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ORIGINAL ARTICLE

Evaluation of Standard Smile Index with Specialist Concept Referred to Dental clinic

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ABSTRACT
There is not any standard to measure grace index of smile that based on references. So, one of the concerns in the dentistry field is consistence rate of grace index between specialists. Smile attractiveness is very important in inter-human communications. A smile is the second important factor in one's eyes in regards to the attention. These days the increase of request to have attractive smile implies the importance of this issue. So, the aim of this study was to evaluate the correlation between standard smile indexes with specialist concept referred to dental clinic. In this descriptive study, 100 patients in faculty of dentistry of Islamic Azad University of Tehran (over 18 years old without any orthogenetic treatment and intact anterior teeth) were selected. These samples were given to a jury group consisting of 3 orthodontists, 3 restorative/cosmetics dentists and 3 prosthodontists and then evaluated them based on a 10cm VAS bar. Subsequently the samples were graded by the jury and stored according to the respective grades they had received. The 30 photographs in each group which received the highest grade were regarded as attractive samples and became as our final study group. At the end of the study, the score of the dentists were compared. The photos collected in an album and evaluated by 3 groups of referees orthodontists, restorative/cosmetics dentists and prosthodontists. The indexes were mini-esthetics (buccal corridor, smile arc and tooth show) and micro esthetics (golden proportion). Average number of each group used for further analysis. According the results, buccal corridor indexes for prosthodontists were 1.57±0.12 and 1.56±0.10 for restorative dentists. Golden proportion index for orthodontic group was 71.23% and restorative dentists 76.7%. The smile curve index for orthodontic, prosthodontics and restorative dentists were 83.3, 66.7and 63.3%, respectively. In all groups the golden proportion and buccal corridor indexes were as attractive index in the same confine but the orthodontic group was more sensitive to smile arc. Also, the orthodontic and restorative dentists emphasize on the midline index (P<0.05). From these results it was determined that the attractiveness rate of simile curve and buccal corridor are two main factors on attractiveness and beauty of smile. So, to plan a dentistry treatment, the smile curve must be considered as main factor and then buccal corridor and golden proportion are at importance.
Keywords: *Smile curve, Buccal corridor, Golden proportion, Smile attractiveness*

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INTRODUCTION

Staying healthy and having good appearance is of great emphasis these days. Never before has there been such attention on facial make over. A centerpiece of this revitalization is a pleasing smile. Due to society acceptance, there is a good marketplace for this matter [1]. We as dental professionals are keenly aware of this major trend and have positioned ourselves accordingly. Along with an understanding of the science and the artistry of this regime, dentists feel that this is indeed a team effort. The goal in attempting this re-creation is not only an admired look, but also the ability to harmonize with hard and soft tissues [2]. As public awareness of esthetic dental treatment increases, patients seek to enhance and resolve several common concerns. The nature and scope of priorities often includes the color and contour of individual teeth. Beyond rectifying problems for individual teeth, however, patients are often

concerned with the collective appearance of the alignment of their teeth [3]. Although tooth arrangement problems are often best addressed with orthodontic procedures, restorative dentists are frequently asked to create the illusion of improved tooth alignment with restorative treatment alone [4]. As our interaction with cosmetic dentistry has increased, we have become very aware of what standards guide the dentist who strives for a pleasing smile. Through cosmetic bonding and laminate veneers, the dentist can control tooth shape by adding or taking away from the tooth, crown, or laminate [5].

Facial attractiveness is something that is intuitively perceived rather than measurable with instruments [6]. Until recently, facial attractiveness was more a subject of interest for artists and philosophers than for scientists. However, physical attractiveness has proven to have such serious interpersonal and social consequences that science cannot exclude it from its realm of study. Moreover, scientific research on physical attractiveness is justified because it is connected to the features of the perceiver and the person perceived [7]. Based on the literature, there is not any standard document to measure grace index of smile, so one of the concerns of the dentistry is consistence rate of grace index between specialists. Smile attractiveness is very important in inter-human communications. So, the aim of this study was to evaluate the correlation between standard smile indexes with specialist concept referred to dental clinic in Islamic Azad University, Dental Branch.

MATERIAL AND METHODS

This study was done on people referred to dental clinic in Islamic Azad University, Dental Branch. 100 patients (over 18 years old without any orthogenetic treatment) were used in this study and randomly divided into 3 groups: orthodontists, restorative/cosmetics and prosthodontics. Before the study, all patients received the information about the research they included by filling and siningg the forms. From each patient, digital photos done using a digital camera (Nikon D 80, focal lens 10mm, WB and auto flash). The photos were captured and numbered. The 30 photographs in each group which received highest grade were regarded as attractive sample and became as our final sample. At the end of the study, the score of the dentists were compared. 3 groups of referees 3orthodontists, 3 restorative/cosmetics dentists and 3 prosthodontists with least 5 years of experience checked the photos for smile attractiveness and marked all photos. The used indexes were mini-esthetics (buccal corridor, smile arc and tooth show) and micro esthetics (golden proportion). Average number of each group used for further analysis.

Statistical analysis

Obtained results of each patients analyzed using T test sample test, Kruskal-Wallis. $P<0.05$ used for significant differences among the groups.

RESULTS

The results for buccal corridor in patients are shown in table 1. According to the results, the mean of orthodontists was 1.57±0.12 mm ($P<0.05$). Also, buccal corridor in patients by prosthodontic was 1.57±0.09 ($P<0.05$). Additionally the mean of buccal corridor by the decision of restorative dentists was 1.56±0.10 ($P<0.05$). The statistical analysis did not show any significant difference among the groups.

Table 1. Mean of results for buccal corridor in patients

	mean	Std. Deviation	Maximum	Minimum	P Value
Orthodontic	1.57	0.12	1.77	1.37	0.006
Prosthodontic	1.57	0.09	1.77	0.69	0.006
restorative	1.56	0.10	1.77	1.37	0.007

As seen in table 2, the mean of results for golden proportion evaluated by orthodontists was %73.23±3.70 ($P<0.05$). Also, the mean of results for golden proportion by prosthodontists marks was %71.86±4.98 ($P<0.05$). Furthermore based on operative dentists the results for golden proportion in patients was 69.96±3.31 ($P<0.05$).

Table 2. Mean of results for golden proportion in patients

	mean	Std. Deviation	Maximum	Minimum	P Value
Orthodontic	73.23	3.70	80	60	0.000
Prosthodontic	71.86	4.98	80	67	0.000
Operative	69.96	3.31	82	62	0.000

As seen from the table 3, the results of midline for orthodontic group was 76.7 ($P<0.05$). Also, the Midline=on in prosthodontics and operative groups were 66.7 and 76.7, respectively ($P<0.05$). In the

midline=off index for both orthodontic and operative groups were 23.3 but it was 33.3 for prosthodontics (P<0.05).

Table 3. Mean of results for midline of smile in patients

	Midline=on	Cumulative Percentage	Midline=off	Cumulative Percentage	P Value
Orthodontic	76.7	100	23.3	23.3	0.005
Prosthodontics	66.7	100	33.3	33.3	0.001
Operative	76.7	100	23.3	23.3	0.005

According to the data, flat arc for orthodontic group was 16.7 but it was 33.3 and 36.7 for prosthodontics and operative groups (P<0.05). Also, the parallel arc in orthodontic group was 83.3 while it was 66.7 and 63.3 in prosthodontics and operative groups (P<0.05).

Table 4. results for beautiful smile in patients

	Flat arc	Cumulative Percentage	Parallel arc	Cumulative Percentage	P Value
Orthodontic	16.7	100	83.3	83.3	0.000
Prosthodontics	33.3	33.3	66.7	100	0.043
Operative	36.7	100	63.3	63.3	0.043

DISCUCCION

Orthodontists typically use image analysis methods to examine attractiveness. A standard orthodontic set of photographs includes frontal smiling, lateral, and frontal views; these are the most common records used to establish a treatment plan, compare changes after treatment, and evaluate treatment results. As seen in this study, the attractiveness rate of smile curve and buccal corridor are two main factors on attractiveness and beauty of smile. So, to plan a dentistry treatment, the smile curve must be considered as main factor and then buccal corridor and golden proportion are at importance. Physical attractiveness is assessed on the basis of different sensory data, e.g., voice, scent, appearance. The face is especially important, because it has many morphological elements, is the main channel of interpersonal communication and, in most cultures, is clearly visible. It is impossible to precisely define physical and facial attractiveness. Nonetheless, an attractive face attracts the perceiver, the perceiver can make a judgment about it, tends to look at it, and wants to make contact with the owner. Usually, but by no means always, the contact desired is erotic in nature [8].

Angle's classification scheme for occlusion became the first commonly accepted method to classify the dentition. Since then, authors have continued to investigate aspects of the normal, or ideal, occlusion. In 1972, Andrews published "The Six Keys to Normal Occlusion," in which he studied 120 untreated orthodontic models that were deemed "normal" and thought to have a correct occlusion. In doing so, six keys were identified: molar relationship, crown angulation, crown inclincation, rotations, spaces, and occlusal plane. These six keys increased orthodontists' knowledge and awareness of factors that contribute to the normal occlusion [9].

The various components that contribute to an ideal dentition can be exhaustive. Things such as buccal corridors, gingival display, smile arc, incisor display, dental midlines, and tooth shape are among the many areas of interest in dental esthetic [10]. The maxillary central incisor is considered the most important tooth in the smile due to its prominent position in the front of the dentition. The ideal esthetics of the maxillary centrals has been studied in terms of size, position, and relationship to other teeth [11]. The position of the teeth within the smile is another esthetic consideration. A majority of beautiful smiles show 75-100% of the central incisor crown. Beautiful smiles also have the incisal edges of the maxillary anterior teeth following the arc of the lower lip [12]

In dentistry, it is important to establish a relationship between the size of the teeth and the rest of the face. This is especially useful in prosthodontics when restoring an edentulous dentition and needing a starting point for the selection of teeth. Certain facial dimensions can be used to predict the size of the anterior dentition [13]. Knowledge of dentofacial relationships aids in the selection of important dental characteristics, such as central incisor width and inter-canine width [14].

Based on the pioneer research conducted by Kokich et al [15], some authors sought digital imaging technology to search for more scientific and consistent references. Since then, several smile variables have been researched as follows: Smile arc; buccal corridor; amount of gingival exposure at smiling; [16]

presence of gingival and incisal asymmetry; presence of diastema; [17] presence of midline shift and changes in axial proclination; maxillary incisors ratio, size and symmetry; among others.

CONCLUSION

We think there is correlation between standard smile indexes with specialist. Authors suggest merit studies needed to determine role of smile index on human beauty.

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