

ANALYSIS OF GINGIVAL MARGIN ESTHETIC CLINICAL CONDITIONS BY DENTAL STUDENTS

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ABSTRACT

It has been suggested that one of the main factors contributing to the perception of esthetics is the position of the gingival tissues in the upper arch. The aim of this study was to evaluate the esthetic perception of dental students regarding different pictures of classical periodontal situations related to the gingival margin. This was an observational cross-sectional study involving 161 dental students. Five clinical situations defined by pictures from books were presented to the students. The cases included unchanged periodontium, gingival smile, uneven gingiva, localized gingival recession and generalized gingival recession. Esthetic perception was evaluated by a Visual Analogue Scale (VAS). The different situations were

compared by One-way ANOVA, with Tukey test as post-hoc. The results showed statistically significant differences between groups ($p < 0.05$). The best esthetics was attributed to the periodontium without changes in shape (7.60 ± 1.80), followed by gingival smile (6.92 ± 2.34). The worst esthetic situation in this evaluation was the uneven gingiva (3.45 ± 2.00). In the intermediate group are the gingival recessions. The perception of localized (5.19 ± 1.91) and generalized (5.69 ± 2.18) gingival recession did not differ significantly. This study concluded that different positions of the gingival tissues affect the esthetic perception of smile.

Key words: Gingiva, Esthetics, Dentists, Smiling.

ANÁLISE DE CONDIÇÕES CLÍNICAS ESTÉTICAS RELACIONADAS À MARGEM GINGIVAL POR ESTUDANTES DE ODONTOLOGIA

RESUMO

Tem sido sugerido que um dos principais fatores que contribui para a percepção estética é a posição dos tecidos gengivais na arcada superior. O objetivo deste estudo foi avaliar a percepção estética por estudantes de odontologia em relação a diferentes fotografias de situações periodontais clássicas relacionadas à margem gengival. Esse foi um estudo observacional transversal envolvendo 161 estudantes de odontologia. Cinco situações clínicas definidas em fotografias retiradas de livros foram apresentadas aos estudantes. Os casos envolviam periodonto inalterado, sorriso gengival, desnível gengival, recessão gengival localizada e recessão gengival generalizada. A percepção estética foi avaliada por uma escala visual analógica (EVA). As

comparações das diferentes situações foram realizadas por ANOVA de uma via, com teste pos-hoc de Tukey. Os resultados demonstraram diferenças estatisticamente significativas entre os grupos ($p < 0.05$). A melhor estética foi atribuída ao periodonto sem alterações de forma (7.60 ± 1.80), seguida pelo sorriso gengival (6.92 ± 2.34). A pior situação estética nessa avaliação foi o desnível gengival (3.45 ± 2.00). No grupo intermediário estão as recessões gengivais. Ambas as recessões localizada (5.19 ± 1.91) e generalizada (5.69 ± 2.18) não foram estatisticamente diferentes. Este estudo concluiu que posições diferentes da margem gengival afetam a percepção estética do sorriso.

Palavras chave: Gengiva, Estética, Dentistas, Sorriso.

INTRODUCTION

The demand for oral esthetics, including the appearance of teeth and gingival tissues, has increased in recent years. In addition to esthetic considerations related to intra-oral aspects, the overall rating of oral esthetics includes the smile and the way each component of the oral cavity harmonizes with the individual. Therefore, many patients evaluate oral health and treatment outcomes according to

the attractiveness of the smile and the esthetic changes observed¹. It has been advocated, for example, that changes in symmetry make teeth less attractive as perceived by patients and dental professionals². These cosmetic aspects should be taken into account not only for changes in teeth, but also for those related to the periodontal tissues, with the aim of achieving the most attractive smile³.

It has been suggested that one of the main factors that can contribute to the perception of esthetics is the position of the gingival tissues in the upper arch¹. Changes in the shape of the periodontium, gingival height, presence of localized or generalized recession and uneven gingival tissues, may contribute to the perception of beauty of the smile. In this sense, the definition of factors related to the esthetics of the smile is crucial because it can influence appearance, attractiveness, and even the perception of one's personality⁴.

The professional's decision on the choice of approach in situations such as unevenness of the gingival tissues, for example, can be influenced by the perception of the esthetic components of the smile⁵. It is therefore of utmost importance that different perceptions of esthetics be assessed in order to contribute both to the planning of some treatment approaches and to better ascertain what is most likely to be understood as good appearance. There is no doubt that the dental profession plays an important part in building esthetic standards, and it is of great interest to know how future dental professionals evaluate different esthetic situations. To the best of our knowledge, there is no study that has objectively and quantitatively evaluated the esthetic perceptions of oral health personnel. Quantifying perceptions is not an easy matter. The Visual Analogue Scale (VAS) has been used to quantify perceptions^{2,6} and is a validated method for evaluating objectively and numerically outcomes that are not traditionally quantified. The aim of this study was to evaluate the esthetic perception of dental students in relation to different pictures of classical periodontal situations related to the gingival margin.

MATERIALS AND METHODS

Study design

This study used an observational cross-sectional design. The protocol was approved by the Committee of Ethical Affairs of the Lutheran University of Brazil. All participants signed an informed consent form.

Subjects

One hundred and sixty one dental students from semesters 5 to 8 (dental education at this school is imparted in 10 semesters) were included in the present study. Ages ranged from 19 to 28 years; 34.8% were males and 65.2% were females. There was no restriction for participating in the study.

Development of the study

The study was conducted in the classrooms where students were attending lectures. The researcher entered the class, explained the objectives of the study and gave instructions on how to participate. After students had provided their consent, they were presented with 5 different clinical situations involving gingival esthetics. For the purpose of the present study, the situations were named Clinical Situation 1 through 5.

The 5 situations were presented to the students on a slide projector, with the same lighting and image quality. Each dental student received 5 separate sheets of paper with a 10 centimeter Visual Analogue Scale (VAS) reading "the worst esthetics possible" on the left and "the best esthetics possible" on the right. They were instructed to grade the clinical situation they were evaluating on the VAS. The 5 clinical situations were clinically defined cases obtained from books, so that no doubt would exist regarding the classification of the situation. They were presented to the different classes at random, so that the order of presentation would not influence the results. The 5 situations are:

Clinical situation 1: unchanged periodontium (this case was a young individual, in whom periodontal breakdown had not occurred, with gingival alignment, without any alteration).

Clinical situation 2: Gingival smile (this case was a young individual, in whom a significant part of the gingival tissues appears upon smiling, with teeth not as long as expected. There is excess of gingival appearance).

Clinical situation 3: Uneven gingiva (this case is of a patient in whom there is an uneven gingival margin. The individual has longer teeth in one side of the mouth, so that there is no symmetry in the smile).

Clinical situation 4: Localized gingival recession (this case reports localized gingival recession in one upper canine).

Clinical situation 5: Generalized gingival recession (this case is a patient in whom recession occurred in all front teeth due to excessive brushing. Bone loss is present in this patient).

Analysis of the data

After collecting data, each scale was measured in centimeters up to the second decimal. The questionnaires data were analyzed by means of SPSS statistical package (SPSS Inc., Chicago, IL, USA).

Mean values for each clinical situation (and standard deviations) were calculated and, as data were normally distributed, comparisons of the different situations were performed by One-way ANOVA, with Tukey test as post-hoc. The level of significance was set at 5%.

RESULTS

The results of the present study are presented in Table 1. The best esthetics was attributed to the periodontium without changes in shape (7.60 \pm 1.80), followed by gingival smile (6.92 \pm 2.34). The worst esthetic situation in this evaluation was the uneven gingiva (3.45 \pm 2.00). Localized gingival recession and generalized gingival recession were in the intermediate range. Attempts were made to separate student responses according to gender and to level in the curriculum, but no statistically significant difference was observed (data not shown).

DISCUSSION

Esthetics currently has high social value. Patients often seek treatment and evaluate its result based strictly on esthetics. Different parameters have been evaluated in relation to esthetics, among them symmetry^{2,6}, color and shape of teeth⁷ and the position of the gingival margin⁸. Of these, with the latter has the highest impact on individual esthetic perception¹.

The present study evaluated dental students' esthetic perception of five classical clinical situations involving the gingival margin. The results showed that the gingival smile, uneven gingiva and localized and generalized gingival recessions are considered worse than an unaltered periodontium. Uneven gingiva was rated as the worst of the evaluated clinical situations. This information is important in the sense that this situation should deserve special attention in clinical approaches to patients. On the other hand, gingival smile was the situation closest to the unaltered periodontium. This finding confirms the importance of maintaining a dento-gingival relationship with clear presence of the gingival tissues, although reports strongly suggest that when a great amount of gingiva is seen in a smile, it is considered unaesthetic⁹.

Gingival recession is a very important and prevalent situation in the population. The prevalence of individuals with gingival recession \geq 3mm is of 51.6%

Table 1: Means and standard deviation of Visual Analogue Scale for different clinical situations.

	Mean (cm)	Tukey Test*	P-value ANOVA
Unchanged Periodontium	7.60 \pm 1.80	A	0.0001
Gingival smile	6.92 \pm 2.34	B	
Uneven gingival	3.45 \pm 2.00	C	
Localized gingival recession	5.19 \pm 1.91	D	
Generalized gingival recession	5.69 \pm 2.18	D	

* Different letters mean statistically significant differences (p<0.05)

in the Brazilian population, for example¹⁰. In the present study no significant difference was observed in the perception of localized and generalized gingival recessions. One possible explanation is that generalized gingival recessions, despite the greater defect area compared to localized recessions, present an important characteristic: symmetry. Different studies demonstrated that facial symmetry is an important factor affecting esthetic perception⁶. This might explain the similar evaluation of localized and generalized gingival recessions.

In this study, a VAS was used to measure esthetic perception. The VAS has been used extensively to evaluate opinions regarding various aspects of dentofacial appearance: profile esthetics¹¹, preferences to altered dental esthetics^{2,6}, and smile esthetics in adolescents seeking orthodontic treatment¹². The VAS also has been used to appraise facial esthetic preferences of alternate photographic views of the same subject^{11,13}. A VAS is a convenient, simple, economical, fast method of obtaining value judgments¹¹. However, the fact that they are easy to use and the large number of studies in which they have been used do not mean that they have no weaknesses or limitations. Raters tend to spread their responses over the entire scale and avoid the ends at the anchor points, independently of the actual preferences¹⁴. In this study, the unaltered periodontium presented a variation in results (range 3.14-10.0), not obtaining the highest rating for many participants. Additionally, the perception of professionals is subject to a multiplicity of intervening factors, not only related to the gingival margin position, but to other factors such as facial symmetry, color of the skin, amount of the face presented in the picture and

socio-cultural factors. Other investigators reported that female raters were more likely to judge various different dentofacial attributes as more attractive than the male raters^{15,16}. An important difference between professionals and laypeople has been demonstrated for different esthetic situations¹⁷, indicating that increasing professional knowledge may have impact on the results. Additionally, esthetic patterns may vary among people from different ethnic and socio-economic backgrounds¹⁸. In the present study, no difference was found according to gender or level in dental education. The findings may relate mainly to generation and cultural aspects. In response to the notion that the clinician's attitudes and judgments are still the driving force in the

decision-making process, research in esthetics has been geared toward evaluating esthetic judgments and values of the general public against professional opinions¹⁹. These findings demonstrated the importance of the evaluation of alterations of the gingival margin position, since they represent an important esthetic impact and its observation should be taken into consideration in treatment planning for the patients.

CONCLUSION

This study showed that gingival margin alterations affect the esthetic perception of the smile. Uneven gingiva was considered to have the worst periodontal esthetics.

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