

Factors Affecting Patient's Satisfaction with the Appearance of Teeth, Gums and Treatments that Improve Aesthetics in Saudi Arabian Sub-Population

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ABSTRACT

BACKGROUND

Dental appearance influences the facial aesthetics that includes smile harmony, tooth colour, shape, arrangement and visibility.

METHODS

The current study aims to identify and evaluate factors affecting patients' satisfaction towards the appearance of teeth & gums; and dental treatments that facilitate facial and dental aesthetics. 300 patients were surveyed with a questionnaire containing close-ended questions on their gender, age, education, tooth appearance, orthodontic and teeth whitening treatments, tooth & gum-related problems and satisfaction levels towards dental and facial aesthetics. Chi-square test and logistic regression analysis were performed on the collected data.

RESULTS

A majority (76 %) of the study population desired to undergo bleaching treatment for teeth whitening. 70 % of the respondents also wish for composites, while only 40 % desired orthodontic appliances. Satisfaction with dental appearance is significantly found to affect facial appearance. Also, similar to dental appearance, there is a statistically significant relation between the desire for tooth bleaching, orthodontic appliance, and composites and satisfaction towards facial appearance. Satisfaction with gingival appearance, tooth-colour, and satisfaction with smile appearance are found to affect the satisfaction towards facial appearance.

CONCLUSIONS

Tooth colour was observed to be a crucial aspect that affects the overall dental aesthetics and satisfaction levels of the participants. It was realized from this investigation that dental care, better hygiene and treatments for improving dental aesthetics are relevant for patients' satisfaction regarding overall facial appearance and aesthetics.

KEY WORDS

Dental Aesthetics, Facial Aesthetics, Orthodontic Treatment, Tooth Whitening

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BACKGROUND

Dental appearance affects the overall facial aesthetics including smile harmony, tooth colour, shape, arrangement and visibility.¹ Facial aesthetics is important for individuals since the lack of attractive face can negatively impact social interactions and psychological well-being of the individual.² The need to acquire attractive features of human appearance in modern society has increased the demand for aesthetic treatments. People are observed to associate their satisfaction levels towards dental appearance with tooth colour and position. However, there have been differences of opinion among populations about how they perceive dental appearance and its significance.³ People with yellow or dark colour teeth are most often considered to be less attractive, to say the least. The variables that are found to affect tooth coloration are aging, dietary patterns, food intake and oral care hygiene.⁴ The impact of dental aesthetics including teeth colour and the overall quality of life has shifted the focus from dental caries to teeth-whitening and orthodontic treatments.⁵

Considering the relevance of dental aesthetics, the importance of conducting research that evaluates the factors affecting the need for dental aesthetics and its impact on patient satisfaction is essential. Further, most studies are focused on dental appearance alone,⁶⁻⁸ while the current study emphasizes the need to study its impact on facial appearance and the level of satisfaction. The current study, therefore, is targeted to evaluate the satisfaction level of patients towards the appearance of their teeth & gums and aesthetic dental treatments. Moreover, the study includes highlighting the experience of tooth pain, tooth trauma and gingival bleeding among patients.

METHODS

The current research adopts a cross-sectional design where data about patient's dental and facial appearance was collected from patients in out-patient department, college of dentistry, before the conduct of this study, ethical approval was obtained from the scientific research committee. A convenient sample of 300 patients willing to participate in the study was recruited.

The study comprised subjects of both genders ranging from 18 to 50 years old. The period of this study was five months from April 2019 to August 2019. A close-ended questionnaire containing 21 questions related to demographic data and patient's satisfaction level regarding their facial appearance, teeth, gums and treatment were imposed. The internal consistency of the questionnaire was assessed using Cronbach's alpha that was found to be good with a coefficient of 0.8. The questionnaire was translated into the local language (Arabic) for easy understanding and was distributed online as e-questionnaires. The data obtained was analyzed using the Statistical Software for Social Sciences (SPSS) version 22. Pearson chi-square test with 95 % confidence Interval and the level of significance as a P-value < 0.05 was performed to achieve the research objectives.

RESULTS

Demographic Data	No	%
Gender	Male	34
	Female	266
Age in Years	18 - 25	128
	26 - 30	83
	31 - 40	59
	41 - 50	30
Education	Basic	19
	Secondary	60
	University	221

Table 1. Frequency Distribution of Subjects Based on Their Demographic Profile

Dental Satisfaction	N (%)
Satisfaction with dental appearance	166 (55.3 %)
Satisfaction with tooth colour	151 (50.4 %)
Perception of dental crowding	79 (26.3 %)
Perception of dental alignment	176 (58.7 %)
Perception of dental protrusion	100 (33.3 %)
Wish for orthodontic appliances	122 (40.7 %)
Wish for tooth bleaching	228 (76.0 %)
Wish for composites	212 (70.7 %)

Table 2. Study Participants' Frequency Distribution Based on Satisfaction Regarding Dental Appearance

General Appearance Perception	N	%
Facial satisfaction	Strongly dissatisfied	14
	Dissatisfied	11
	Satisfied	139
	Strongly satisfied	136
Perception of attractiveness	No	8
	To some extent	145
	Yes	147
Concerned with others' opinions regarding dental appearance	No	106
	Sometimes	138
	Always	56
Satisfaction with gingival colour	Strongly dissatisfied	44
	Dissatisfied	32
	Satisfied	127
	Strongly satisfied	97
Satisfaction with gingival appearance	Strongly dissatisfied	39
	Dissatisfied	25
	Satisfied	138
	Strongly satisfied	98
Satisfaction with smile appearance	Strongly dissatisfied	67
	Dissatisfied	61
	Satisfied	110
	Strongly satisfied	62

Table 3. Study Participants' Frequency Distribution Based on Perception Regarding General Facial Appearance

Considering the demographic data, a majority (88.7 %) of the respondents were females, and the remaining 11.3 % were males. 42.7 % of the respondents were of the age group of 18 - 25 years. 27.7 % of them were between 26 - 30 years of age, 19.7 % were between 31 - 40 years of age, and 10 % were of 41 to 50 years of age. Most of the respondents had acquired a higher level of education, i.e., at the university level (Table 1).

A majority (76 %) of the study population desired to undergo bleaching treatment for teeth whitening. 70 % of the respondents also wish for composites, while 40 % desired orthodontic appliances. It was understood from the analysis, that more than half of the population was satisfied with their tooth colour and dental appearance (Table 2).

When considering general facial appearance, 46.3 % were satisfied, and 45.6 % of them were highly satisfied with their facial appearance. A majority (49 %) of the participants perceived themselves to be attractive, though 46 % of them considered the opinions of others towards their dental appearance. 42.3 % of the participants were satisfied with

their gingival colour, and 46 % were satisfied with their gingival appearance. While 36 % of the respondents were satisfied with their smile appearance, 22 % of the population was highly dissatisfied with their smile (Table 3).

Predictors		Satisfaction with Dental Appearance				P-Value
		Not Satisfied		Satisfied		
		No	%	No	%	
Gender	Male	14	41.2 %	20	58.8 %	.664
	Female	120	45.1 %	146	54.9 %	
Age in years	18 - 25	48	37.5 %	80	62.5 %	.146
	26 - 30	39	47.0 %	44	53.0 %	
	31 - 40	32	54.2 %	27	45.8 %	
	41 - 50	15	50.0 %	15	50.0 %	
Education	Basic	9	47.4 %	10	52.6 %	.438
	Secondary	31	51.7 %	29	48.3 %	
	University	94	42.5 %	127	57.5 %	
Performed tooth bleaching	No	105	45.1 %	128	54.9 %	.796
	Yes	29	43.3 %	38	56.7 %	
Used or is using orthodontic appliances	No	88	44.4 %	110	55.6 %	.914
	Yes	46	45.1 %	56	54.9 %	
Wish for orthodontic appliances	No	60	33.7 %	118	66.3 %	.001*
	Yes	74	60.7 %	48	39.3 %	
Wish for tooth bleaching	No	25	34.7 %	47	65.3 %	.049*
	Yes	109	47.8 %	119	52.2 %	
Wish for composites	No	22	25.0 %	66	75.0 %	.001*
	Yes	112	52.8 %	100	47.2 %	
Gingival bleeding	No	66	36.5 %	115	63.5 %	.001*
	Yes	68	57.1 %	51	42.9 %	
Table 4. Distribution of Study Participants' Satisfaction Regarding Dental Appearance by Their Bio-Demographic Factors						
P: Pearson X ² test; * P < 0.05 (significant)						

Predictors		Facial Satisfaction				P-Value
		Not Satisfied		Satisfied		
		No	%	No	%	
Gender	Male	2	5.9 %	32	94.1 %	.583
	Female	23	8.6 %	243	91.4 %	
Age in years	18 - 25	8	6.3 %	120	93.8 %	.325
	26 - 30	10	12.0 %	73	88.0 %	
	31 - 40	6	10.2 %	53	89.8 %	
	41 - 50	1	3.3 %	29	96.7 %	
Education	Basic	0	0.0 %	19	100.0 %	.271
	Secondary	7	11.7 %	53	88.3 %	
	University	18	8.1 %	203	91.9 %	
Satisfaction with dental appearance	Not satisfied	20	14.9 %	114	85.1 %	.001*
	Satisfied	5	3.0 %	161	97.0 %	
Performed tooth bleaching	No	22	9.4 %	211	90.6 %	.195
	Yes	3	4.5 %	64	95.5 %	
Wish for orthodontic appliances	No	10	5.6 %	168	94.4 %	.040*
	Yes	15	12.3 %	107	87.7 %	
Wish for tooth bleaching	No	2	2.8 %	70	97.2 %	.048*
	Yes	23	10.1 %	205	89.9 %	
Gingival bleeding	No	16	8.8 %	165	91.2 %	.695
	Yes	9	7.6 %	110	92.4 %	
Satisfaction with gingival colour	Strongly Dissatisfied	9	20.5 %	35	79.5 %	.003*#
	Dissatisfied	5	15.6 %	27	84.4 %	
	Satisfied	6	4.7 %	121	95.3 %	
	Strongly Satisfied	5	5.2 %	92	94.8 %	
Satisfaction with gingival appearance	Strongly Dissatisfied	9	23.1 %	30	76.9 %	.002*#
	Dissatisfied	3	12.0 %	22	88.0 %	
	Satisfied	6	4.3 %	132	95.7 %	
	Strongly Satisfied	7	7.1 %	91	92.9 %	
Satisfaction with smile appearance	Strongly Dissatisfied	15	22.4 %	52	77.6 %	.001*#
	Dissatisfied	6	9.8 %	55	90.2 %	
	Satisfied	3	2.7 %	107	97.3 %	
	Strongly Satisfied	1	1.6 %	61	98.4 %	

Table 5. Distribution of Study Participants' Facial Satisfaction by Their Bio-Demographic Factors

P: Exact probability test, # Chi-square for linear trend
* P < 0.05 (significant)

Related to dental care, it was observed from the analysis that 22 % of the participants had performed tooth bleaching in their past, and 34 % of the respondents had or were using orthodontic appliances for better dental aesthetics, as shown in figure 1. As depicted in figure 2, it is inferred that 54 % of the respondents have encountered tooth pain in the last six months, 39.7 % of the people have had gingival bleeding, and 36.3 % of them had faced dental trauma. No significant association between gender, age, and education; and satisfaction with dental appearance was found. A statistically significant relationship between the desire for tooth bleaching, orthodontic appliance, and composites with the level of satisfaction towards dental appearance was observed (Table 4).

Satisfaction with dental appearance was significantly found to affect overall facial satisfaction. Also, similar to dental appearance, there was a statistically significant relation between the desire for tooth bleaching, orthodontic appliance, and composites and satisfaction towards facial appearance. Satisfaction with gingival appearance, color, and satisfaction with smile appearance are also found to affect the satisfaction towards facial appearance (Table 5).

DISCUSSION

As per the results of the current study, it is well established that dental aesthetics including tooth colour and smile are important variables that affect the overall satisfaction level of patients towards their dental and facial appearances. The study has arrived at the conclusion that most of the population desires bleaching for tooth whitening (76 %), composites (70 %), and orthodontic appliances (40 %), for better aesthetics as they were found not satisfied with their existing teeth colour and dental appearance.

A study by Mansour et al.⁹ matches with the results of current study as they too established that several patients, both males and females, were found not satisfied with their teeth appearance, colour and spacing between teeth. They specified in their research that helping patient's in satisfaction towards their dental hygiene and that dentition is one of the pre-determined goals in the dental care domain. To understand the satisfaction level of patients, the researchers conducted a quantitative study wherein questionnaires were distributed among 254 patients at Qassim University in Saudi Arabia. The questionnaires aimed to extract data on the factors affecting patient satisfaction levels and on the treatments needed for improving dental aesthetics. In the study, no impact difference in tooth appearance has been found between variables of gender and age. While 63 % of the respondents were satisfied with their dental appearance, 68 % were not happy about their teeth colour. While considering the desire for dental treatments, the study found that age is a crucial factor as older people vis-a-vis the younger ones were observed of being desirous for most common treatments such as orthodontic, teeth-whitening, fixing porcelain crowns and gum treatment. Nevertheless, in the current study no statistically significant difference was found with respect to the level of satisfaction based on age comparison.

In the present study, a majority of the population was found to be satisfied with their facial appearance (46.3 %), dental appearance (55.3 %) and smile aesthetics (36.7 %). While comparing with the relevant literature, Alamassi et al.,¹⁰ studied the satisfaction among adult patients in Riyadh, Saudi Arabia, towards their dental aesthetics especially smile harmony. The average age of the patients studied was 39 years. Adopting a survey method comprising of feedback on five questions regarding evaluation of the factors affecting smile, the researchers used a visual analogue scale to analyse the opinions. Professional dentists were also involved in the study. By way of using photographs and applying the same scale, the smiles of patients were rated. As per the analysis, the dentists rated the smiles at 4.95 mark whereas the patient's self-analyses scored their smiles at 6.47 mark. Evidently it shows that the patients were satisfied enough with their smile and aesthetics that included overall smile, colour, shape, appearance of gum and teeth alignment. The patients who regularly visited the dental clinics for non-aesthetic reasons were also observed to be quite satisfied. While considering gender, females were observed to be less satisfied with their smiles, in comparison to male patients / respondents. Al-Zarea¹¹ studied, by way of seeking their opinions through a quantitative questionnaire, the desire of people for undergoing treatment for enhancing their dental aesthetics. The study also used the visual analogue scale and revealed, through results, that most of the study respondents were not satisfied with appearance of their teeth and colour. The study participants were found being keen for aesthetic treatments of their teeth: for alignment, colour, shape and dentures. These findings were similar to those of the present study wherein the majority of subjects desired to undergo various treatments such as bleaching and orthodontic treatment for aesthetic purposes.

As per the current study, more than half of the population studied was satisfied with their teeth colour (50.4 % of them) and dental appearance (55.3 %). As compared with the previous literature, Shah et al.,¹² showed a similar finding wherein most of the population was moderately satisfied with their teeth colour and dental appearance. The researchers used a questionnaire to identify the satisfaction levels of patients towards dental cosmetic elements and oral treatments for better aesthetics, especially for maxillary anterior teeth restorations. For individuals who underwent porcelain jacket crown and removable partial denture treatments were observed to be less satisfactory but demanding for the need for tooth whitening.

The results of Nayak and Jasmin Winnier¹³ were also in accord with the current study, wherein the researchers while surveying school children aimed to assess the association of dental aesthetics with regard to self-satisfaction and dental appearance. Most of the participants were found happy and satisfied with their dental looks though their satisfaction seemed affected by their dental appearance. A significant correlation between dental appearance, dental aesthetics and also orthodontic treatment was observed by the researchers.

In contrast to the results of the current study, Shah et al.,¹² stated that age and gender were the factors that affected the satisfaction levels since females were observed to be more dissatisfied with their teeth colour and unaesthetic teeth fillings.

Another study by Akarslan et al.,¹⁴ produced conflicting results in terms of age and gender, though similarity found in results related to satisfaction levels with dental appearance. The researchers evaluated the determinants affecting the satisfaction of patients towards their dental aesthetics and treatments and thereby emphasised on improving the overall aesthetics. A survey approach was adopted where patients in a dental school of Turkey were approached as respondents. The study found that factors including gender, age and education level had a noticeable impact on the satisfaction level of the participants. These factors were also found affecting the probability for the patients to undergo dental aesthetic treatments. However, the current study has found no statistically significant association between gender & age and education with regard to satisfaction towards dental and facial appearances. The differences in the findings in various studies may be attributed to the difference in the study design, sample size and study population and study settings.

The current research is supported by another study performed by Goulart et al.¹³ who found that age, gender and income were having no decisive impact on satisfaction towards dental appearance.

Strajnic et al.¹⁵ evaluated the impact of demographic factors and teeth appearance on satisfaction levels and the need for improvement in dental aesthetics among people. Also, using a quantitative survey, the study found that gender had no significant impact on dental appearance and aesthetics. However, the level of education was observed to be affecting the perceptions of the population with higher education among people resulting in better satisfaction levels as compared to those with lower levels of education, in contrast to the findings of present study wherein a statistically non-significant ($p = 0.27$) difference is found regarding the dental-satisfaction level based on education.

A significant co-relation between the desire for tooth bleaching, orthodontic appliance & composites and satisfaction towards dental appearance was established in the current study. Also similar to the current results, Akarslan et al.¹⁴ found that a majority of the respondents were not satisfied with their teeth colour and dental appearance. The patients dissatisfied with their appearance also underwent aesthetic restoration-treatment and most of them desired teeth whitening treatment. Goulart et al.¹³ researched towards understanding of any association, if existed, between dental aesthetics and quality of life; and found through a survey approach that most of the population sought public dental services and treatments, which furthermore affected their quality of life. Colour of the teeth was observed to be a significant factor that affected the satisfaction levels of people and their perceptions towards the quality of life. No such conclusions were drawn with respect to age, gender and income.

Lajnert et al.¹⁶ carried out a research on developing a scale for measuring the satisfaction of patients towards smile aesthetics. The researchers used the means of self-perceived smile aesthetics to develop the scale and distributed the same among 671 study participants so as to measure its effectiveness. The study found that the satisfaction towards smile aesthetics increases with a successful teeth whitening procedure, higher visibility of teeth and the absence of gingivitis or damaged teeth in the anterior region of the oral cavity

CONCLUSIONS

This cross-sectional study has provided conclusive results on the role of teeth whitening or bleaching and orthodontic appliance in usage for increasing patients' satisfaction level towards their dental aesthetics. Several patients surveyed under the study were found to be dissatisfied and thus desired the improvement of dental aesthetics. It is, therefore, pertinent for the dentists to consider the studied aspect as crucial for their practice in view of increasing demand for dental aesthetics as it is an integral part of dental care. The current study has also spelt out the relevance and the need for knowledge about preventing oral health problems. It will not only avoid tooth and gum-related issues but will also increase the satisfaction of people towards dental appearance. Thus, in consideration and consonance hereof, it is essential to provide awareness among people on dental aesthetics and healthcare practices and the current study explicitly deciphers that it is quite imperative for the dentists / professionals to be always updated and ready for meeting the ever increasing demand of society with regard to the overall oral health care in its totality including dental / facial aesthetics.

Data sharing statement provided by the authors is available with the full text of this article at jemds.com.

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