EVALUATION OF DENTAL SCHOOL STUDENT'S SATISFACTION REGARDING THEIR OWN SMILE ESTHETICS AND FACIAL PROFILE

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Palavras-chave: Face. Sorriso. Estética Facial. Perfil Facial. Ortodontia.

RESUMO

Introdução: A estética facial apresenta grande importância na vida dos indivíduos. Entretanto, nem sempre o considerado estético pelo ortodontista corresponde com a opinião do paciente, visto que a estética é subjetiva. Assim, objetivou-se avaliar a percepção de graduandos da faculdade de Odontologia, em relação ao próprio sorriso e perfil facial, analisando se haveria diferença nesta percepção em relação ao período que cursariam e à medida que os conhecimentos são adquiridos. **Materiais e Métodos**: Desenvolveu-se este estudo observacional transversal, no qual distribuiu-se um questionário para todos os alunos do curso de Odontologia da Universidade do Estado do Rio de Janeiro. O questionário continha perguntas sobre o período cursado, idade, sexo, naturalidade, história prévia de tratamento ortodôntico, satisfação com o sorriso, índice de Necessidade de Tratamento Ortodôntico (IOTN) para ser comparado com o sorriso, além de escala para comparação do perfil facial. O teste do qui-quadrado foi aplicado no *software* SPSS 13.0 e todas as análises foram realizadas com 95% de confiança ($p \leq 0,05$). **Resultados**: Foram preenchidos 166 dos 253 questionários distribuídos. Destes, 103 alunos relataram tratamento ortodôntico prévio. O grau de satisfação com o próprio sorriso foi alto, sendo de 78% no primeiro ano de faculdade, 63% no segundo, 87% no terceiro e 72% no quarto ano. Houve preferência pelo perfil levemente convexo para ambos os gêneros. Foi observado que 62% da amostra já havia feito tratamento ortodôntico, sendo a maioria da etnia branca. O teste qui-quadrado encontrou diferença estatisticamente significativa na etnia dos estudantes que receberam tratamento ortodôntico prévio ($p=0,008$). **Conclusão**: Não houve diferença na percepção estética do próprio sorriso e perfil em relação ao período cursado, sendo o grau de satisfação com o próprio sorriso bastante alto.

Keywords: Face. Smiling. Facial Aesthetics. Facial Profile. Orthodontics.

ABSTRACT

Introduction: Facial aesthetics is especially important in a person's life. However, what is considered aesthetic by the orthodontist does not always correspond with the patient's opinion, since aesthetics is very subjective. Thus, the aim of this study is to evaluate the perception of dental graduate students in relation to their own smile and facial profile, analyzing if there would be any difference between this self-evaluation associated with the year students are attending in dental school and the technical knowledge progressively acquired. **Materials and methods:** A transverse observational study was performed, in which a questionnaire was applied to all dentistry students at the State University of Rio de Janeiro. The questionnaire inquired about: student's current semester, age, gender, nationality, and previous history of orthodontic treatment. It also contained a Likert scale of satisfaction about their smile, the aesthetic component of the Index of Orthodontic Treatment Need (IOTN) for students to compare with their smile, and a scale for facial profile comparison. The chi-squared test was applied using the SPSS 13.0 software and all analyzes were performed with 95% confidence ($p \leq 0.05$). **Results:** A total of 253 questionnaires were distributed and 166 were filled out. Among those, 103 people reported having had orthodontic treatment before. The level of satisfaction with their own smile was high, reaching 78% in the first year of the course, 63% in the second, 87% in the third, and 72% in the fourth year. There was a preference for a slightly convex profile for both genders. It is observed that 62% of the sample reported having been submitted to orthodontic treatment before and the percentage of white students who had received previous orthodontic treatment was substantially higher than other ethnicities. The qui-square test found a significant statistical difference in ethnicity among students that had received previous orthodontic treatment ($p=0.008$). **Conclusion:** There was no difference in the aesthetic perception of the smile and profile in relation to the year attended by dental school students, with the level of satisfaction with their own smile being high.

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INTRODUCTION

Although orthodontists seek both functional and aesthetic improvement during treatments, the patient's decision to undertake orthodontic treatment is based primarily on aesthetic considerations. Being so, the evaluation and understanding of the factors that influence their decision should be considered in addition to a clinical evaluation.[1]

Many factors can influence the perception of aesthetics. This implies that the ideals of beauty are always changing in different populations.[2] The demand for orthodontic treatment is much more related to psychological and social factors than somatic ones.[3] In multiple places, such as Scandinavia, The Netherlands and the United Kingdom, the social impact of malocclusions has become a matter of public health. Thus, efforts have been made to provide orthodontic treatment to the population in order to fend off negative impacts caused by malocclusions.[3]

Facial profile is also related to psychosocial factors; it is observed that people with balanced facial features are supposedly happier and more successful.[4] Adults and children with attractive faces are perceived favorably and treated in a more positive way than less attractive ones.[4]

Orthodontic treatment plays an important role in facial aesthetics due to the influence that anterior teeth have on the lips position and, consequently, the facial profile.[2] However, orthodontists' assessments do not always correspond to patients' expectations and/or opinions, since aesthetics is not absolute or objective, but rather extremely subjective.[5]

The vast majority of the classification systems take into account only the mean measures of a population, to the detriment of the measurements of each individual. In addition, it is known that the most accepted standard may vary according to different ethnicities and cultures, and that orthodontic treatments must consider the individual aspects of the evaluated patient. [4]

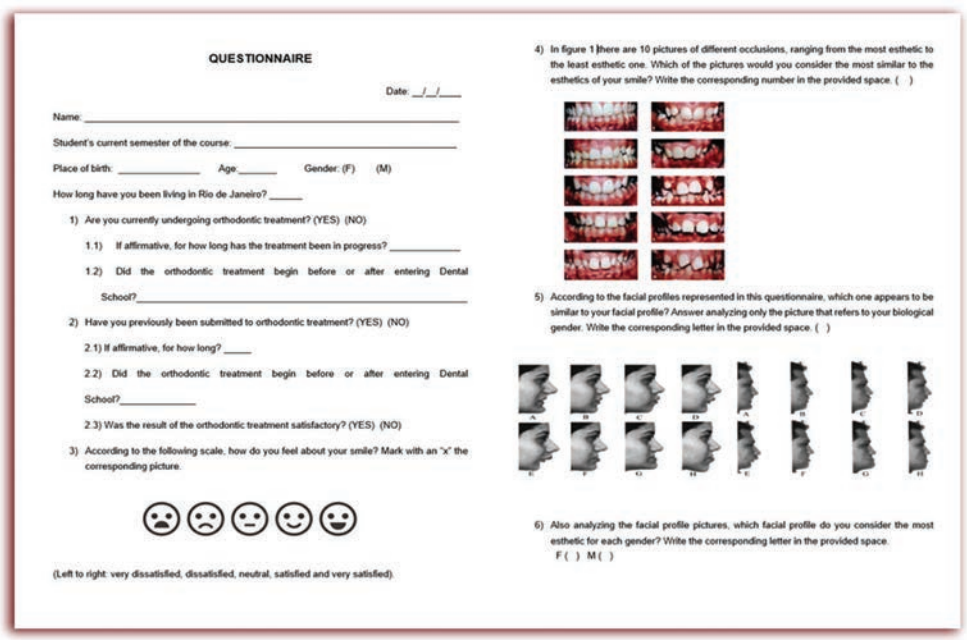
The related literature contains a great number of studies regarding the preference of lay people[3,6,7] yet there is lack of information concerning the analytical point of view of dental surgeons.[3]

Thus, the objective of this study is to evaluate the self-perception Dentistry students have of their smile and facial profile, analyzing the hypothesis that students' personal preferences would change during the graduation course because of the specific knowledge acquired throughout their studies.

MATERIAL AND METHODS

This study has been submitted and approved by the Research Ethics Committee of the Pedro Ernesto University Hospital (Protocol approval 2.756.436) and all participants have signed an informed consent form.

The study form consisted of a transverse observational study, in which a self-administered questionnaire (Figure 1) was applied to all dentistry students at the State University of Rio de Janeiro in the year of 2019. All graduate students enrolled in Dentistry school, with no exception or exclusion criteria, were invited to participate.



QUESTIONNAIRE

Date: __/__/____

Name: _____

Student's current semester of the course: _____

Place of birth: _____ Age:_____ Gender: (F) (M)

How long have you been living in Rio de Janeiro? _____

1) Are you currently undergoing orthodontic treatment? (YES) (NO)

1.1) If affirmative, for how long has the treatment been in progress? _____

1.2) Did the orthodontic treatment begin before or after entering Dental School? _____

2) Have you previously been submitted to orthodontic treatment? (YES) (NO)

2.1) If affirmative, for how long? _____

2.2) Did the orthodontic treatment begin before or after entering Dental School? _____

2.3) Was the result of the orthodontic treatment satisfactory? (YES) (NO)

3) According to the following scale, how do you feel about your smile? Mark with an "x" the corresponding picture.

(Left to right: very dissatisfied, dissatisfied, neutral, satisfied and very satisfied).

4) In figure 1 there are 10 pictures of different occlusions, ranging from the most esthetic to the least esthetic one. Which of the pictures would you consider the most similar to the esthetics of your smile? Write the corresponding number in the provided space. ( )

5) According to the facial profiles represented in this questionnaire, which one appears to be similar to your facial profile? Answer analyzing only the picture that refers to your biological gender. Write the corresponding letter in the provided space. ( )

6) Also analyzing the facial profile pictures, which facial profile do you consider the most esthetic for each gender? Write the corresponding letter in the provided space.
F ( ) M ( )

***Figure 1**: Questionnaire used in the present study, including the Likert scale, the photographs of the esthetic component of the IOTN index and the female and male facial profile scales.*

The questionnaire inquired about students' current semester, age, gender, nationality and previous background of orthodontic treatments.

A Likert scale [6] ranging from very satisfied, satisfied, neutral, dissatisfied to very dissatisfied. (Figure 1) was used in order to analyze students' satisfaction with their own smile. The questionnaire also included photographs used in the aesthetic component of the Index of Orthodontic Treatment Need (IOTN).[8]

As described in the mentioned index, these photographs are numbered in a scale from 1 to 10 (in which 1 corresponds to the best dental appearance and 10 to the worst one), and the purpose of this scale is that the interviewee can identify which of them they would fit into, regardless of the teeth's color and shape (Figure 1).

Moreover, two facial profile scales were used – male and female[3] (Figure 1), being up to interviewees to select the one that most resembled theirs, as well as which profile they considered the most aesthetic for each gender.

The sample size calculation was based on the paper of Oliveira *et al.* (2013)[4] and was performed using a 95% confidence level, as well as a 5% margin of error, resulting in 153 questionnaires.

The qui-square test was used to analyze if there was any change in students' self-evaluation according to the semester they were attending or according to students' ethnic. Also, the correlation between students' ethnic and the access to orthodontic treatment was made so that an analysis about eventual differences between students could be verified. The descriptive statistics of the data, frequency tables and qui-square test were carried out using the Statistical Package for Social Sciences 13.0 *software* (SPSS Inc., Chicago, Illinois, USA). All analyzes were performed with 95% confidence and $p \leq 0.05$.

RESULTS

From the total of 253 questionnaires distributed, 166 were filled out, more than the minimum sample size required by the sample size calculation. The other students did not agree to participate. The questions that eventually were found with no answer were specified as missing data.

The distribution of students that answered the questionnaire according to their semester can be seen in Table 1. It is noticeable that first semester students comprised the largest parcel of the responses. This is because this class has 60 students, while others have around 25 to 30.

***Table 1**: Distribution of students that answered the questionnaire by semester.*

Semester	1st	2nd	3rd	4th	5th	6th	7th	8th
Total	60	27	26	30	26	29	28	27
Answered	42	19	13	23	11	21	19	18

It was found that 74.5% of respondents were female and 25.5% male. 103 of the respondents had already undergone orthodontic treatment (98 did so before the beginning of Dental school and 5 after it).

The chi-squared test did not find any statistically significant difference between students' smile satisfaction and the year they were attending in dental school (p=0.4), or regarding students' ethnicity (p=0.8). Nevertheless, it revealed a significant statistical difference in ethnicity among students that had received previous orthodontic treatment (p=0.008), as it can be seen in Table 2.

***Table 2**: Comparison between students' ethnicity and orthodontic treatment access.*

		Ethnicity				
		White	**Black**	**Brown**	**Indígenous**	**Total**
Previous orthodontic treament	**Yes**	64	8	17	1	90
	No	18	12	9	0	39
Total		82	20	26	1	129

Note: The Pearson's chi-square value obtained was 11.738 a with degree of freedom 3 and Asymptotic Significance (bilateral) of 0.008.

Students' satisfaction regarding their own smile was high, showing that 28.5% claimed to be very satisfied and 47.9% stated to be satisfied (Table 3). This high satisfaction rate was observed in all semesters of dental school, without any noteworthy differences on this aspect. The level of satisfaction with their own smile was 78% in the first year of dental school, 63% in the second, 87% in the third, and 72% in the fourth.

***Table 3**: Student satisfaction with their own smile according to the Likert scale.*

Satisfaction	Frequency (n)	Valid Percentage
Dissatisfied	9	5.5%
Neutral	30	18.2%
Satisfied	79	47.9%
Very Satisfied	47	28.5%
Total	165	100%
Error	1	0.6%

When comparing their smile with the IOTN index, about half the respondents (50.9%) felt represented by the most aesthetic smile, followed by a 27.3% of who selected the second most aesthetic one. From the cumulative percentage, it was observed that 90% of interviewees identified themselves with the 3 most aesthetic occlusions (Table 4).

***Table 4**: Student's self-evaluation according to the IOTN index.*

AC IOTN	Frequency (n)	Valid Percentage
1	84	50.9%
2	45	27.3%
3	19	11.5%
4	6	3.6%
5	4	2.4%
6	3	1.8%
7	3	1.8%
8	1	0.6%
Total	165	100%
Error	1	0.6%

The participants were almost unanimous (91% for female and 89.6% for male) in the preference for the slightly convex profile for both genders (Table 5). Eighteen students left this question with no answer. The results did not show major discrepancies between students' facial profile self-perception and the profile they elected as the most aesthetic. One hundred and thirty participants self-identified with the convex profile B (79.3%); 17 with C (10.4%), 8 with H (4.9%), 7 with A (4.3%), and 2 with F (1.2%).

***Table 5**: Preference for facial profiles according to gender.*

Profile	Gender fem (n)	Gender fem (%)	Gender male (n)	Gender male (%)
A	1	0.7%	12	8.3%
B	135	91.2%	129	89.6%
C	7	4.7%	3	2.1%
H	5	3.4%	0	0.0%
Total	148	100%	144	100%
Error	18	10.8%	22	13.3%

DISCUSSION

Performing aesthetic procedures is not a simple task, as it demands not only technical knowledge, but also adequate interpretation of patients' wishes.[9] One of the main goals for adults when seeking orthodontic treatment is aesthetic improvement.[10] However, the satisfaction level and aesthetic parameters may vary between patients and orthodontists.[10] The present study observed a high demand for orthodontic treatment among Dentistry student's prior to the beginning of the course. Such fact demonstrates the smile's importance for undergraduates of this academic field,

but also may indicate that orthodontic treatment can influence career choice. Students' satisfaction with their own smile was high in all semesters of dental school, with no noteworthy differences on this aspect, not even after having the orthodontic discipline in the sixth period of dental school.

The face scale on the Likert Scale was used because it is a universal method for survey collection, easily understood, enabling participants to respond in a degree of agreement. Moreover, the responses are easily quantified and subjective for computation in mathematical analysis. Likert surveys are also quick, efficient, and inexpensive methods for data collection. They have high versatility and can be sent out through mail, over the internet, or given in person.[11]

Considering that the ethnicity of more than 60% of this study sample was white, it could be observed that the number of white people who received previous orthodontic treatment exceeds other ethnicities. These findings are corroborated by a systematic review of Brazilian data, which confirms that, among university students, the percentage of white people who received orthodontic treatment outnumbers other ethnical groups.[10]

The aesthetic component of the IOTN index was employed in this questionnaire to determine which of the 10 photographs (that illustrate a scale of occlusion aesthetics) was the best fit for each individual. It was noted that in the process of filling out the questionnaire, some of the participants found it difficult to understand the scale's goal, trying to find a picture that matched their own occlusion. This information raises suspicion regarding the accuracy of studies that used the IOTN, most of all when administered to lay people. Curiously, the study of Lu Yin *et al*. (2014)[12] registered a substantial dissonance between the opinions of orthodontists and lay people regarding the aesthetic component of the IOTN[13], which makes possible the idea that interviewees misinterpreted the index.

The slightly convex profile chosen by participants of the current study differs from the results reached by Lu Yin *et al*. (2014)[12], since the straight profile was elected the most aesthetic by Chinese respondents. Furthermore, this same study analyzed how Chinese young adults perceived their own facial profiles (taking into consideration soft tissues, as well as dental aesthetics) and compared to the opinion of orthodontists about these same young people. According to the results, the assessment made by the professionals was closer to the answers of male lay people than female ones.

The present study, however, deviates from those findings, unveiling a nearly unanimous preference of the public for the slightly convex profile for both genders, the same as in the analysis performed by Viegas *et al*. (2016)[6].

There is controversy in the literature when it comes to the use of photographs or silhouettes in facial profile analysis. Some authors defend that employing photographs may lead to confusion and reduce the decision's objectivity, since other physical characteristics could affect the process of decision making.[6] Other authors support that silhouettes make the analysis by participants more difficult and that photographs simulate the features meant to be evaluated in a more realistic manner.[12]

Previously to the application of this study questionnaire, it was done a pilot test using a greater number of facial profiles. However, the participants of the pilot test reported having doubts about which profile to choose, arguing that the differences between them were too subtle. So, it was tried another pilot test with the profile silhouettes that were used in this study, which did not cause any other doubt.

As a weakness of this research, it is essential to acknowledge that a real analysis of students' face and occlusion by an orthodontist was not conducted, which would have provided a comparison with the collected data.However, this would entail a longer interview and would probably affect the sample size, which was a positive point of this study. A sample of 166 students is extremely relevant, considering the total number of students at the university (253), and no other work in the literature was found with this expressive sample size.

Further studies should be carried out with other undergraduate courses and even with Dentistry courses in other states so that the results could be compared.

CONCLUSION

It could be concluded from this study data that there is a high demand for orthodontic treatment among dental school students even before starting the course; Students reported high satisfaction with their smile aesthetics and profile and that it didn't change as they progressively acquired specific knowledge in the field; The percentage of white students who had received previous orthodontic treatment was substantially higher than other ethnicities. The slightly convex profile was considered the most aesthetic for both men and women.

REFERENCES

1. Flores-Mir C, Silva E, Barriga MI, Lagravere MO, Major PW. Lay person's perception of smile aesthetics in dental and facial views. J Orthod. 2004;31(3):204–9. doi: 10.1179/146531204225022416.
2. Peck H, Peck S. A concept of facial esthetics. Angle Orthod. 1970;40(4):284–317. doi: 10.1043/0003-3219(1970)040<0284:ACOFE>2.0.CO;2.

3. Cala L, Spalj S, Slaj M, Lapter MV, Slaj M. Facial profile preferences: Differences in the perception of children with and without orthodontic history. Am J Orthod Dentofac Orthop. 2010;138(4):442–50. doi: 10.1016/j.ajodo.2008.10.024.
4. Khosravanifard B, Rakhshan V, Raeesi E. Factors influencing attractiveness of soft tissue profile. Oral Surg Oral Med Oral Pathol Oral Radiol. 2013;115(1):29–37. doi: 10.1016/j.oooo.2012.03.021.
5. Mori, AT. Expectativas com relação aos resultados estéticos dos tratamentos odontológicos [dissertação]. São Paulo: Universidade de São Paulo, Faculdade de Odontologia; 2003. doi: 10.11606/D.23.2003.tde-04112003-093231.
6. Viegas MM, Mariano Pereira P, Proença L. Avaliação da perceção estética do perfil facial em diferentes painéis de observadores. Rev Port Estomatol Med Dent e Cir Maxilofac. 2016;57(4):252–7. doi: 10.1016/j.rpemd.2016.09.002.
7. Correia LP, Morado Pinho M, Manso MC. Motivação, perceção do impacto e grau de satisfação com o tratamento ortodôntico. Rev Port Estomatol Med Dent e Cir Maxilofac. 2016;57(4):247–51. doi:10.1016/j.rpemd.2016.08.001.
8. De Oliveira MDV, Da Silveira BL, Mattos CT, Marquezan M. Facial profile esthetic preferences: Perception in two Brazilian states. Dental Press J Orthod. Julie 2015;20(3):88–95. doi: 10.1590/2176-9451.20.3.088-095.oar.
9. Bernabé E, Flores-Mir C. Normative and self-perceived orthodontic treatment need of a Peruvian university population. Head Face Med. 2006;2:22. doi: 10.1186/1746-160X-2-22.
10. Pachêco-Pereira C, Pereira J, … BD-AJ of, 2015 U. Factors associated with patient and parent satisfaction after orthodontic treatment: a systematic review. Elsevier. 2015;148(4):652–9. doi:10.1016/j.ajodo.2015.04.039.
11. Likert R. A technique for the measurement of attitudes. Arch Psychol. 1932.
12. Yin L, Jiang M, Chen W, Smales RJ, Wang Q, Tang L. Differences in facial profile and dental esthetic perceptions between young adults and orthodontists. Am J Orthod Dentofac Orthop. 2014;145(6):750–6. doi: 10.1016/j.ajodo.2014.01.021.
13. Kok Y V., Mageson P, Harradine NWT, Sprod AJ. Comparing a quality of life measure and the aesthetic component of the index of orthodontic treatment need (IOTN) in assessing orthodontic treatment need and concern. J Orthod. Desember 2004;31(4):312–8. doi: 10.1179/146531204225020625.