



Self-perceptions of Smile and Facial Attractiveness among Dentistry Students

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Abstract

Background: Many factors are known to influence individuals' understanding and awareness about their orofacial beauty, including age, sex, social and educational level. This manuscript attempts to identify perceptions of dental students about their own smile and their understanding about ideals of facial beauty as they are going to perform part of facial esthetic procedures after graduation.

Methods: A convenience sampling method was used to recruit a sample of dental students at different stages of their study in college of dentistry. A printed questionnaire form was dispersed among the students containing demographic data and two sets of questions regarding characteristics of their own smile and their understanding about general ideals of facial beauty.

Results: No significant differences emerged regarding age or sex in the students' responses to questions related to their smile's attractiveness. Whereas significant differences were found in the majority of responses to the other set of questions related to esthetic ideals of facial beauty between males and females but not between the two age groups.

Conclusion: The outcome of the current study indicates similar awareness among male and female students about their own smiles. However, male and female students reported different outlooks toward facial beauty and attractiveness.

Keywords: Smile; Facial Attractiveness; Facial Beauty; Esthetic

Introduction

Beauty is defined as "a state of harmony - a balance of facial proportions - a balanced relationship among skeletal structures, teeth, and soft tissue or as the relative measure of balance and harmony" [1,2]. This harmonic and proportionate distribution of different parts of the face should provide pleasure to the senses and mind and should act in harmony in the static and dynamic face. Many factors are known to influence individuals' understanding and awareness about their orofacial beauty, including age, sex, social and educational level [3]. Furthermore,

scientific advances, improved technology and tools used for determining the ideals for individual and customized beauty designs at reduced treatment cost have also contributed to the rising demand for cosmetic procedures [2].

Today's generation pay particular attention to their aesthetic appearance. As a result of this increasing social demand for improved facial characteristics, today's dentists have also started to be aware of how to produce the most required and pleasing esthetic outcome, which has become one of the most desirable, rewarding and interesting aspects of today's dentistry [4]. Numerous comparative smile

assessment studies on laypeople and dentists have used photographs and virtual software images to assess different features of teeth and gingiva regarding size, shape, colour of the teeth and interdental papilla and midline diastema plus the relationship of gingiva to teeth and lips. From these studies the important fact emerged that dentists are more aware of and familiar with the elements of oral esthetic and features of the orofacial region than the patients [5,6]. It is, therefore, expected that dentists might have greater influence on decision making while planning esthetics treatment with the patient [7].

While facial esthetic remain the essential demand for patients requesting cosmetic procedures, there is a concomitant focus on preserving the ethnic identity of the facial features that exhibit racial characteristics [8], Dürer stated that despite the concept of facial beauty being viewed subjectively, the assessment of facial proportions could be assumed objectively. He also assumed that disproportionate human faces are unesthetic; however, proportionate features could provide acceptable facial characteristics even if they are not beautiful [9]. Which leads to the conclusion that characteristics and ideals of beauty are influenced by genetics, racial and environmental factors [10]? However, objective measurements remain the fundamental values for esthetic evaluation [11].

As dentists, it is essential for us to know about the ideals of dental esthetic and to transfer this knowledge to dental students during their university study years. We also needed to understand our students' views about their own smile

and their opinions regarding the implications of each facial component contributing to a beautiful face. Besides, we tried to identify if these perceptions of their smile's appearance would produce negative social behaviours, for example, hiding their smiles. Hence, this study aims to identify dental students' perceptions about their own smile and their understanding about ideals of facial beauty.

Materials and Methods

Study Population

A Visual Analog Scale (VAS) questionnaire was used based on a previous study [12]. It consisted of 19 questions related to smile perception and orofacial attractiveness. The scale was set from zero to 100 mm to determine the value of their answers by measuring the millimetres from the left-hand end of the line to the point that the student marks. The first set of questions comprised subjective questions about students' perception of their own smiles, as shown in Table 1. Whereas, the second set of questions was related to their opinion about the importance of different features of the face, as shown in Table 2. The questionnaires were dispersed among all dental students at the University of Sulaimani and collected on the following day. Before conducting the survey, the research proposal was registered with the scientific committee of the college of dentistry and formal ethical approval was obtained after submitting the research proposal to the Ethics and Scientific Committees of the University of Sulaimani.

How Pleased/Satisfied are you with your smile? Please indicate along the following line	Patient groups					p values	
	All (N=313)	Male (N=128)	Female (N=185)	Age (years)		Sex	Age
				Age group 1 18-20 Years (N=101)	Age group 2 >20 (N=212)		
How pleased/satisfied are you with your smile?	68.9 (5-100) ±24.78	67.26 (5-100) ±25.61	70.07 (5-100) ±24.25	69.92 (5-100) ±25.84	68.41 (5-100) ±24.3	0.32	0.326
How pleased/satisfied are you with the shape of your lips?	67.51 (5-100) ±24.68	66.88 (5-100) ±24.03	67.84 (5-100) ±25.2	66.13 (5-100) ±23.14	68.18 (5-100) ±25.43	0.71	0.863
How pleased/satisfied are you with the shade (whiteness) of your teeth?	60.38 (2-100) ±25.47	62.81 (10-100) ±25.78	58.55 (2-100) ±25.16	59.86 (5-100) ±25.66	60.63 (2-100) ±25.43	0.15	0.485
How pleased/satisfied are you with the evenness of your teeth?	56.06 (0-100) ±27.91	56.69 (10-100) ±26.01	55.44 (0-100) ±29.16	59.95 (10-100) ±27.62	54.18 (0-100) ±27.92	0.74	0.381
How pleased/satisfied are you with the looks of your gums?	66 (0-100) ±27.3	62.58 (0-100) ±27.01	68.41 (0-100) ±27.38	64.08 (0-100) ±29.05	66.93 (0-100) ±26.44	0.07	0.52

If you answered yes, how much does it affect your smile? Please indicate along the following line.	50.5 (0-100) ±26.74	53.03 (8-100) ±25.52	47.08 (0-95) ±28.04	54.96 (15-100) ±25.6	48.73 (0-100) ±27.15	0.31	0.902
If you answered yes, how interested are you in having orthodontic treatment to correct the crooked teeth? Please indicate on the following line.	45.67 (0-100) ±28.94	42.8 (0-100) ±28.8	47.60 (0-100) ±28.991	49.01 (2-100) ±25.81	43.9 (0-100) ±30.35	0.23	0.331
To what extent have your teeth affected your psychology?	52.04 (0-100) ±28.54	50.72 (0-100) ±28.17	52.74 (0-100) ±28.77	55.21 (0-100) ±27.64	50.46 (0-100) ±28.91	0.5	0.277
How much do you like to show your teeth when taking a selfie photo?	53.89 (100) ±30.22	49.91 (0-100) ±29.56	56.48 (0-100) ±30.46	55.03 (0-100) ±29.87	53.33 (0-100) ±30.45	0.06	0.085

Table 1: Frequency and distribution of students' answers to section one questions related to the attractiveness of their own smile.

How important are the following features for an attractive face? Please indicate along the following line in each case.	Patient groups					p values	
			Age (years)				
	All (N=313)	Male (N=128)	Female (N=185)	Age group 1 18-20 Years (N=101)	Age group 2 >20 (N=212)	Sex	Age
Hair	70.3 (0-100) ±27.2	67.81 (0-100) ±27.9	72.11 (0-100) ±26.69	68.8 (0-100) ±29.25	71.03 (0-100) ±26.2	0.11	0.744
Hairline	57.76 (0-100) ±26.8	55.56 (0-100) ±26.26	59.23 (0-100) ±27.29	55.42 (0-100) ±28.12	58.89 (0-100) ±26.21	0.18	0.425
Eyes	74.73 (0-100) ±22.05	72.03 (0-100) ±20.9	76.67 (4-100) ±22.73	76.04 (10-100) ±21.7	74.09 (0-100) ±22.25	0.07	0.492
Eyebrows	69.33 (0-100) ±24.41	65.19 (0-100) ±24.91	72.37 (0-100) ±23.56	69.28 (15-100) ±22.43	69.35 (0-100) ±25.34	0.008	0.797
Nose	73.26 (0-100) ±24.89	69.8 (0-100) ±25.71	75.77 (5-100) ±24.09	72 (9-100) ±25.31	73.88 (0-100) ±24.73	0.02	0.825
Ears	54.72 (0-100) ±27.1	53.32 (0-100) ±25.46	55.51 (0-100) ±28.17	53.28 (0-100) ±26.72	55.43 (0-100) ±27.31	0.38	0.117
Lips	71.1 (0-100) ±23.5	66.1 (0-100) ±24.17	74.68 (9-100) ±22.45	71.94 (9-100) ±23.93	70.7 (0-100) ±23.33	0.001	0.209
Teeth	80.92 (0-100) ±21.14	79.44 (0-100) ±22.95	81.94 (19-100) ±19.87	80.18 (10-100) ±22.53	81.28 (0-100) ±24.49	0.24	0.288
Chin	62.63 (0-100) ±27.04	57.85 (0-100) ±26.78	65.89 (0-100) ±26.87	55.53 (0-100) ±29.41	66.08 (4-100) ±25.17	0.01	0.008
Shape of Head	65.42 (0-100) ±23.7	63.19 (5-100) ±24.3	66.82 (0-100) ±23.19	64.97 (15-100) ±22.81	65.64 (0-100) ±24.15	0.23	0.648

Table 2: Frequency and distribution of students' answers to section two questions related to ideals of facial attractiveness.

Statistical Analysis

The collected data were analysed by statistical software package SPSS 26 (SPSS Inc., Chicago, IL, USA). The normality test (Shapiro-Wilk test) was used to categorize the answers according to parametric and nonparametric data, T-test was used to show the difference between the two sexes and the two age groups (18-20 and >20). The level of significance was (p) set at ≤ 0.05 .

Results

Thirty-six forms were excluded from a total 349 because of missing or incorrect data. Among 313 respondents, 127 (40.6%) were males, and 186 (59.4%) were females, with an age range of (19-25) years. The answers to questions 6 and 8 were binary and not subjected to a normality test. values of the remaining answers were subjected to (Shapiro-Wilk) test [12].

Table 1 shows the mean value and the standard deviation of the students' responses to the questions regarding their own smile characteristics, with significance levels of

differences between the age and sex groups. The results reported almost no significant differences between the two groups' responses.

Considering the features of an attractive face, the students' scores were around 50-80 mm on VAS measurements and there were significant differences between males and females in most aspects, as shown in Table 2. The most significant differences related to the eyes, eyebrows, nose, lips, and chin ($p = 0.008, 0.01, 0.037, 0.001, \text{ and } 0.006$, respectively). The scale levels were higher for females than males for all facial structures. There were no significant differences for age group for any of the features of an attractive face except for the shape of the chin ($p = 0.004$).

Regarding questions on perceptions of their own smile, the majority of the responses were significantly related, including the responses or factors relating to hiding the teeth when taking selfie photos, as shown in Table 3. Similarly, strong associations were noted for the answers relevant to the different face structures, as shown in Table 4.

		Q4	Q5	Q9	Q10	Q11	Q14	Q20
Q2	Pearson Correlation	.333	.274	.018	.078	.216**	.230**	.256**
	Sig. (2-tailed)	.000	.000	.805	.178	.000	.000	.000
	N	307	302	184	299	296	306	307
Q4	Pearson Correlation		.235**	.033	.166**	.247**	.183**	.103
	Sig. (2-tailed)		.000	.650	.004	.000	.001	.069
	N		306	187	303	300	310	311
Q5	Pearson Correlation			.082	.043	.067	.218**	.283**
	Sig. (2-tailed)			.272	.455	.254	.000	.000
	N			183	298	295	305	306
Q9	Pearson Correlation				.298**	.182*	-.222**	-.135
	Sig. (2-tailed)				.000	.014	.002	.066
	N				187	181	186	187
Q10	Pearson Correlation					.220**	.029	.087
	Sig. (2-tailed)					.000	.615	.129
	N					293	303	303
Q11	Pearson Correlation						.177**	.246**
	Sig. (2-tailed)						.002	.000
	N						299	300
Q14	Pearson Correlation							.351**
	Sig. (2-tailed)							.000
	N							310

Table 3: Pearson's correlations for the parametric questions.

	Spearman correlation	Q3	Q7	Q12	Q13	Q15	Q16	Q17	Q18	Q19	Q21
Q1	Correlation Coefficient	.450**	.284**	.273**	.223**	.204**	.219**	.148**	.275**	.293**	.130*
	Sig. (2-tailed)	0.000	0.004	0.000	0.000	0.000	0.000	0.009	0.000	0.000	0.022
	N	311	99	312	309	312	313	311	310	313	308
Q3	Correlation Coefficient		0.150	0.037	.116*	0.045	.142*	0.107	.174**	.232**	0.067
	Sig. (2-tailed)		0.141	0.517	0.042	0.431	0.012	0.061	0.002	0.000	0.242
	N		98	310	307	310	311	309	308	311	307
Q7	Correlation Coefficient			0.044	0.036	-0.070	0.171	.247*	0.145	-.233*	0.037
	Sig. (2-tailed)			0.668	0.727	0.494	0.090	0.015	0.156	0.020	0.720
	N			98	98	98	99	97	97	99	98
Q12	Correlation Coefficient				.504**	.398**	.345**	.227**	.233**	.262**	.342**
	Sig. (2-tailed)				0.000	0.000	0.000	0.000	0.000	0.000	0.000
	N				309	311	312	310	309	312	307
Q13	Correlation Coefficient					.426**	.211**	.330**	.210**	.140*	.353**
	Sig. (2-tailed)					0.000	0.000	0.000	0.000	0.014	0.000
	N					308	309	307	306	309	304
Q15	Correlation Coefficient						.339**	.301**	.443**	.365**	.416**
	Sig. (2-tailed)						0.000	0.000	0.000	0.000	0.000
	N						312	310	309	312	307
Q16	Correlation Coefficient							.225**	.400**	.472**	.306**
	Sig. (2-tailed)							0.000	0.000	0.000	0.000
	N							311	310	313	308
Q17	Correlation Coefficient								.223**	0.084	.378**
	Sig. (2-tailed)								0.000	0.140	0.000
	N								308	311	306
Q18	Correlation Coefficient									.480**	.407**
	Sig. (2-tailed)									0.000	0.000
	N									310	306
Q19	Correlation Coefficient										.273**
	Sig. (2-tailed)										0.000
	N										308

Table 4: Spearman's correlations for the nonparametric questions.

Discussion

Esthetic has become of vital concern within the modern society and have caused an increased demand for esthetic treatments [13]. Facial esthetic has been associated with harmony between smile elements within the facial structures. Smile harmony is dependent on several factors, such as tooth colour, shape, size and position; lip position allowing tooth visibility and gingival colour, shape and amount of gingival

display [14]. Lack of proportion between these structures leads to lack of an attractive smile, potentially influencing self-esteem and damaging the person's psychological and physical health [15].

The results in Table 1 show that students scored around 50-70 on VAS levels. There were no significant differences between the age and sex groups, except for the question related to the look of their gingiva, where a significant

difference was found between males and females ($p = 0.036$). Although question No. 5 related to the appearance of the gums, without further questioning on the form and amount of gingival display, we deduce that females have more tendency than males toward excessive gingival display, which is one of today's marked esthetic problems. Tjan, et al. reported that approximately 7% of men and 14% of women have excess gingival display in full smile [16,17]. As the current questionnaire was conducted among dental students, it is reasonable to expect them to have some professional skill regarding their own smile evaluation; therefore, the non-significant differences between males and females in responses to all the remaining questions might be related to their knowledge and close age proximity.

Taking selfies with mobile cameras and sharing them on social media has become a phenomenon of modern life [18]. We added this question purposely to link their real actions with the preceding questions as a cause and effect relation. Except for their teeth shade, significant relations were found between showing their teeth during selfie taking and the factors related to smile expression like smile satisfaction, shape of lips, and evenness of teeth. This reflects that unmasking teeth during smiling is a multifactorial action and not limited to a single factor. About 46% of the students have hidden their teeth during selfie taking. The percentage is close to the result in a previous study by Silva et al. which that found 44% of the respondents would hide their smile with their hands [19]. In contrast, a study by Akarslan, et al. found 22% of smile hiding among 1014 patients [20].

However, the significant differences between male and female responses on the importance of certain facial features of an attractive face might be related to males having different visions compared to females of facial attractiveness or beauty, which could be based on overall or general features of the face. Females usually have different preferences for specific elements of beauty and assess each element individually and independently. Beauty appraisal can be mainly explained as a simple additive method of appraising isolated facial attributes. In a study by Mark, et al. on subjective and objective facial attractiveness ratings and gender differences in objective appraisals of female faces, female patients presenting to a dermatology office rated themselves as more attractive than did judges who viewed photographs of the subjects. Age and marital status were significant factors, and male judges rated attractiveness lower than female judges [21,22]. demographic variables, and how men versus women judge female facial attractiveness. **METHODS:** Sixty-five women (mean 42 years In the current study, male students rated all questions related to facial attractiveness lower than female students, and the majority of differences between males and females were significant.

The ideal of beauty is always changing; today it is more inclusive than ever; technology has put the power to define beauty in the hands of the people. Mobile phones allow people greater control of their image and include applications that come with filters used for fun, enhancing appearance, and entertainment. Regarding the two age groups, as there were no age gradations the two groups and the age range was so small, answers were similar between the two groups and showed no statistical differences ($P > 0.05$).

Another important relationship was recorded regarding responses on the importance of different face elements to facial esthetic, as the concept of esthetic is not related to a single face element, but rather depends on all facial structures. These structures are very interdependent in constituting a beautiful face.

We should remember that perception of self-beauty does not reflect the actual attributes of beauty. People usually underestimate their own beauty compared to the reality. In another meaning, people tend not to be satisfied with their own appearance and are eager to be better looking. That is why we see gross relationships between the second set of questions which are related to their objective views compared to the subjective assessment applied to their own smile in the first set of questions.

Conclusion

The results of this survey about the students' perceptions of the attractiveness of their own smiles and ideals of facial attractiveness showed non-significant differences in the students' responses between the two age groups or between males and females. However, answers to facial attractiveness questions mostly showed significant differences between male and female students but non-significant differences between the two age groups. The outcome of the current study indicates that male and female students have different outlooks toward facial beauty and attractiveness.

Ethical Compliance Section

- a. **Funding:** No finding devoted for this research.
- b. **Ethical Approval:** the research proposal was registered with the scientific committee of the college of dentistry and formal ethical approval was obtained after submitting the research proposal to the Ethics and Scientific Committees of the University of Sulaimani.
- c. **Conflict of interest:** The authors declare no conflict of interest with this study.
- d. **Consent form:** Not required N/A.

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