

The Effect of Anterior Teeth Forms in Smile Esthetics

Jafari K¹, Bagheri A², Hekmatfar S^{3*} and Dadgar L⁴

¹Department of Prosthodontics, Ardabil University of Medical Sciences, Ardabil, Iran

²Department of Oral and Maxillofacial Pathology, Ardabil University of Medical Sciences, Ardabil, Iran

³Department of Pediatric Dentistry, Ardabil University of Medical Sciences, Ardabil, Iran

⁴Student Research Committee, Ardabil University of Medical Sciences, Ardabil, Iran

*Corresponding author: Somayeh Hekmatfar, Assistant Professor, Department of Pediatric Dentistry, Ardabil University of Medical Sciences, Ardabil, Iran, Tel: +98 45 3352 2247; E-mail: hekmatfar24@gmail.com

Received date: November 4, 2017; Accepted date: November 28, 2017; Published date: December 5, 2017

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Abstract

Background and objective: Smile play a great role on the face attractiveness. A good-looking smile advances the individual's acceptability by affecting the social interactions. This study aimed to evaluate the effects of different anterior teeth forms on smile esthetics in people referred to dental faculty clinic in Ardabil, Iran.

Materials and methods: For this survey, six photos of different shapes of central and lateral incisors (round, round-square, and square), and canines (pointed and flat) were shown to 469 people in the dental faculty of Ardabil, Iran, including 248 females and 221 males. Each image was scored from one to ten.

Results: According to this study, no significant difference was observed between age, gender, and educational stage of participant ($P>0.05$). According to the groups judgments, the scores of images of pointed tip canine and round incisors and flat canine and round incisors were the highest and the images of pointed tip canine and square incisors and flat canine and square incisors were scored the least. Regarding the results of the Wilcoxon test, the pointed canine type was not effective in the esthetic judgment. The participants similarly rated the photos of pointed and flat canines ($P>0.05$).

Conclusion: The age, gender, and educational stage was not correlated to the preferences about esthetics of the aforementioned photos. Generally, the smile with anterior teeth with round incisal edges was preferred.

Keywords: Anterior teeth; Esthetics; Dentistry; Orthodontists

Introduction

Esthetics in modern dentistry has become increasingly important [1]. Face is the most important part of the people's physical appearance and mouth is the basis of facial attractiveness [2]. The number of individuals seek to improve the form of anterior teeth is tend to grow continuously.

Nowadays, the focus of dentistry procedures has shifted to enhancing the dental appearance. Because it is known that the face attractiveness plays an important role in social interactions, academic achievement, occupation promotion, and even family satisfaction [3].

"Smile" is the aesthetics index of face, which is related to dentistry field. All dentists might offer smile modification as one of their services. A beautiful smile has several psychological effects including improvement in individual's self-image and confidence [4]. Various studies are conducted on assessing the different aspects of a beautiful smile [5]. Carolien Rieffe evaluated the effect of extra-oral factors on face esthetics; furthermore, the internal ones are also investigated in various studies.

In a study conducted by Bothung et al. the effect of inclination of upper maxillary canines has been evaluated [6]. Hideki Ioi et al. demonstrated the effect of vertical positions of anterior teeth on smile

esthetics in South Korea and Japan [7]. Therefore, the anterior maxillary teeth form considered as one of the most substantial aspects of smile esthetics; it is in line with the study conducted by Ong et al. which indicated that the anterior teeth form has the highest impact on the smile attractiveness [8]. Various forms of anterior teeth have been investigated in several studies. For instance, Williams et al. have submitted the categories of diverse forms of anterior teeth [9,10].

Ahmed Hussain et al. have evaluated the influence of various maxillary incisor shapes on perceived smile esthetics [11]. Maria Eduarda has compared the esthetics perception in different groups of regular and orthodontic patients and orthodontists by reconstruction of incisal embrasures in different forms (round, semi-round, and square) by changing the area of adjacent gum [12].

This study aimed to evaluate the effect of anterior teeth forms on perceived smile esthetics by referring people to the dental faculty clinics of Ardabil, Iran, 2016.

Materials and Methods

This descriptive cross-sectional study investigated the general perspective about the natural smile. For uniformity and ruling out the interfering factors, only the smile frame, consisted of teeth, lips, and the surrounding skin was considered in these photos; the necessary alterations were performed using Adobe Photoshop version CS5.

Six photos with different forms of anterior teeth were separately demonstrated in two pages (Figures 1 and 2). The photos of the pointed tip canine and round incisors, pointed tip canine and round-square incisors, pointed tip canine and square incisors, flat tip canine and round incisors, flat tip canine and round-square incisors, and flat-tip canine and square incisors were demonstrated in six figures, respectively.



Figure 1: The pointed form of canine teeth with incisal edges of round, round-square, and square, respectively.



Figure 2: The flat form of canine teeth with incisal edges of round, round-square, and square, respectively.

Each photo was showed to 469 patients referred to dental faculty clinic in Ardabil, Iran in two groups of 248 females and 221 males. They scored the photos between 1-10, and then information forms were completed.

The esthetics of each photo was evaluated based on the visual analogue scale (VAS), that its validity and reliability is confirmed by the literature [13].

Data analysis was performed using SPSS software version 16, Friedman, Kruskal-Wallis, and Wilcoxon tests. In all measurements P-value less than 0.05 was considered statistically significant.

Results

Since our data were ordinal, the median was measured to reveal the central distribution (Tables 1 and 2). The results of Kruskal-Wallis test determined no significant difference in the terms of esthetics judgments between both groups of men and women ($P>0.05$).

According to the results of Kruskal-Wallis test, there was no significant relationship between the age and educational stage of participants and their esthetics judgments ($P>0.05$). Given the results of Friedman test, a significant disparity was observed between the awarded scores of each photo ($P<0.05$).

Thus, the Wilcoxon test was applied to determine the differences between the groups (Tables 3-8). The first and fourth images were given the highest and the third and sixth ones were given the least scores among the groups.

	15-29	30-44	45-60
Pic 1			
D	8	8	8
B	8	9	9
Pic 2			
D	7	6	6
B	6	7	6
Pic 3			
D	5	5	5
B	5	6	6
Pic 4			
D	8	8	9
B	9	8	8
Pic 5			
D	7	6	6.5
B	6	7	6
Pic 6			
D	6	5	6
B	5	6	5

Table 1: Median scores in the women's brochure.

	15-29	30-44	45-60
Pic 1			
D	8	8	8
B	9	9	10
Pic 2			
D	7	6	6
B	7	6	8
Pic 3			
D	5	5	5
B	6	5	8

Pic 4			
D	8	8	9
B	8	9	7
Pic 5			
D	7	6	6.5
B	7	6	7
Pic 6			
D	6	5	6
B	5	5	4

Table 2: Median scores in the men's brochure.

	Pic 1	Pic 2	Pic 3	Pic 4	Pic 5	Pic 6
Pic 1						
D		0.071	0.001	0.767	0.134	0.002
B		0	0	0.302	0	0
Pic 2						
D	0.071		0.001	0.062	0.916	0.008
B	0		0.302	0	0.844	0.005
Pic 3						
D	0.001	0.001		0	0	0.633
B	0	0.302		0	0.026	0.284
Pic 4						
D	0.767	0.062	0		0.118	0.001
B	0.302	0	0		0	0
Pic 5						
D	0.134	0.916	0	0.118		0.002
B	0	0.844	0.026	0		0
Pic 6						
D	0.002	0.008	0.633	0.001	0.002	
B	0	0.005	0.284	0	0	

Table 3: Judgments of 15 to 29 years old men about the smile attractiveness assessed by Wilcoxon test.

	Pic 1	Pic 2	Pic 3	Pic 4	Pic 5	Pic 6
Pic 1						
D		0.001	0	0.05	0.177	0.001
B		0	0	0.663	0	0
Pic 2						

D	0.001		0.002	0	0.05	0.048
B	0		0	0	0.568	0.002
Pic 3						
D	0	0.002		0	0	0.548
B	0	0		0	0	0.968
Pic 4						
D	0.05	0	0		0.003	0
B	0.663	0	0		0	0
Pic 5						
D	0.177	0.05	0	0.003		0
B	0	0.568	0	0		0
Pic 6						
D	0.001	0.048	0.548	0	0	
B	0	0.002	0.968	0	0	

Table 4: Judgments of 15 to 29 years old women about the smile attractiveness assessed by Wilcoxon test.

	Pic 1	Pic 2	Pic 3	Pic 4	Pic 5	Pic 6
Pic 1						
D		0	0	0.431	0	0
B		0	0	0.578	0	0
Pic 2						
D	0		0	0	0.74	0
B	0		0	0	0.84	0
Pic 3						
D	0	0		0	0	0.444
B	0	0		0	0	0.883
Pic 4						
D	0.431	0	0		0	0
B	0.578	0	0		0	0
Pic 5						
D	0	0.74	0	0		0
B	0	0.84	0	0		0
Pic 6						
D	0	0	0.444	0	0	
B	0	0	0.883	0	0	

Table 5: Judgments of 30 to 45 years old men about the smile attractiveness assessed by Wilcoxon test.

	Pic 1	Pic 2	Pic 3	Pic 4	Pic 5	Pic 6
Pic 1						
D		0.049	0	0.091	0.029	0
B		0	0	0.968	0	0
Pic 2						
D	0.049		0.001	0.002	0.488	0.003
B	0		0.001	0	0.936	0.002
Pic 3						
D	0	0.001		0	0	0.861
B	0	0.001		0	0	0.568
Pic 4						
D	0.091	0.002	0		0	0
B	0.968	0	0		0	0
Pic 5						
D	0.029	0.488	0	0		0
B	0	0.936	0	0		0
Pic 6						
D	0	0.003	0.861	0	0	
B	0	0.002	0.568	0	0	

Table 6: Judgments of 30 to 45 years old women about the smile attractiveness assessed by Wilcoxon test.

	Pic 1	Pic 2	Pic 3	Pic 4	Pic 5	Pic 6
Pic 1						
D		0.017	0.008	1	0.024	0.015
B		0.655	0.102	0.655	0.102	0.102
Pic 2						
D	0.017		0.209	0.005	0.84	0.244
B	0.655		0.276	1	0.157	0.18
Pic 3						
D	0.008	0.209		0.003	0.339	0.831
B	0.102	0.276		0.414	0.083	0.102
Pic 4						
D	1	0.005	0.003		0.005	0.005
B	0.655	1	0.414		0.18	0.109
Pic 5						
D	0.024	0.84	0.339	0.005		0.216

B	0.102	0.157	0.083	0.18		0.317
Pic 6						
D	0.015	0.244	0.831	0.005	0.216	
B	0.102	0.18	0.102	0.109	0.317	

Table 7: Judgments of 45 to 60 years old men about the smile attractiveness assessed by Wilcoxon test.

	Pic 1	Pic 2	Pic 3	Pic 4	Pic 5	Pic 6
Pic 1						
D		0.038	0.01	0.25	0.117	0.013
B		0.079	0.017	0.622	0.035	0.012
Pic 2						
D	0.038		0.098	0.253	0.653	0.041
B	0.079		0.026	0.606	0.348	0.011
Pic 3						
D	0.01	0.098		0.007	0.381	0.277
B	0.017	0.026		0.206	0.572	0.301
Pic 4						
D	0.25	0.253	0.007		0.094	0.003
B	0.622	0.606	0.206		0.065	0.023
Pic 5						
D	0.117	0.653	0.381	0.094		0.015
B	0.035	0.348	0.572	0.065		0.021
Pic 6						
D	0.013	0.041	0.277	0.003	0.015	
B	0.012	0.011	0.301	0.023	0.021	

Table 8: Judgments of 45 to 60 years old women about the smile attractiveness assessed by Wilcoxon test.

Regarding the results of the Wilcoxon test, the canine cusp tip did not affect the perceived esthetics. According to Listener's test, there was no diversity between the scores given to the images showing round edges of incisor, central, and lateral teeth in two groups of sharp and smooth canines ($P>0.05$). Additionally, no significant difference was reported between the scores given to images with edges of incisor, central, and lateral teeth with round-square case in comparison to incisor, central, and lateral teeth with square case in two groups of sharp and smooth canines ($P>0.05$).

Regarding the Listener's test, more points were given to the images with edges of incisor, central, and lateral teeth with round-square case rather than square case ($P>0.05$). Considering the educational stage, people with high school diploma and higher education degree (bachelor or above) who aged between 30 and 45 gave similar scores to the images.

Discussion

In the current study, the photos of different smiles were shown to the participants who were placed in two groups of diverse ages, genders, and educational stages in dental faculty clinics, Ardabil, Iran. The only difference between the images was in terms of the edges of maxillary anterior teeth. In this study, the participants were categorized based on the need for the probable treatment. People aged from 15 to 30, 30 to 45, and 45 to 60 needed orthodontic, esthetics, and prosthetic treatments, respectively. Since the culture and personal fields of the observers influence the esthetics perceiving, the participants were categorized in two groups with academic and non-academic degrees to assess the possible impact of the educational level.

People expect a desirable appearance of the teeth after applying the procedures like restoration, prosthetics, and orthodontics [14]. The anterior teeth form, especially maxillary teeth, can be seen while smiling, play an important role in fulfilling patients' desires [15].

According to Phillips study, the anterior teeth form has a great effect on smile esthetics [16].

Regarding the Goldstein's study, teeth form and the smile arc are the substantial elements of the golden proportion in relation to their size [17]. Given the study conducted by Ong, an attractive smile is formed with combination of various factors and the anterior teeth form is the most important one of them [8]. In this study similar to the literature, VAS method was applied to evaluate the smile esthetics [18,19].

Given the results of another study, all the groups with different genders, ages, and educational stages similarly gave the most score to the teeth with round edges; however, the canine teeth form was not effective. This finding was consistent with the results of Anderson, which announced that the different canine teeth forms have lower impact on esthetics in comparison to the anterior teeth form. Therefore, in many cases, canine teeth reformation is not recommended due to the lower impact on the esthetics and functional considerations.

After evaluating the effectiveness of the rounded edge teeth on esthetics, the participants scored the best to the teeth with round-square form and then to those with square edges. According to Heravi et al. study, the lay people preferred the teeth with rounded edges more than the other forms. In this study, individuals age and gender had no impact on their judgement [18]. In Maria study, people preferred the incisal semi-rounded edges [20].

Jannike Jantung have compared the esthetics perception between dentists and ordinary people, and concluded that the ordinary people and dentists' idea are different in terms of esthetics [21]. In our study, gender did not have influence on judgment of esthetics. According to Brisman study, gender was effective in esthetics judgement, women preferred anterior teeth with rounded edges, and men preferred those with square edges. The judgment of esthetics is a subjective and conceptual issue, since it is affected by cultures, traditions, and historical background in each society.

The reported conflicts in various studies could be related to the cultural and historical differences in the evaluated society. Esthetics judgments varies over time and can be influenced by media; furthermore, more studies on esthetics judgments are recommended in different communities.

Conclusion

Regarding the results, different ages, genders, and educational stages had no impact on the esthetic judgements. People preferred rounded incisal edge form more than the other ones and the diverse forms of canine teeth had no effect on smile esthetics judgements.

References

1. Parrini AS, Castroflorio AT (2016) Laypeople's perceptions of frontal smile esthetics: A systematic review. *Am J Orthod Dentofacial Orthop* 150: 740-750.

2. Wolfart S, Menzel H, Kern M (2004) Inability to relate tooth forms to face shape and gender. *Eur J Oral Sci* 112: 471-476.
3. Vann der Geld PNM, Oosterveld P, Heck GV (2007) Smile attractiveness, self perception and influence on personality. *Angle Orthodontist* 5: 1-23.
4. Heymann H, Edward JS, Ritter AV, Sturdevant CM (2013) *Sturdevant's art and science of operative dentistry* (6th edn.). Elsevier/Mosby, St. Louis.
5. Faure JC, Rieffe C, Maltha JC (2002) The influence of different facial components on facial aesthetics. *Eur J Orthod* 24: 1-7.
6. Bothung, C, Fischer K, Schiffer H, Springer I, Wolfart S (2015) Upper canine inclination influences the aesthetics of a smile. *J Oral Rehabil* 42: 144-152.
7. Ioi H, Kang S, Shimomura T, Kim SS, Park SB, et al. (2013) Effects of vertical positions of anterior teeth on smile esthetics in Japanese and Korean orthodontists and orthodontic patients. *J Esthet Restor Dent* 25: 274-282.
8. Ong E, Brown RA, Richmond S (2006) Peer assesment of dental attractiveness. *Am J Orthod Dentofac Orthop* 130: 3-9.
9. Williams JL (1914) A new classification of human tooth with special reference to a new system of artificial teeth. *Dent Cosm* 56: 627-636.
10. Frush JP, Fisher RD (1995) Introduction to dentogenic restorations. *J Prosthet Dent* 5: 586-595.
11. Hussain A, Louca C, Leung A, Sharma P (2016) The influence of varying maxillary incisor shape on perceived smile aesthetics. *J Dent* 50: 12-20.
12. Duarte EAM, Da Motta AFG, Mucha N, Motta TA (2017) Morphological simulation of different incisal embrasures: perception of laypersons, orthodontic patients, general dentists and orthodontists. *J Esthet Restor Dent* 29: 68-78.
13. Tennis GH, Dabbs JM (1975) Judging physical attractiveness: Effects of judge's own attractiveness. *Pers Soc Psychol Bull* 513: 1-6.
14. Hulsey CM (1970) An esthetic evaluation of tooth-lip relationships present in smile. *J Am Orthod* 57: 13-44.
15. Phillips E (1996) The anatomy of a smile. *Oral Health* 86: 7-13.
16. Goldstein RE (1997) *Change your smile* (3rd edn.). Quintessence Publishing, UK. pp: 223-44.
17. Heravi F, Rashed R, Abachizadeh H (2011) Esthetic preferences for the shape of anterior teeth in a posed smile. *Am J Orthod Dentofac Orthop* 139: 806-814.
18. Johnson DR, Gallerano R, English J (2005) The effects of buccal corridor spaces and arch form on smile esthetics. *Am J Orthod Dentofac Orthop* 127: 343-350.
19. Anderson KM, Behrens RG, McKinney T, Buschang PH (2005) Tooth shape preferences in an esthetic smile. *J Orthod Dentofac Orthop* 128: 455-458.
20. Jornung J, Fardal Q (2007) Perception of patient smiles a comparison of patient and dentist opininions. *J Am Dent Assoc* 138: 1544-1553.
21. Brisman AS (1980) Esthetics a comparison of dentists and patients concepts. *J Am Dent Assoc* 100: 345-352.