (G1) and adolescent women (G2). In this case, women of 15 to 25 years of age reported a lower correlation between social acceptance and the appearance of their teeth after the treatment.

#### Received attention

In the aspect of received attention, no statistically significant difference was found when comparing the group of men and women. However, we did find a statistically significant difference between young people and adults, the latter being the ones who reported a poorer attention. Although the group of adult women (G3) was the one that gave lower ratings to the attention they received and had a lower sympathy with the orthodontist, they mostly referred an excellent service from the residents of the university. There was no statistically significant difference in any of the items

**Table II.** Results of the questionnaire regarding psychosocial impact.

Question	Groups	Adolescent men (G1) adolescent women (G2) Treatment		Adolescent men (G1) adult women (G3) Treatment		Adolescent men (G1) adult men (G4) Treatment		Adolescent women (G2) adult women (G3) Treatment		Adolescent women (G2) adult men (G4) Treatment		Adult women (G3) adult men (G4) Treatment	
		T1	T2	T1	T2	T1	T2	T1	T2	T1	T2	T1	T2
When I am with people my teeth make me feel confident		5/3.9	9/9	5/3.1	9/9	5/5.7	9/9	3.9/3.1	9/9	3.9/5.7	9/9	3.1/5.7*	9/9
I enjoy showing my teeth when I am with people		4.3/3.5	9/9	4.3/3.2	9/8	4.3/5.9	9/9	3.5/3.2	9/8	3.5/5.9*	9/9	3.2/5.9*	8/9
My teeth are attractive to the opposite sex		4.5/4.1	8.7/8.5	4.5/3.1	8.7/8.1	4.5/5.5	8.7/8.7	4.1/3.1	8.5/8.1	4.1/5.5	8.5/8.7	3.1/5.5*	8.1/8.7
I have received good comments on my appearance and teeth		3.7/3	9.1/9.1	3.7/2.8	9.1/9.3	3.7/5.5	9.1/8.9	3/2.8	9.1/9.3	3/5.5*	9.1/8.9	2.8/5.5*	9.3/8.9
I feel that people around me accept me more when they see my teeth		4.8/3.4	8.7/6.1*	4.8/3.6	8.7/7.2*	4.8/6.3	8.7/8.2*	3.4/3.6	6.1/7.2	3.4/6.3*	6.1/8.2	3.6/6.3*	7.2/8.2
When I look at other people's teeth I feel happy about the appearance of mine		4.3/3.9	9.3/8.9	4.3/4.1	9.3/9	4.3/6	9.3/8.9	3.9/4.1	8.9/9	3.9/6	8.9/8.9	4.1/6	9/8.9

There was a statistically significant difference in the assessment of the different groups regarding psychosocial impact. \*p < 0.01.

of this category. Although the prevailing perception was an excellent care at the clinics of the university, the aspect of timeliness in the attention was the quality with lower rating.

## DISCUSSION

The study conducted a survey to patients in retention phase of the Intercontinental University, about their self-perception and psychosocial health before and after treatment to determine if there was any significant change in their self-esteem as a result of orthodontic treatment.

Upon analysis of the surveys applied to the 4 groups of patients it was determined that there was no statistically significant difference in the perception of pre and post-treatment self-confidence among young and adult patients or regarding social skills before and after treatment between young and adult patients. Additionally, there was no significant difference in pre and post-treatment self-confidence between male and female patients, or in their perception of the quality of care they received. On the other hand, there was a statistically significant difference in the perception of the quality of care between young patients and adults.

The group of women between 25 and 40 years referred having low self-esteem prior to treatment. However, at the end of treatment, there was no statistically significant difference in self-esteem when compared to the 4 groups, so that orthodontic treatment represented an improvement in the appearance regardless of the situation the patients had when they attended the clinic for the first time.

According to Kiyak,<sup>25</sup> the impact on oral health, appearance, dental malocclusion and the treatment for these conditions in relation to the wellbeing and psychosocial aspect, have called their attention to do research in this field. The concept of malocclusion and its treatment on oral health and quality of life (OHRQoL) have been proposed in order to determine the psychosocial aspect and wellbeing of the individual after orthodontic treatment. On the other hand, the result of orthodontic treatment is usually evaluated in relation to clinical aspects, such as Andrew's Six Keys of Occlusion without considering the psychosocial impact.<sup>26</sup>

However, different types of indexes have been developed to provide a more holistic approach that includes the patient's psychosocial wellbeing. With this purpose, some indices have been proposed. This is the case of the Peer Assessment Rating<sup>27</sup> that focuses on assessing the quality of treatment. Another one of these indexes is the Index of Orthodontic Treatment

Need (IOTN).<sup>28</sup> The IOTN has two components: first, the perception of the aesthetic factor and second, a component with treatment needs to identify more clearly the expectations in the self-esteem of the patient.

Notwithstanding the importance of the various factors that orthodontics solves, what the patient seeks are well aligned teeth and an attractive facial appearance as an important element of quality of life,<sup>25</sup> giving a secondary place to functional aspects, such as chewing and having an optimal oral health with fewer cavities and periodontal problems, although it is known that malocclusions do not necessarily increase the risk of caries and periodontal problems.<sup>29,30</sup>

The clinician must not lose sight of the fact that society proclaims an aggressive culture of «good looks» which is reflected everywhere. In movies, magazines, advertisements, etc., people are usually shown with good appearance and aligned teeth that communicate a positive condition of beauty,<sup>25</sup> so that in the majority of patients their image perception is more related to teeth perfection than oral health, a perception that of course affects their self-esteem.

## CONCLUSIONS

Among the limitations of this study, it was concluded that self-esteem conditioned by the presence of malocclusions is very difficult to assess although the results show evidence that patients seeking orthodontic treatment for aesthetic reasons based on a social aspect that makes them feel better, what was most evident in adult patients.

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Mailing address:

**Salvador García-López**

E-mail: drsalvadorgarcialopez@gmail.com