

Evelyne Mol

Dental aesthetics: a comparison of patients, dental students, and dentists' perception

Universidade Fernando Pessoa

Faculdade de Ciências da Saúde

Porto, 2022



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“Trabalho apresentado à Universidade Fernando Pessoa como  
parte dos requisitos para obtenção do grau de  
Mestre em Medicina Dentária.”

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## **ABSTRACT**

**Objectives:** The present study aimed to compare the dental aesthetic perception among patients, dental students and dentists with a survey.

**Materials and Methods:** We have invited 50 patients, 50 dental students, and 50 dentists to construct a convenience sample of a total of 150 individuals to participate in our study. The survey consists of 10 multiple-choice questions, which were shown as photography, with 3 different photos for each question: Tooth color, Tooth alignment, Tooth shape, Dental exposure at rest, Incisal curve versus lower Lip, Smile line, Smile width (number of visible teeth), Entrance corridor, Upper interincisal line versus middle line, Occlusal plane versus commissure/horizontal line. The participants chose the most pleasing smile in their opinion. The tested hypothesis is: The categories of students and dentists will converge, and the opinion of patients will be poles apart. The significance value admissible is  $p < 0,05$ .

**Results:** The present study aimed to confirm our hypothesis that: The categories of students and dentists will converge, and the opinion of patients will be poles apart.

**Conclusions:** The present study aimed to confirm our hypothesis that: The categories of students and dentists will converge, and the opinion of patients will be poles apart. Indeed, our study showed that dental students share the same opinion as dentists. But patient perceptions did not significantly converge with either group.

**Key words:** Dental aesthetics, Dentist's perception, Patient's perception

## RESUMO

**Objectivos:** O objectivo do presente estudo era comparar a percepção estética dental entre pacientes, estudantes de medicina dentária e dentistas com um inquérito.

**Métodos:** Convidámos 50 pacientes, 50 estudantes de medicina dentária e 50 dentistas a construir uma amostra de conveniência de um total de 150 indivíduos para participarem no nosso estudo. O inquérito consiste em 10 perguntas de escolha múltipla, que foram mostradas como fotografia, com 3 fotografias diferentes para cada pergunta: Cor do dente, Alinhamento dentário, Forma do dente, Exposição dentária em repouso, Curva incisal versus lábio inferior, Linha do sorriso, Largura do sorriso (número de dentes visíveis), Corredor de entrada, Linha interincisal superior versus linha média, Plano oclusal versus comissura/horizontal linha. O participante escolheu o sorriso mais agradável na sua opinião. A hipótese testada é: As categorias de estudantes e dentistas irão convergir, e a opinião dos pacientes será pólos à parte. O valor de significância admissível é  $p < 0,05$ .

**Resultados:** O presente estudo visava confirmar a nossa hipótese, ou seja, as categorias de estudantes e dentistas irão convergir, e a opinião dos pacientes será pólos à parte.

**Conclusões:** O presente estudo teve como objectivo confirmar a nossa hipótese, ou seja: As categorias de estudantes e dentistas convergirão, e a opinião dos pacientes serão pólos separados: As categorias de estudantes e de dentistas convergirão, e a opinião dos pacientes serão pólos à parte. De facto, o nosso estudo mostrou que os estudantes de medicina dentária partilham a mesma opinião que os dentistas. Mas as percepções dos pacientes não convergiram significativamente com nenhum dos grupos.

**Palavras-Chave:** A estética dentária, a percepção do dentista, Percepção do paciente.

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## **I. Introduction**

Aesthetics is an individual and subjective concept. Each person has a particular way to self-assess his/her appearance and the beauty of other persons (Czarnecki *et al.*, 1993).

Smiling and dental aesthetics are inseparable components in the heart of human relationships. The dental aesthetic is based on the principles of harmony and proportion between teeth, gum, and face (Bhuvaneswaran, 2010).

Aesthetics is often the main complaint in the dental office and patients usually evaluate treatment results based on the positive changes in their smile (Işiksal *et al.*, 2006) (Blatz *et al.*, 2019). A possible reason for patients seeking a better look is the fact that appearance may influence relevant concepts such as personality, physical attractiveness, professional success, intelligence, and happiness. An attractive smile also seems to impact social acceptance (Abu Alhaija *et al.*, 2011).

Patients, dental students, and dentists vary in how they judge different smiles, and their perception also depends on their knowledge of dental abnormalities. (Demir *et al.*, 2017).

A pleasing smile is the result of an interaction of multiple components with varying degrees of importance, and an understanding of the principles that determine the balance between the knowledge of dental professionals regarding smile aesthetics and patient perceptions is essential. Knowledge is defined as the abilities needed by the dental graduate to be able to embark on the practice of dentistry (Armalaite *et al.*, 2018).

The present study aimed to compare the aesthetic perception among dental patients, dental students, and dentists with an online survey to help oral health professionals to better understand the expectations of patients who want to improve their smile, and also to allow patients a better perception of the dimension of beauty among health professionals.

## II. Development

### 2.2 Material and methods

#### Material

In an Observational study, transversal was carried out and approved by the Ethics Committee of the University of Fernando Pessoa.

The questionnaire consisted of two sections: An identification of the subject: age, gender, and category. The categories are: patients, dental students, or dentists. In the second section there are 10 Questions, each of which has 3 photos showing different dimensions: Tooth color, Tooth alignment, Tooth shape, Dental exposure at rest, Incisal curve versus lower Lip, Smile line, Smile width (number of visible teeth), Entrance corridor, Upper interincisal line versus middle line, Occlusal plane versus commissure / horizontal line.

The questionnaire was based on Mauro Fradeani's checklist (Fradeani, 2006). It is an aesthetic evaluation checklist of dental architecture that was also designed specifically for the preparation of this study, based on an identical instrument developed by M. Fradeani, *Designed Aesthetic Checklist*.

The author, M. Fradeani, established a checklist in his book: Aesthetic rehabilitation in fixed prosthesis, Aesthetic analysis: a systematic approach to prosthetic treatment, in order to make it available to all oral health professionals. These professionals will be able to follow all the key points of an "ideal smile" and analyse the smile of their patient.

#### Methods

The survey consists of 10 multiple-choice questions, which were shown as photography to make the questions easier to understand. The first 3 questions which show 3 different photos for each question: Tooth color, Tooth alignment, and Tooth shape were selected from Adobe Stock<sup>®</sup> platform (Adobe inc, 2021) and modified with the Adobe Photoshop software (Adobe Systems, San Jose, CA, USA) while the other 7 questions: Dental exposure at rest, Incisal curve versus lower Lip, Smile line, Smile width (number of visible teeth), Entrance corridor, Upper

interincisal line versus middle line, Occlusal plane versus commissure/horizontal line were taken from M. Fradeani's book (Fradeani, 2006).

There were 3 photographs for each question. The participants, who answered the questions, had to choose the answer that seemed the most aesthetic among the three options.

The tested hypothesis is: The categories of students and dentists will converge, and the opinion of patients will be divergent. The significance value admissible is  $p < 0,05$ .

### **2.3 Type of study**

A cross-sectional observational study was conducted.

### **2.4 Sample**

We invited patients, dental students, and dentists to construct a convenience sample of a total of 150 subjects who were distributed into 3 groups: 50 patients, 50 dental students, and 50 dentists. We selected a convenience sample of 150 individuals enrolled in this cross-sectional study, which was carried out between April and May 2022.

### **2.5 The inclusion and exclusion criteria**

The inclusion criteria were patients, dental students, and dentists from the Fernando Pessoa campus because this is the most appropriate and accessible place to meet the 150 individuals from the 3 categories of our study. The exclusion criteria were all individuals who did not wish to participate in the study or who were minors.

### **2.6 Information collection methods**

Data collection was carried out using an online questionnaire on the Google Forms platform or on paper (Annex 5) between the months of April and May 2022, with prior authorization from

the Ethics Committee of Fernando Pessoa CPMD-UFP (Annex 1). Patients' opinions were collected in the waiting room of the Fernando Pessoa University Clinic. Students' feedback on the 4<sup>th</sup> and 5<sup>th</sup> years of dental medicine was collected at the end of the classes or on the campus of Fernando Pessoa. Year 4 and 5 students were selected because of their more detailed knowledge of dentistry and smile aesthetics. And finally, we took the time to contact the professors/dentists of the faculty to kindly give us time at the end of their theoretical-practical teaching.

After being aware of the objectives proposed by the study, each participant gave their Informed Consent (Annex 2) before starting to fill in the respective questionnaire and, thus, gaining access to it. In this study, the data requested and collected did not contain any identification of the person in question. Their total confidentiality and anonymity were always guaranteed. Immediately after the preparation and completion of this Master's dissertation, all the results obtained will be eliminated.

## **2.7. Statistical treatment of data**

The data collected during the investigation period were transferred to a Microsoft Excel<sup>®</sup> spreadsheet (2007). Statistical analysis was then performed with the help of the Statistic Package for the Social Sciences - IBM<sup>®</sup> SPSS<sup>®</sup> Statistics (vs.28.0) computer application, using appropriate descriptive and analytical techniques and considering a significance level  $p=0.05$ .

## **III. Result**

The questionnaire was answered by 150 individuals between 18-65+ years old. This study shows the participation of 83 (55.3%) female and 67 (44.7%) male respondents (N=150). (Table 1). We decided not to compare options by age because the majority  $n=112$  (74,7%) of individuals were aged 18-45 years and only  $n=38$  (25,3%) were aged 45-65+ years old. There is no equality between the category of ages, otherwise the study will be compromised. (Table 12). We will now examine the responses from this analysis according to the type of category of individuals, composed of 50 individuals per group. (Total  $n= 150$ )

For the result of the choice of the tooth shade. According to Table 2, there are 33 (22.0%) dental students and 43 (28.7%) dentists that chose option 1, with a more natural tooth shade color. While 28 (18.7%) patients chose option 2, a whiter shade color. (Table 2).

In Table 3, which represents the dental alignment at the gingival level, we can see that there is an equality in the distribution of dental students, 18 (12.0%) students chose option 1 and 18 (12.0%) students chose option 2. While 27 (18.0%) of the dentists chose option 1, with a more harmonious gingival dental alignment. And concerning the patients, 26 (17.3%) of them chose option 2. (Table 3). Normally, the gingival zenith of the maxillary lateral incisor is located 0.5 to 1 mm below the zenith of the maxillary central incisors and canines, even though they are at the same level. The relationship between the zeniths of these teeth results in an imaginary triangle that provides the ideal conditions for a harmonious smile (Option 1). When the zenith of the maxillary lateral incisor is at the same level as the zenith of the maxillary central incisor and canine (straight line) or even above (inverted triangle), the consequence will be a gingival disharmony (Option 3) (Gürel, 2003; Hall, 2003; Câmara, 2004; Chu *et al.*, 2009).

Regarding the shape of the teeth, Table 4 shows that the majority of individuals in the three categories chose option 1 with 34 (22.7%) of the students, 38 (25.3%) of the dentists, and 36 (24.0%) of the patients. (Table 4). Option 1 is the most natural smile, this seems to suit the majority of the 3 categories.

In Table 5, which shows the result of Dental exposure at rest, we can see that the majority of the 3 categories chose option 3 with 35 (23.3%) of the dental students, 40 (26.7%) of the dentists, and 32 (21.3%) of the patients. (Table 5). According to the author, M. Fradeani, the most aesthetic smile would therefore be the one chosen by the majority, in this case, option 3. When the mandible is in a resting position, the teeth are not in contact, the lips are slightly parted, and a portion of the incisal third of the maxillary incisors is visible; this varies from 1 to 5 mm, depending on the height of the lips, the age and the gender of the patient (Fradeani, 2006).

In Table 6, which shows the result of the Incisal curve versus lower lip, we can see that the majority of the 3 categories chose option 3 with 21 (14,0%) of the dental students, 22 (14,7%) of the dentists, and 27 (18.0%) of the patients. But we can also add that for this question the dentists were divided. It can be seen that 21(14,0%) dentists chose option 2 and 22 dentists (14,7%) chose option 3 (Table 6). It is quite interesting to note that the dentists chose options 2

and 3 equally. Moreover, according to the author, M. Fradeani, he thinks there is a continuous relationship between the lip and the teeth, called in contact (Option 2). To him, this is considered particularly pleasing from an aesthetic point of view. But there are situations where the relationship of the lower lip completely covers the incisor third of the maxillary teeth, called the cover (Option 3). Here there is no wrong answer for dentists. To create a harmonious smile, in all cases, the incisor margins must maintain a parallel alignment with the lower lip (Fradeani, 2006).

In Table 7, for the smile line, all individuals 150 (100%) chose option 3 (Table 7). In Fradeani's words, a pleasing smile can be defined as one that fully exposes the maxillary teeth, together with approximately 1 mm of gingival tissue. Gingival exposure that does not exceed 2 to 3 mm is nevertheless considered aesthetically pleasing (option 3), while excessive exposure (more than 3 mm) is generally considered unattractive (option 2) (Fradeani, 2006).

In Table 8, which represents smile width (number of visible teeth), we can see that the majority of dental students and patients chose option 3 which is 10 visible teeth, with 23 (15,3%) students and 24 (16,0%) patients. But 23 (15.3%) of the dentists chose option 2 which is 6 at 8 visible teeth. According to M. Fradeani, there is no wrong answer in this case. The number of teeth exposed during the smile varies from subject to subject. The analysis of the width of the smile is a determining factor in correct and individual planning of the subject (Fradeani, 2006). The authors C. Maulik and R. Nanda reported that the most frequently visible posterior maxillary tooth is the second premolar (Maulik *et al.*, 2007).

In Table 9, which shows the entrance corridor, we can see that the majority of the 3 categories chose option 3 with dental students and patients 21 (14,0%) individuals per category, and 25 (16,7%) dentists. M. Fradeani (2004) and J.R. Calamia *et al.* (2011) describe three variations of the buccal corridor: normal (option 3), wide or deficient (option2), and absent (or over-filled) (option 1). The absence of this bilateral negative space (option 1) creates a barrier effect that gives an artificial appearance (Fradeani, 2006). Also, we can add that in the literature, there are different hypotheses regarding the influence of the buccal corridor on smile attractiveness. According to the systematic review, buccal corridor size, in isolation, has no significant impact on perceived smile attractiveness (Janson *et al.*, 2011).

Table 10, represents the upper interincisal line versus the middle line. We can see the majority of dentists and patients chose (option 3) where we can see a deviation of the upper interincisal

line but with a nice shape of teeth and smile: 38 (25,3%) dentists and 33 (22,0%) patients. However, 32 (21.3%) of the dental students chose (option 1) with no deviation of the upper interincisal line (Table 10). In this case, it seems that the deviation of the upper interincisal line does not interfere heavily with the perception of a beautiful smile, on the other hand, the uniformity of teeth shade and color appears to be a fundamental aspect.

In Table 11, which shows the result of Occlusal plan versus commissure/horizontal line, we can see that the majority of the 3 categories chose option 3 with 50 (33,3%) of the dental students, 49 (32,7%) of the dentists and 48 (32.0%) of the patients. (Table 11). The correct orientation of the occlusal plane plays a vital role in optimal aesthetic achievement. For a natural smile, the incisal tips follow the curve of the lower lip. This effect is an expression of a correctly oriented occlusal plane (Monteith, 1985).

#### **IV. Discussion**

The World Health Organization Charter (WHO), defines health as "a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity" (WHO, 1946). According to R. Freitas, professionals who work in the aesthetics field, as it is the case of the dentists, it is necessary to be very careful in their approach, since, normally, an individual's concept of beauty is translated into what he or she would like to have or be. Thus, what may seem pleasant and appropriate to the professional may not be perceived in the same way by the patient. Communication between patient and dentist is decisive for both dentists and patients to understand each other's individual concept of beauty. This interaction of concepts will give rise to a more concrete perception of the objective to be achieved. This will be the most effective way of managing patient expectations to avoid unforeseen complications (Freitas, 2007).

Before beginning the discussion of the results, it is important to mention that the analysis was based on the category of the individual: patients, dental students, and dentists. It was not analysed by age group because there was no homogeneity in each age group that could alter the results obtained.

This study shows the participation of 83 (55.3%) female and 67 (44.7%) male respondents (N=150) and calculated the gender ratio of our sample (Table 1). It can be seen that the female frequency in our study was slightly higher, which can be explained by the fact that the female Portuguese population living in Porto is composed of 54.2% of females (INE, 2021).

The questionnaire starts with the selection of the most aesthetically attractive tooth shade (Fig 1a, 1b,1c). The color of the teeth is closely linked to age, gender, appearance, physical constitution, and even physiological changes. However, the evaluation of this parameter of aesthetics also varies with color perception from individual to individual (Micheli, 1987; Derbabian, 2001). We notice that the majority of students and the majority of dentists share the same opinion, a more natural shade of color (Fig 1a). On the other hand, we have patients who prefer a whiter shade of color (Fig 1b). The hypothesis is that the characteristics of the celebrity smile correspond to the general population's perception of the aesthetic parameters of a smile (Arroyo Cruz *et al.*, 2020). Celebrities tend to have a bright white smile, which is called the "Hollywood smile". When discussing the improvement of a smile, one cannot ignore the significance of the Hollywood smile, which has now become an important patient demand from their dental health care providers. The use of veneers in aesthetic dentistry has evolved into the discovery of this terminology, which is now being used by patients as well as dental practitioners regular (Abidia *et al.*, 2017).

After having seen the color of the teeth, we will move on to the 2<sup>nd</sup> important point which is, the Limits of aesthetic acceptability of incisal and gingival aesthetic zone. We can see that 38,0% of individuals chose Fig. 2b (Table 3). Fig 2b shows the incisal equal alignment of the central incisor, lateral incisor, and canine. In 2014, A.W. Machado conducted a research to test the vertical position of maxillary central incisors and found that extruded central incisors were slightly more attracted than the ones slightly intruded. His results reveal that the vertical position of incisors is pleasant when the edge of central incisors is near the lower lip and far from the incisal edge of lateral incisors and canines, thereby ensuring the dominance of central incisors. In other words, the incisal edge of maxillary central incisors must be below the cuspid tip of canines. In the ideal design of incisal contour in the aesthetic zone, the step between central and lateral incisors must range from 1.0 - 1.5 mm for women and 0.5 - 1.0 mm for men. This finding reveals that convex smile arcs are more suitable for women whereas convex or plane arcs are acceptable for men. After discussing this concept, we can reassess Fig 2b, in this case, in order to have a more harmonious smile, the for maxillary central incisor must be

extruded. We can also add that 21,3% of individuals chose Fig 2c with an absence of the gingival zenith (Table 3). Gingival tissue architecture must also be considered in aesthetic treatment. The terms "pink aesthetics" and "red aesthetics" have been used to describe ideal gingival contour at smiling. Some dental textbooks bring the following parameter of ideal aesthetic gingiva: "Canine gingival margin must coincide with central incisors gingival margin, whereas lateral incisors gingival margin must be slightly below this line" (Machado, 2014). But it is undeniable that the majority of subjects chose Fig; 2a. Indeed, 40.7% chose a correct incisal and gingival alignment (Table 3).

The 3<sup>rd</sup> question of our survey concerns the tooth shape. The anatomy, and color of the front teeth play an important role in the natural appearance, individuality, and personality of a smile. Our study shows that the majority of individuals chose Fig 3a: 72,0% (Table 4) with a more natural appearance. According to E.A McLaren and P.T. Cao, 2009, aesthetic treatment should result in an improved but natural appearance that imparts a lively and realistic appearance to the patient. Moreover, smile design should be an integral part of comprehensive patient care (McLaren and Cao, 2009). Effective communication between the dentist and the patient about the differences between natural and artificial teeth is necessary. The dentist should appraise the patient's wishes from the beginning of a clinical relationship. As Chiche and Pinault said in 1998, the TV smile is characterized by white, aligned teeth with the absence of black triangles at the gingival and incisal niches and long contact areas. Patients who prefer a beautiful and natural appearance, consent to a small degree of dental irregularities. The dentist should seek the cooperation of the patient as soon as possible in the treatment to determine which of these categories they fall into. The active participation of the patient is crucial for the final acceptance of the treatment (Chiche and Pinault, 1998).

In Table 5, which shows the result of Dental exposure at rest, we can see that the majority of the 3 categories chose Fig 4c with 23.3% of the dental students, 26.7% of the dentists, and 21.3% of the patients (Table 5). As specified by R.G. Vig *et al.*, the older someone is, the less maxillary incisor have exposure, and the more mandibular incisor have exposure there will be both at smiling, at rest, or while speaking (Vig *et al.*, 1978). These changes are physiological and are caused by several factors as follows: increased perioral muscle flaccidity, genetics, ethnic group, age, and sunlight exposure, all of which result in less maxillary teeth exposure. In modern society, aesthetics and joviality are strongly associated, i.e., the beauty and the youth are interconnected. A few aesthetic features have been highlighted by TV stars, singers, and

models. Greater maxillary incisor exposure at rest is one of them, and has been associated with beauty, joviality, sensuality, and sexuality. It is possible to infer that the current standard of beauty comprises not only a beautiful smile but also voluminous lips and greater maxillary incisor exposure while smiling, at rest, or while speaking. (Machado *et al.*, 2011). According to the author M. Fradeani, the most aesthetic smile would therefore be the one chosen by the majority, in this case, Fig 4c, but also Fig 4c et 4b: in the resting mandible, the incisal third of the maxillary incisors is exposed for the young subject, at approximately 2-4 mm. We can see in Fig 4a: with age, increased exposure of the mandibular incisors is often observed, mainly due to alterations in the tone of the periorbital tissues. (Fradeani, 2006). Fig 4c was the majority choice probably because it is the youngest smile, and as we have seen above, the beauty and the youth are interconnected. (Machado *et al.*, 2011).

In 2002, W.S. Jameson defined the smile line or upper incisal curvature as "the harmony between the incisal edges of the anterior maxillary teeth and the upper edge of the lower lip" (Harati *et al.*, 2013; Jameson, 2002). More authors consider that the smile line corresponds to an imaginary line that follows the incisal edges of the incisors and the cusps of the canines. This line should be in a parallel relationship with the line that passes through the upper edge of the lower lip - the lower lip line (Mondelli, 2003; McLaren and Cao, 2009; Conceição *et al.*, 2005; Bhuvaneshwaran, 2010). According to Câmara (2006), it is the shape of the lower lip and the incisal edges of the anterior upper teeth that allow the design of an ideal smile. It is essential that there is a harmonious relationship between the lower lip and upper incisal curvature, so that the arch formed by the incisal edges of the anterosuperior teeth is parallel to the upper limit of the lower lip. This line varies from individual to individual, being straighter for males, whereas for females it is more pronounced and convex (Gürel, 2003). The upper incisal curvature of the anterosuperior teeth may touch the lower lip (contact): Fig 5b, may not touch (no contact) : Fig 5a, or may be covered Fig 5c, mainly the cervical portions of the teeth, by the lower lip. In our study we can see that the majority of the 3 categories chose option 3 with: 21 (14,0%) of the dental students, 22 (14,7%) of the dentists and 27 (18.0%) of the patients (Table 6). Between the 3 options proposed in question 5, there are no wrong answers. This is why dentists were split in their answers, 14.0% of dentists chose Fig 5b while 14.7% chose Fig 5c . According to M. Fradeani in 2004, ideally there should be no contact between the upper incisal edges and the lower lip, but light contact is acceptable (Fig 5a or Fig 5b) (Mondelli, 2003) (Fradeani, 2004). Following the results of our study, the most aesthetic and pleasing smile to

the individuals (46,7%) would be Fig 5c: The upper incisal curvature of the anterosuperior teeth may be covered, mainly the cervical portions of the teeth, by the lower lip.

Assessing the number of teeth and gingival tissue exposure in the aesthetic zone, it is of paramount importance for smile aesthetics. The first step in this analysis is to assess the exposure of the anterior teeth while smiling. Based on the proportion of dental and gingival exposure in the maxillary anterior sextant area, some authors (Tjan *et al.*, 1984) identified three types of smile lines: low, medium and high. Low line smile: The motility of the upper lip exposes the anterior teeth in no more than 75% (Fig 6a). Medium line smile: Lip movement shows 75% to 100% of the anterior teeth as well as the interproximal gingival papillae (Fig 6c). High line smile: As well as the anterior teeth, which are fully exposed during smiling, a gingival band of variable height is also exhibited (Fig 6b). (Tjan *et al.*, 1984). A pleasing smile can be defined as one that fully exposes the maxillary teeth, together with approximately 1 mm of gingival tissue. Gingival exposure that does not exceed 2 to 3 mm is nevertheless considered aesthetically pleasing, while excessive exposure (more than 3 mm) is generally considered unattractive (Allen, 1988) (Fradeani, 2006). In our study, 100% of individuals chose Fig 6c (Table 7) with a medium line smile. Importantly, the ideal smile does not require gingival tissue exposure to be eliminated. In fact, many TV stars and models display the entire length of teeth and little gingival tissue while smiling. As previously mentioned, greater exposure of incisors and little gingival exposure while smiling are aesthetic and characteristic of joviality. Finally, if gingival exposure is not greater than 3.0 mm, it is perfectly acceptable, whereas values greater than 3.0 mm are not considered aesthetic (Machado *et al.*, 2011).

Let us now consider the smile width. Smile width is the distance between the right and left outer commissure. Depending on the number of visible teeth the smile width is divided into four groups: narrow, medium, wide, and extra wide smiles. In the narrow smile, subjects show six anterior teeth; in the medium smile, six anterior and the first premolar; in the wide smile, six anterior teeth and both premolars; and in the extra wide smile six anterior teeth, both premolars, and molars (Tjan *et al.*, 1984) (Bidra, 2011). If the patient exposes the gingival margins of the maxillary molars when smiling, and there is a need for prosthetic treatment, the exposure of the metal margin of the crown, for example, will be seen and, in most cases, unpleasant for the patient. The number of teeth exposed when smiling varies from one subject to another. The analysis of the width of the smile is a determining factor in the correct planning to carry out the preparation of the type of buccal tooth and the choice of restorative material (Fradeani, 2006).

In our study, we can see that the majority of dental students and patients chose Fig 7c that is 10 visible teeth, with 23 (15,3%) students and 24 (16,0%) patients. While 23 (15.3%) of the dentists chose Fig 7b which is 6 to 8 visible teeth. According to M. Fradeani, there is no wrong answer here, because the analysis of the width of the smile is individual to each subject. But it can also be added that the generally most common smile is the one that exposes 6 to 8 teeth, i.e. the exposure from the first premolar to the first premolar (Maulik *et al.*, 2007). So why did dental students and patients predominantly choose the option of 10 visible tooth? It may be due to the influence of celebrities who display a wide smile. As we can see in the study proposed by Arroyo Cruz *et al.* in 2020, the aim of their observational study was to evaluate celebrity smiles according to descriptive aesthetic smile criteria and to compare male and female celebrity. The study of Arroyo Cruz *et al.*, showed that the most frequent characteristics found in these smiles are: a smile width of 10 teeth (53.7%) with a total of n=41 (Arroyo Cruz *et al.*, 2020).

Concerning the buccal corridor, it is defined as the bilateral negative spaces between the buccal surface of maxillary posterior teeth and the inner mucosa of the cheek, equivalent to the commissure of the lips when an individual is smiling (Proffit *et al.*, 2013). This slight gap, which is always present in a harmonious smile, allows the natural progression of the smile to be expressed. Our study showed that the size of the entrance buccal corridor, that narrows labial buccal corridor (Fig 8C with 44,7%) is more pleasing than wide or deficient, and absent buccal corridor. The latter being a very degrading parameter for smile harmony. In fact, the absence of this bilateral negative space creates a barrier effect that gives the restoration an undeniably artificial appearance (Fradeani, 2006).

According to Conceição and Masotti (2007), the upper dental midline is an imaginary line dividing the upper central incisors. The upper dental midline can be traced by the upper labial crenellum or the interdental papilla of the upper central incisors. Ideally, this line coincides with the facial midline, but this is not always the case. According to the study by Cardash *et al.*, 2003, deviations of up to 2 mm of the upper dental midline from the facial midline are not noticeable to most people. As our study shows 59.3% chose Fig 9c with a slight deviation of the midline. In this regard, Kokich VO, *et al.*, found in 1999, and confirmed by Naini and Gill in 2008, that deviations up to 4 mm are generally not considered unattractive. However, it should be noted that an incorrect axial deviation such as we can see in Fig 9b may be immediately recognised by any observer as a displeasing feature, being less pleasing than a

lateral alteration of the maxillary interincisal line in relation to the midline of the face (Fradeani, 2006).

Finally, the occlusal plane was analysed and it represents an important craniofacial reference point. Also, the occlusal plane orientation is essential for the development of correct function and the achievement of ideal aesthetics. This is established by joining the incisal surfaces of the anterior teeth with the occlusal surfaces of the posterior teeth. When viewed from the front, the occlusal plane should be parallel to the horizontal reference planes, represented here by the commissural line. The inclination of the occlusal plane in relation to the Frankfort plane, seen from the side, means that, when viewed from the front, the lines joining the incisal margins of the central incisors, the cusps of the molars and the cusps of the first molars are parallel to each other, although they are in different planes (Fradeani, 2006). Our study shows that 98.0% individuals chose Fig 10c with the occlusal plane parallel to the horizontal reference planes, represented here by the commissural line. This study shows evidence that the occlusal plane is paramount in the perception of aesthetics.

Analysing what has been presented above, suggest that the limitation of our study are as follows: The first limitation is the sample recruitment. The form of recruitment of the sample, not being systematised and randomised, may present selection bias, affecting the external validity of the study. The second limitation of our study is the date publication of Dr Fradeani's checklist, which is 2006. After searching for a more recent and comprehensive checklist on search platforms, we did not find a more recent checklist. To go further in this study, it would be ambitious to complete Dr M. Fradeani's checklist and to conduct a more recent study.

## **V. Conclusion**

The present study aimed to confirm our hypothesis that is: The categories of students and dentists will converge, and the opinion of patients will be divergent.

Indeed, our study showed that dental students shared the same opinion as dentists. But patient perceptions did not significantly converge with either group.

The perception of dental aesthetics being linked to psychological, social and cultural factors, it is important for the practitioner to consider the request and the sensitivity of the patient, while using the check-list provided to avoid forgetting fundamental points in the development of the aesthetics of the smile.

Thus, it can be concluded that, further studies or surveys would be needed to better understand the aesthetic demand of the population.

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## VI. Annex

### Annex 1 : Authorization by the Ethics Committee of Fernando Pessoa University



Universidade Fernando Pessoa

Exma. Senhora  
Prof. Doutora Sandra Gavinha  
Diretora da FCS

Nº	Data
FCS/MED – 270/22-2	7 de Abril de 2022

Exma. Senhora Professor Doutora,

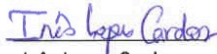
A Comissão de Ética analisou a ressubmissão do projeto de investigação apresentado por Evelyne Mol, intitulado "DENTAL AESTHETICS: a comparison of patients, dental students and Dentist's perception", a realizar no âmbito do Mestrado Integrado em Medicina Dentária.

A Comissão de Ética considera que a informação enviada esclarece os pontos apontados no último parecer. Assim sendo, a Comissão de Ética nada tem a opor quanto à realização deste projeto.

A Comissão de Ética relembra que é necessária a autorização da Direção Clínica das CPMD-UFP (questionário aos pacientes da Clínica Pedagógica), para que o projeto possa ser iniciado.

Com os melhores cumprimentos.

A Presidente da  
Comissão de Ética da UFP

  
Inês Lopes Cardoso



Fundação Ensino e Cultura "Fernando Pessoa"

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UNIVERSIDADE FERNANDO PESSOA (REITORIA) - [FACULDADE DE CIÊNCIA E TECNOLOGIA] - [FACULDADE DE CIÊNCIAS HUMANAS E SOCIAIS]  
Praça 9 de Abril, 349 - 4249-004 Porto - Portugal - T. +351 22 507 1300 - www.ufp.pt - geral@fundacaofernandopessoa.pt  
[FACULDADE DE CIÊNCIAS DA SAÚDE] Rua Carlos da Maia, 296 - 4200-150 Porto - Portugal - T. +351 22 507 4630

ESCOLA SUPERIOR DE SAÚDE FERNANDO PESSOA  
Rua Dellim Mala, 334 - 4200-253 Porto - Portugal  
T. +351 22 509 6371 - geral@ess.fernandopessoa.pt

## Annex 2 : Informed Consent Statement for the paper version

### DECLARAÇÃO DE CONSENTIMENTO INFORMADO, ESCLARECIDO E LIVRE PARA PARTICIPAÇÃO EM ESTUDOS DE INVESTIGAÇÃO

Considerando a "Declaração de Helsínquia" da Associação Médica Mundial (Helsínquia 1964; Tóquio 1975; Veneza 1983; Hong Kong 1989; Somerset West 1996 e Edimburgo 2000)

Designação do Estudo:

DENTAL AESTHETICS: a comparison of patients, dental students and Dentist's perception

Exmo/a Sr./a .....

No seguimento dos trabalhos a desenvolver no âmbito do Mestrado em Medicina dentária, na Universidade Fernando Pessoa e sob orientação da Professor Doutor José Bulhosa Frias venho por este meio solicitar a sua participação na realização do estudo intitulado "DENTAL AESTHETICS: a comparison of patients, dental students and Dentist's perception". O presente estudo tem como objetivos identificar e compreender qual é a percepção que têm de estética dentária de nossos pacientes, pares e profissionais de saúde que nos supervisionam. Para tal, será administrado uma entrevista individual e um questionário online. Trata-se de uma participação VOLUNTÁRIA, não havendo lugar a qualquer tipo de remuneração por parte da investigadora do estudo. Não se antecipam quaisquer riscos associados à participação nesta investigação, do mesmo modo que não haverá vantagens diretas para os participantes. No entanto, irá fornecer uma visão das percepções dos pacientes sobre a estética dentária e assim ajudar os nossos futuros dentistas e dentistas com ideias preconcebidas para melhor compreender as expectativas dos pacientes. E a partir dos dados, será possível comparar as diferentes opiniões de cada um dos participantes pertencentes à sua categoria, e adaptar-se o pedido dos pacientes apenas no domínio da estética dentária, independentemente dos cuidados dentários necessários prestados pelos profissionais de saúde oral. E, inversamente, este estudo permite-nos transmitir a opinião dos nossos especialistas em saúde oral em termos do sorriso ideal proposto hoje.

Relativamente aos dados fornecidos, estes serão registados em suporte papel e digital e a sua utilização será única e exclusivamente para o estudo em questão, sendo garantida a CONFIDENCIALIDADE e total ANONIMATO destes, garantindo, em qualquer caso, que a identificação dos participantes NUNCA será tornada pública. Os dados fornecidos na entrevista serão guardados num local seguro durante a análise e interpretados e DESTRUÍDOS quando a conclusão da investigação.

\_\_\_\_\_ A investigadora, Evelyne MOL

Eu, abaixo-assinado, (nome completo do doente ou voluntário são) \_\_\_\_\_, compreendi a explicação que me foi fornecida acerca da minha participação na investigação que se tenciona realizar, bem como do estudo em que serei incluído. Foi-me dada oportunidade de fazer as perguntas que julguei necessárias e de todas obtive resposta satisfatória.

Tomei conhecimento de que, de acordo com as recomendações da Declaração de Helsínquia, a informação ou explicação que me foi prestada versou os objectivos e os

## Dental aesthetics: a comparison of patients, dental students and dentists' perception

métodos e, se ocorrer uma situação de prática clínica, os benefícios previstos, os riscos potenciais e o eventual desconforto. Além disso, foi-me afirmado que tenho o direito de recusar a todo o tempo a minha participação no estudo, sem que isso possa ter como efeito qualquer prejuízo pessoal.

Por isso, consinto que me seja aplicado o método ou o tratamento, se for caso disso, propostos pelo investigador.

Data: \_\_\_\_ / \_\_\_\_ / 200\_\_

Assinatura do doente ou voluntário são: \_\_\_\_\_

O Investigador responsável:

Nome:

Assinatura:

### Annex 3: Informed Consent Statement for the digital version

#### DECLARAÇÃO DE ASSENTIMENTO PARA PARTICIPAÇÃO EM ESTUDOS DE INVESTIGAÇÃO

Exmo/a Sr./a .....

No seguimento dos trabalhos a desenvolver no âmbito do Mestrado em Medicina dentária, na Universidade Fernando Pessoa e sob orientação da Professor Doutor José Bulhosa Frias venho por este meio solicitar a sua participação na realização do estudo intitulado "DENTAL AESTHETICS: a comparison of patients, dental students and Dentist's perception" O presente estudo tem como objetivos identificar e compreender qual é a percepção que têm de estética dentária de nossos pacientes, pares e profissionais de saúde que nos supervisionam. Para tal, será administrado uma entrevista individual e um questionário online. Trata-se de uma participação VOLUNTÁRIA, não havendo lugar a qualquer tipo de remuneração por parte da investigadora do estudo.

Não se antecipam quaisquer riscos associados à participação nesta investigação, do mesmo modo que não haverá vantagens diretas para os participantes. No entanto, irá fornecer uma visão das percepções dos pacientes sobre a estética dentária e assim ajudar os nossos futuros dentistas e dentistas com ideias preconcebidas para melhor compreender as expectativas dos pacientes. E a partir dos dados, será possível comparar as diferentes opiniões de cada um dos participantes pertencentes à sua categoria, e adaptar-se o pedido dos pacientes apenas no domínio da estética dentária, independentemente dos cuidados dentários necessários prestados pelos profissionais de saúde oral. E, inversamente, este estudo permite-nos transmitir a opinião dos nossos especialistas em saúde oral em termos do sorriso ideal proposto hoje.

Relativamente aos dados fornecidos, estes serão registados em suporte papel e digital e a sua utilização será única e exclusivamente para o estudo em questão, sendo garantida a CONFIDENCIALIDADE e total ANONIMATO destes, garantindo, em qualquer caso, que a identificação dos participantes NUNCA será tornada pública. Os dados fornecidos na entrevista serão guardados num local seguro durante a análise e interpretados e DESTRUÍDOS aquando a conclusão da investigação.

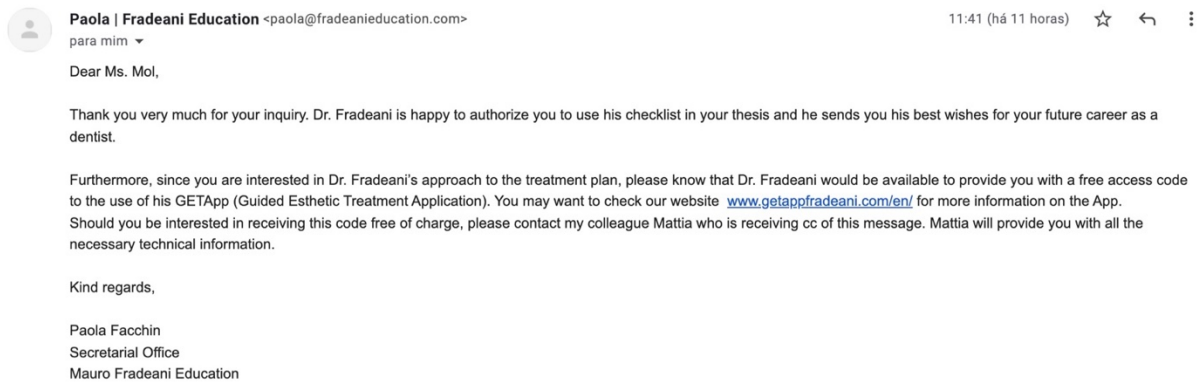
\_\_\_\_\_ A investigadora, Evelyne MOL

Eu, \_\_\_\_\_, ter lido e compreendido este documento acerca do estudo "DENTAL AESTHETICS: a comparison of patients, dental students and Dentist's perception" que se tenciona realizar, tendo sido dada a oportunidade de fazer as perguntas que julguei necessárias, e de todas obtiveram resposta satisfatória. Ademais foi garantida a possibilidade de, em qualquer altura, recusar a minha participação neste estudo sem qualquer tipo de consequências. Desta forma, aceito participar neste estudo e permito os registos em suporte papel e/ou digital dos dados que de forma voluntária forneça, confiando que estes apenas serão utilizados única e exclusivamente para investigação, sendo guardados em local seguro e destruídos após a sua conclusão, e nas garantias de confidencialidade e anonimato que me são dadas pela investigadora.

Data \_\_\_ / \_\_\_ /20 \_\_\_

Assinatura do/a participante \_\_\_\_\_

## Annex 4 : Authorization to use the checklist of Dr Fradeani



## Annex 5: Questionnaire

Exmo/a Sr./a .....

No seguimento dos trabalhos a desenvolver no âmbito do Mestrado em Medicina dentária, na Universidade Fernando Pessoa e sob orientação da Professor Doutor José Bulhosa Frias venho por este meio solicitar a sua participação na realização do estudo intitulado “DENTAL AESTHETICS: a comparison of patients, dental students and Dentist's perception”  
O presente estudo tem como objetivos identificar e compreender qual é a percepção que têm de estética dentária de nossos pacientes, pares e profissionais de saúde que nos supervisionam. Para tal, será administrado uma entrevista individual e um questionário online.

Não se antecipam quaisquer riscos associados à participação nesta investigação, do mesmo modo que não haverá vantagens diretas para os participantes. No entanto, irá fornecer uma visão das percepções dos pacientes sobre a estética dentária e assim ajudar os nossos futuros dentistas e dentistas com ideias preconcebidas para melhor compreender as expectativas dos pacientes. E a partir dos dados, será possível comparar as diferentes opiniões de cada um dos participantes pertencentes à sua categoria, e adaptar-se o pedido dos pacientes apenas no domínio da estética dentária, independentemente dos cuidados dentários necessários prestados pelos profissionais de saúde oral. E, inversamente, este estudo permite-nos transmitir a opinião dos nossos especialistas em saúde oral em termos do sorriso ideal proposto hoje.

Neste estudo, a primeira parte consiste em preencher a identificação do participante. Na segunda parte, temos 10 perguntas. Cada pergunta tem 3 fotografias. Por favor indique qual das 3 fotografias considera ser o sorriso mais estético.

Obrigada pelo tempo que está a dedicar a este estudo.

## Dental aesthetics: a comparison of patients, dental students and dentists' perception

Identification of the subject:

Identificação do sujeito:

Age/Idade:

Gender/Gênero:

- Feminine/Feminino
- Male/Masculino

You are/É você:

- Patient/Paciente
- dental's students/ estudent em medicina dentaria
- Dentists/Medico Dentista

Question 1. Tooth colour



Question 2 : Tooth alignment



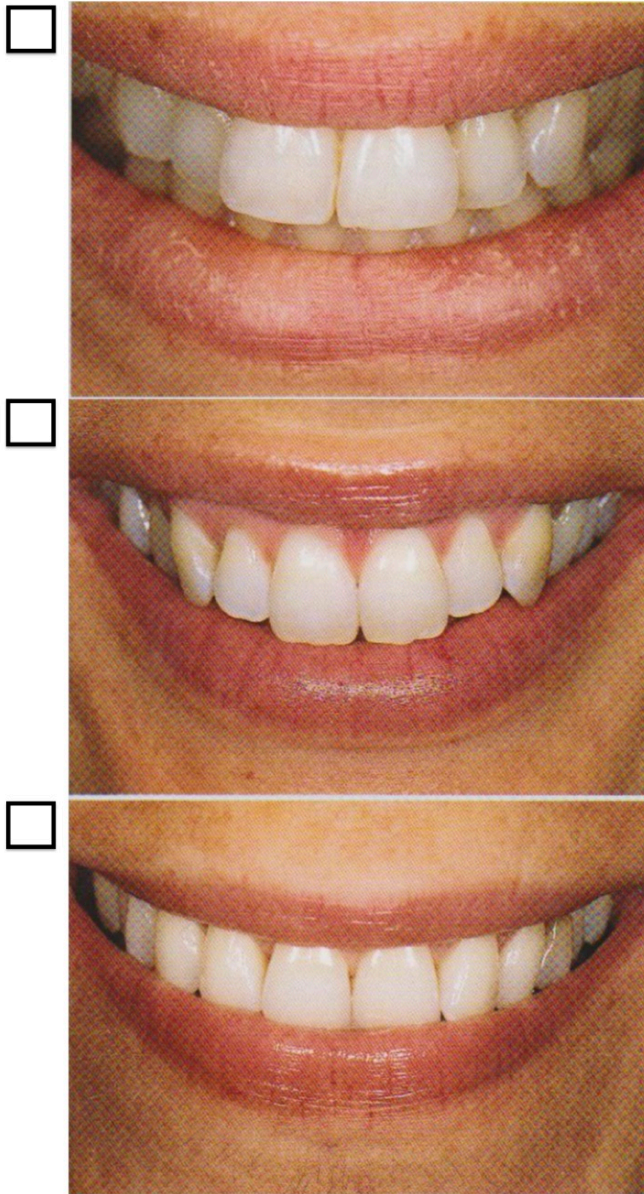
Question 3 : Shape tooth



Question 4: Dental exposure at rest



Question 5. Incisal curve versus lower Lip

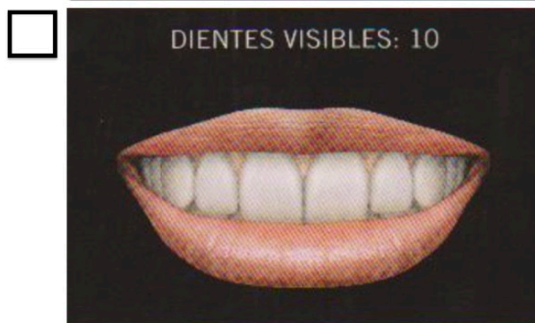
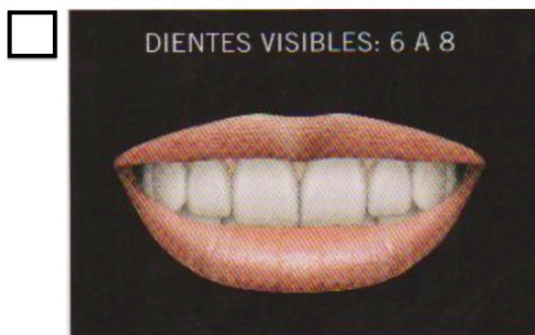
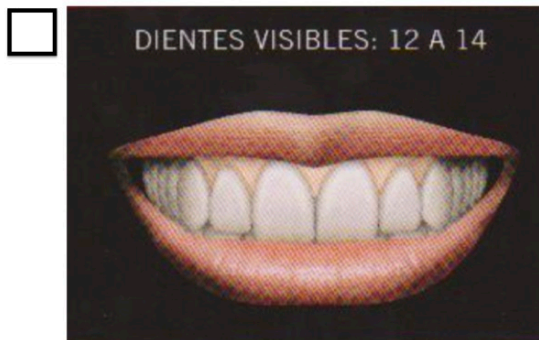


Question 6. Smile line

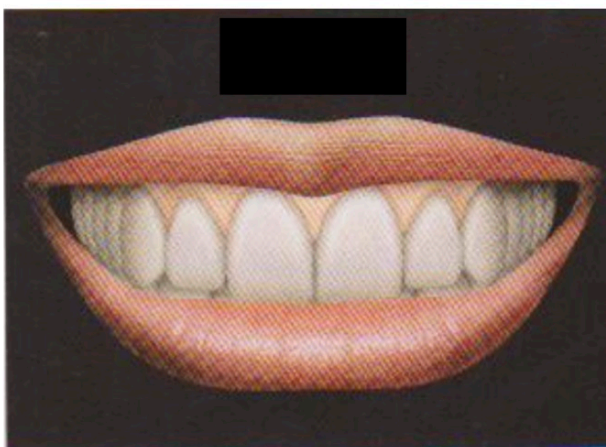


Dental aesthetics: a comparison of patients, dental students and dentists' perception

Question 7. Smile width (number of visible teeth)



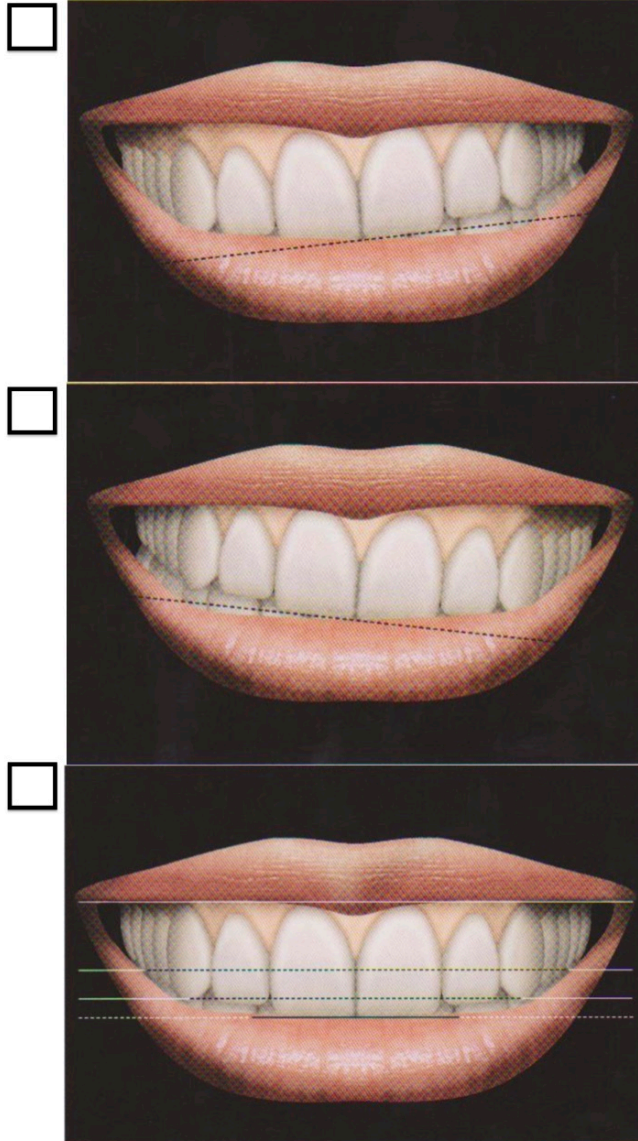
Question 8. Entrance corridor



Question 9. Upper interincisal line versus middle line



Question 10. Occlusal plan versus commissure/horizontal line



**Annex 6 : Table**

**Table 1:** Distribution of participants according to gender (p= 0,05)

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Female	83	55,3	55,3	55,3
Male	67	44,7	44,7	100,0
Total	150	100,0	100,0	

**Table 2:** Distribution of participants according to the type of response of dental aesthetics: tooth color. (p= 0,05)

		Option 1	Option 2	Option 3	Total
Individual Dental's students	Count	33	14	3	50
	% of Total	22,0%	9,3%	2,0%	33,3%
Dentists	Count	43	3	4	50
	% of Total	28,7%	2,0%	2,7%	33,3%
Patients	Count	21	28	1	50
	% of Total	14,0%	18,7%	0,7%	33,3%
Total	Count	97	45	8	150

Dental aesthetics: a comparison of patients, dental students and dentists' perception

	% of Total	64,7%	30,0%	5,3%	100,0%
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**Table 3:** Distribution of participants according to the type of response of dental aesthetics : Dental alignment at gingival level ( $p= 0,05$ )

			Option 1	Option 2	Option 3	Total
Individual	Dental's students	Count	18	18	14	50
		% of Total	12,0%	12,0%	9,3%	33,3%
	Dentists	Count	27	13	10	50
		% of Total	18,0%	8,7%	6,7%	33,3%
	Patients	Count	16	26	8	50
		% of Total	10,7%	17,3%	5,3%	33,3%
Total		Count	61	57	32	150
		% of Total	40,7%	38,0%	21,3%	100,0%

**Table 4:** Distribution of participants according to the type of response of dental aesthetics :  
Tooth shape (p= 0,05)

			Option 1	Option 2	Option 3	
Individual	Dental's students	Count	34	16	0	50
		% of Total	22,7%	10,7%	0,0%	33,3%
	Dentists	Count	38	6	6	50
		% of Total	25,3%	4,0%	4,0%	33,3%
	Patients	Count	36	11	3	50
		% of Total	24,0%	7,3%	2,0%	33,3%
Total	Count	108	33	9	150	
	% of Total	72,0%	22,0%	6,0%	100,0%	

**Table 5:** Distribution of participants according to the type of response of dental aesthetics:  
Dental exposure at rest (p= 0,05)

			Option 1	Option 2	Option 3	Total
Individual	Dental's students	Count	2	13	35	50
		% of Total	1,3%	8,7%	23,3%	33,3%
	Dentists	Count	0	10	40	50

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		% of Total	0,0%	6,7%	26,7%	33,3%
	Patients	Count	0	18	32	50
		% of Total	0,0%	12,0%	21,3%	33,3%
Total		Count	2	41	107	150
		% of Total	1,3%	27,3%	71,3%	100,0%

**Table 6:** Distribution of participants according to the type of response of dental aesthetics: Incisal curve versus lower Lip ( $p= 0,05$ )

			Option 1	Option 2	Option 3	Total
Individual	Dental's students	Count	16	13	21	50
		% of Total	10,7%	8,7%	14,0%	33,3%
	Dentists	Count	7	21	22	50
		% of Total	4,7%	14,0%	14,7%	33,3%
	Patient	Count	9	14	27	50
		% of Total	6,0%	9,3%	18,0%	33,3%
Total		Count	32	48	70	150
		% of Total	21,3%	32,0%	46,7%	100,0%

**Table 7:** Distribution of participants according to the type of response of dental aesthetics

Smile line (p= 0,05)

			Option 3	Total
Individual	Dental's students	Count	50	50
		% of Total	33,3%	33,3%
	Dentists	Count	50	50
		% of Total	33,3%	33,3%
	Patients	Count	50	50
		% of Total	33,3%	33,3%
Total		Count	150	150
		% of Total	100,0%	100,0%

**Table 8:** Distribution of participants according to the type of response of dental aesthetics:

Smile width (p= 0,05)

			Option 1	Option 2	Option 3	Total
Individual	Dental's students	Count	8	19	23	50
		% of Total	5,3%	12,7%	15,3%	33,3%
	Dentists	Count	7	23	20	50
		% of Total				

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		% of Total	4,7%	15,3%	13,3%	33,3%
	Patients	Count	7	19	24	50
		% of Total	4,7%	12,7%	16,0%	33,3%
Total		Count	22	61	67	150
		% of Total	14,7%	40,7%	44,7%	100,0%

**Table 9:** Distribution of participants according to the type of response of dental aesthetics : Entrance corridor (p= 0,05)

			Option 1	Option 2	Option 3	Total
Individual	Dental's students	Count	11	18	21	50
		% of Total	7,3%	12,0%	14,0%	33,3%
	Dentists	Count	4	21	25	50
		% of Total	2,7%	14,0%	16,7%	33,3%
	Patients	Count	14	15	21	50
		% of Total	9,3%	10,0%	14,0%	33,3%
Total		Count	29	54	67	150
		% of Total	19,3%	36,0%	44,7%	100,0%

**Table 10:** Distribution of participants according to the type of response of dental aesthetics: Upper interincisal line vs middle line (p= 0,05)

			Option 1	Option 3	Total
Individual	Dental's students	Count	32	18	50
		% of Total	21,3%	12,0%	33,3%
	Dentists	Count	12	38	50
		% of Total	8,0%	25,3%	33,3%
	Patients	Count	17	33	50
		% of Total	11,3%	22,0%	33,3%
Total	Count	61	89	150	
	% of Total	40,7%	59,3%	100,0%	

**Table 11:** Distribution of participants according to the type of response of dental aesthetics: Occlusal plan versus commissure/horizontal line (p= 0,05)

			Option 1	Option 2	Option 3	Total
Individual	Dental's students	Count	0	0	50	50
		% of Total	0,0%	0,0%	33,3%	33,3%
	Dentists	Count	0	1	49	50
		% of Total	0,0%	0,7%	32,7%	33,3%

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Patients	Count	1	1	48	50
	% of Total	0,7%	0,7%	32,0%	33,3%
Total	Count	1	2	147	150
	% of Total	0,7%	1,3%	98,0%	100,0%

**Table 12:** Distribution of participants according to Age (p= 0,05)

		Dental students	Dentists	Patients	Total	
Age	18-25	Count	38	1	19	58
		% of Total	25,3%	0,7%	12,7%	38,7%
	26-35	Count	11	11	5	27
		% of Total	7,3%	7,3%	3,3%	18,0%
	36-45	Count	1	17	9	27
		% of Total	0,7%	11,3%	6,0%	18,0%
	46-55	Count	0	7	7	14
		% of Total	0,0%	4,7%	4,7%	9,3%
	56-65	Count	0	11	8	19
		% of Total	0,0%	7,3%	5,3%	12,7%
	65+	Count	0	3	2	5
		% of Total	0,0%	2,0%	1,3%	3,3%
Total		Count	50	50	50	150

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% of Total	33,3%	33,3%	33,3%	100,0%
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**Annex 7: Figures**

Fig. 1a



Fig. 1b



Fig. 1c



Fig. 2a



Fig. 2b



Fig. 2c



Fig. 3a



Fig. 3b



Fig. 3c



Fig. 4a



Fig. 4b



Fig. 4c

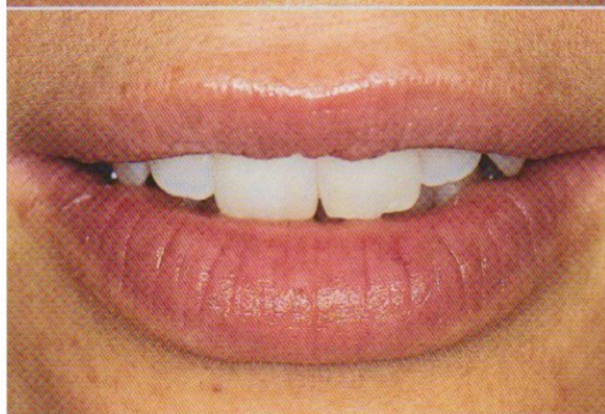


Fig. 5a



Fig. 5b

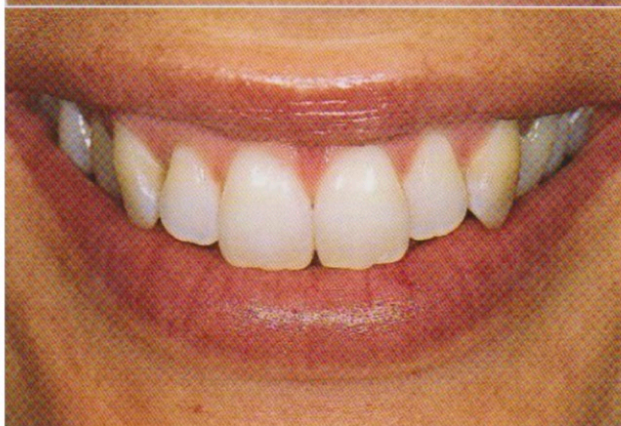


Fig. 5c

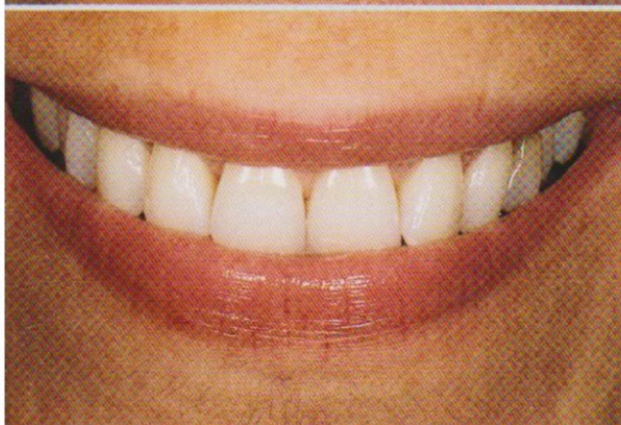


Fig. 6a



Fig. 6b



Fig. 6c



Fig 7a



Fig. 7b



Fig. 7c

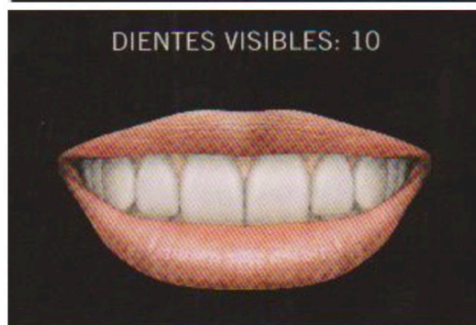


Fig. 8a

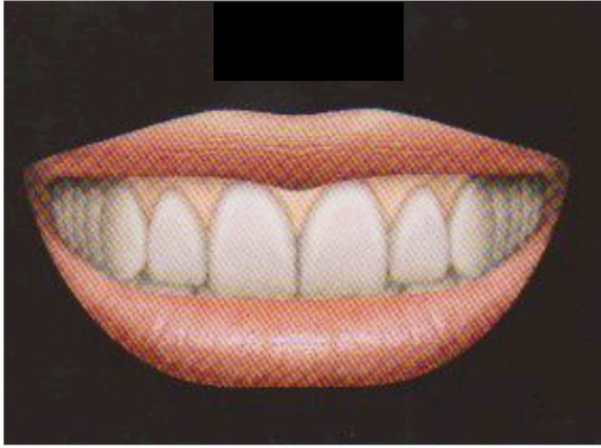


Fig. 8b

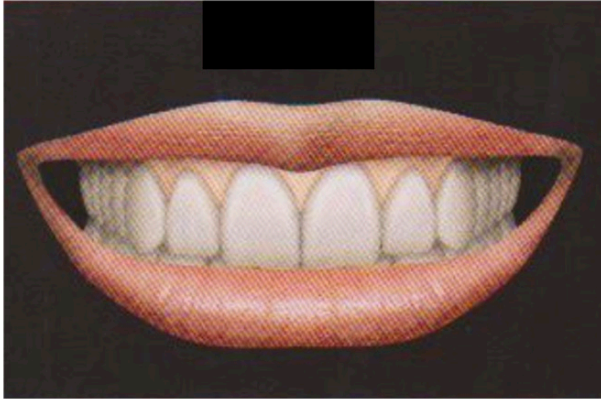


Fig. 8c

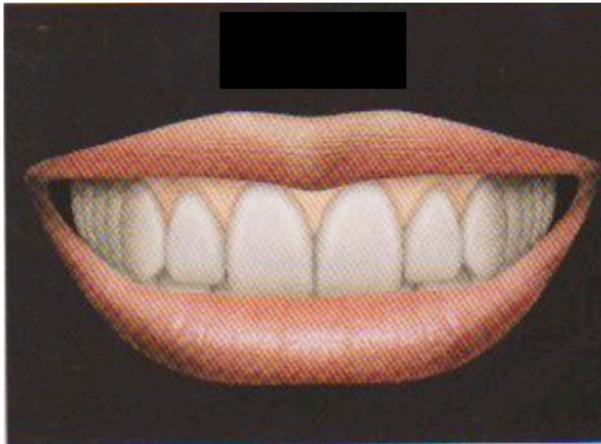


Fig 9a



Fig. 9b

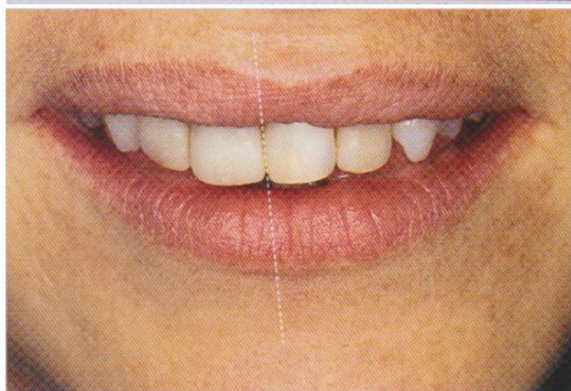


Fig. 9c



Fig. 10a

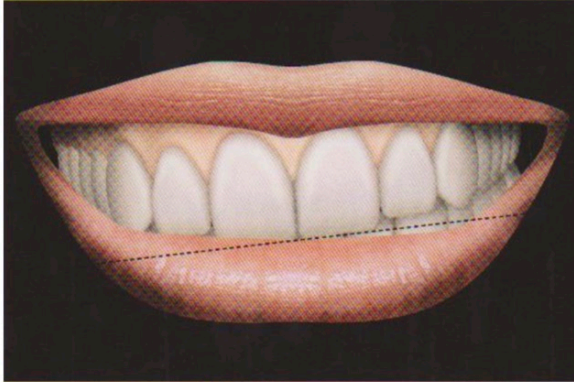


Fig. 10b

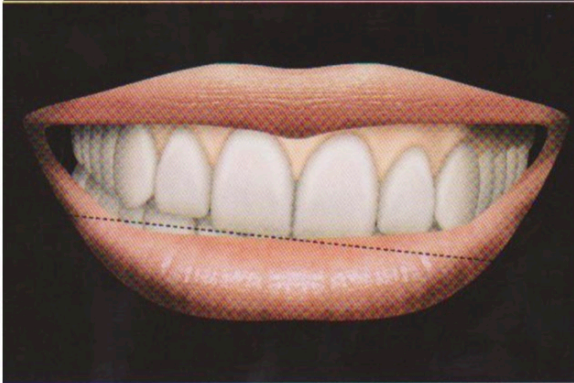
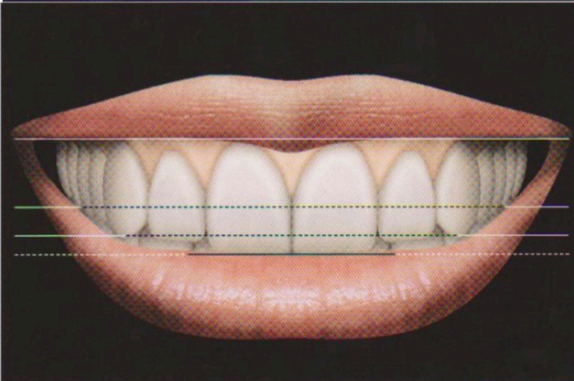



Fig. 10c



## Annex 8: Authorization by the technical direction

 **Direção Técnica CPMD** <direcaotecnica.cpm@ufp.edu.pt>  
para mim, Jose ▾

quarta, 20/04, 10:46 ☆ ↶ ⋮

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Ex.ma Senhora aluna Evelyne Mol

Autoriza-se a realização da investigação proposta nas CPMD-UFP sob as condições apresentadas.

A Direção Técnica relembra que as publicações resultantes deste trabalho têm de estar obrigatoriamente afiliadas à UFP:  
**FP-131D, CPMD FCS, Universidade Fernando Pessoa, Porto - Portugal.**

Quando terminar a sua investigação terá de informar esta direção relativamente ao término da mesma.  
A Direção Técnica deseja-lhe boa sorte para a prossecução deste trabalho, estando disponível para qualquer esclarecimento adicional ou apoio que necessite.

Com os melhores cumprimentos,  
**Sandra Gavinha**  
Direção Técnica CPMD

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