



Satisfaction with Dental Appearance and Attitude toward improving Dental Esthetics among Patients attending a Dental Teaching Center

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ABSTRACT

Aim: The aim of this study was to evaluate the factors influencing the satisfaction of dental appearance and attitude toward treatments to improve dental esthetics among patients attending a dental teaching center.

Methods: A questionnaire was used to collect data of four background variables among 450 patients attended a dental teaching center in the city of Irbid in Jordan. The questionnaire enclosed self-reported questions about the appearance of anterior teeth, received esthetic treatment and desired treatment for improving esthetics. Descriptive, multiple logistic regression and Chi-square tests were used for data analysis ($p \leq 0.05$).

Results: The 450 participants consisted of (66.2%) male and (33.8%) female. Of these, 69.3% were satisfied with their dental appearance and 58.0% with the color of their teeth. Esthetic restorations were the most received treatment (39.8%) and whitening of teeth was the most desired treatment (55.3%). The patients' satisfaction with dental appearance was influenced by teeth color, crowding and receiving whitening ($p < 0.05$, $r = 0.561$, $r^2 = 0.315$). The most desired esthetic treatments influenced by the satisfaction with dental appearance were esthetic restorations and orthodontics ($p < 0.05$, $r = 0.223$, $r^2 = 0.05$). Significantly more female reported having esthetic restorations and orthodontics ($p = 0.008$, 0.000) and desired to have orthodontic, crowns or veneers and esthetic restorations ($p = 0.000$, 0.015 , 0.028).

Conclusion: Satisfaction with dental appearance was affected by teeth color, feeling teeth are crowded, desire for esthetic restorations and orthodontic treatment. A high percentage of patients were not satisfied with the color of their teeth.

Clinical Significance: Recognizing the factors that affect patients' satisfaction with their present dental appearance and

attitude toward treatments to improve dental esthetic can guide clinicians to strategies to improve esthetics.

Keywords: Cross-sectional study, Dental teaching, Esthetics, Patient.

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INTRODUCTION

The concept of esthetics in dentistry is not a new issue. Studies have shown that esthetic considerations are one of the primary reasons to request dental treatment.^{1,2} However, as the increase in the demand of tooth whitening services and cosmetic dentistry and as the media in general emphasize the effect of a pleasing smile,³ esthetics has become a major concern for both the patient and the dentist.⁴

Discrepancy between the dentist's and the patient's perception of esthetic needs, which in some cases may result in an esthetic appearance lower than the patient's expectations, has been found.^{5,6} Thus, the attitude of the patient toward dental esthetics and preferences should be recognized in any treatment plan of the dentist in order to reach the expectations of his or her patient and to reduce the discrepancy between the dentist' assessment and the patient' perception of esthetic needs.⁵

Sociodemographic factors such as gender, age and educational level have an impact on the patient's perception of dental esthetics.⁷ Females are reported to

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be more sensitive than males regarding the appearance of teeth and the importance of teeth appearance decreases with aging; also patients with limited education had a greater preference for whiter teeth than patients with a high level of education.⁸ Perceived dental treatments on anterior teeth also have an impact on dental esthetics. It has been also shown that esthetic restorative treatment has a positive effect on the patients' self-esteem,⁹ and patients' satisfaction with their dentition has an impact on their daily living and quality of life.¹⁰ Therefore, it is of vital importance for the dentist to be able to define what exactly the patient requires and what actually he or she needs relative to the esthetic restorative treatment.

The differences in the perception of a beautiful smile not only exist among individuals but also between cultures.¹¹ Therefore, the professional opinion may not be consistent with the perception and expectations of the subject.⁵ Information has been published about patient satisfaction with dental esthetic and attitude toward improvement of esthetics of different populations.^{4,12-16} Recognizing the perception of the patients and their satisfaction with the present dental appearance and desired treatments to improve dental esthetic can guide clinicians to strategies to improve esthetics. However, there is currently little information on the patients' perception of their dental esthetics and attitude toward improvement of dental esthetics among Jordanian patients.

Thus, the aims of this study were to evaluate the factors influencing patients' satisfaction with dental appearance, self-reported previously received dental treatments on anterior teeth and the patient's attitude toward dental treatment for improvement of esthetic among patients who reported to the Department of Conservative Dentistry at a dental teaching center that belongs to the Faculty of Dentistry.

METHODS

A cross-sectional survey to determine attitude toward dental appearance and treatment for improving dental esthetics among patients who attended the Department of Conservative Dentistry at a dental teaching center that belongs to the Faculty of Dentistry and located in the city of Irbid, a major city in the north of Jordan, was conducted. All included patients were adults older than 18 years, had no clear evidence of cognitive disturbances and did not receive dental treatment in the previous 6 months, and have no missing anterior teeth. All the patients who reported to the department of conservative dentistry in the college of dentistry, Irbid, over a period of 2 months with the above inclusion criteria were included in the study after they were informed of the nature of the investigation and gave their consent.

A structured, interviewer-guided questionnaire was used for data collection (Table 1). The questionnaire

Table 1: Study questionnaire

<i>Gender</i>	<i>Male</i>	<i>Female</i>
Education level:	Primary school	High school
	University degree	Postgraduate degree
Income:	Less than 250 JD	250–500 JD
	500–1000 JD	More than 1000 JD
Questions about patient satisfaction with dental appearance		
1. Are you satisfied with your anterior teeth appearance?	Yes	No
2. Are you satisfied with the color of your anterior teeth?	Yes	No
3. Do you feel your anterior teeth are crowded?	Yes	No
4. Do you feel your anterior teeth are poorly aligned?	Yes	No
5. Do you have dental caries in your anterior teeth?	Yes	No
6. Do you have non esthetic restorations in your anterior teeth?	Yes	No
7. Are you hiding your teeth during smiling?	Yes	No
8. Did you previously receive any of the following treatment(s) on your anterior teeth?		
• Whitening of teeth	Yes	No
• Orthodontic treatment	Yes	No
• Crowns or veneers	Yes	No
• Esthetic restorations	Yes	No
Questions about patient's attitude toward dental treatment for improvement of esthetics		
• Whitening of teeth	Yes	No
• Orthodontic treatment	Yes	No
• Crowns or veneers	Yes	No
• Esthetic restorations	Yes	No

consisted of questions on socio-demographic items as well as questions on each patient's satisfaction with his/her dental appearance, received and desired dental treatment for improvement of esthetics. A single trained investigator recorded answers from the patients. A pilot study was carried out with 20 patients to check the feasibility of the study, and the questions were modified accordingly. These subjects were excluded from the final study.

The results were tabulated and analyzed using the Statistical Package for Social Sciences (SPSS) for Windows (version 14.0; SPSS Inc, Chicago, IL, USA). Descriptive statistics such as frequency and percentages for categorical variables were determined. Factors that influenced patients' satisfaction with dental appearance were determined and variables selected for inclusion in the logistic regression analysis model were determined according to the best model fit. Linear regression with stepwise correlation was used to analyze the correlation between the dependent variable (satisfaction with dental appearance) and the independent variables (satisfaction with teeth color, anterior teeth crowding, anterior teeth alignment, presence of dental caries, presence of nonesthetic restorations on anterior teeth, and if the participant received treatment such as orthodontic, esthetic restorations, crowns or veneers or whitening), in addition to the correlation between hiding teeth during smile and satisfaction with dental appearance. Linear regression was also used to analyze the correlation between the dependent variable and the participants desire to receive specific treatment to improve the esthetic of anterior teeth. The Chi-square test was used to assess the significant effect of each demographic variable and satisfaction with dental esthetic and to compare the male and female participants' responses to the survey questions. The level of significance was set at ≤ 0.05 .

RESULTS

The demographic background distribution of the patients and their response to the survey questions are summarized in Tables 2 and 3. Four hundred fifty patients participated in this study, 66.2% of whom were male and 33.8% were female. Age ranged from 18 to 56 years with a mean age of 27.5 ± 7.4 years. The Chi-square test results showed that there was no significant impact of any of the demographic variables on the patients' general satisfaction with dental appearance (Table 2).

About 69.3% of the patients were satisfied with their dental appearance and 58% of the subjects were satisfied with their teeth color. Regression analysis showed that patients' general dissatisfaction with dental appearance was influenced mostly by anterior teeth color and

Table 2: Subjects' demographic distribution and p-values of satisfaction with dental appearance

Subjects' demographic background	No (%)	Yes	No	p
	N=450	No (%)	No (%)	
Gender				
Male	298 (66.2)	212 (67.9)	86 (62.3)	0.244
Female	152 (33.8)	100 (32.1)	52 (37.7)	
Age				
18–20	79 (17.6)	61 (19.6)	18 (13.0)	0.195
21–29	256 (56.9)	176 (56.4)	80 (58.0)	
≥ 30 years	115 (25.6)	75 (24.0)	40 (29.0)	
Educational Level				
Primary	12 (2.7)	5 (1.6)	7 (5.1)	0.165
High	101 (22.4)	68 (21.8)	33 (23.9)	
University	293 (65.1)	209 (67.0)	84 (60.9)	
Postgraduate	44 (9.8)	30 (9.6)	14 (10.1)	
Income				
<240	206 (45.9)	147 (47.1)	59 (43.1)	0.710
250-500	118 (26.3)	79 (25.3)	39 (28.5)	
500-1000	77 (17.1)	55 (17.6)	22 (16.1)	
>1000	49 (10.8)	31 (9.9)	18 (12.4)	

anterior teeth crowding ($p < 0.05$, $r = 0.561$, $r^2 = 0.315$). It was found also that the patients' general dissatisfaction is highly correlated with previously receiving whitening procedures and hiding one's teeth during smiling. However, it should be addressed that hiding teeth during smiling is a consequence of dissatisfaction, not a cause of it. Regression analysis also showed that the mostly desired esthetic treatments influenced by the general dissatisfaction with dental appearance were esthetic restorations and orthodontic treatment ($p < 0.05$, $r = 0.223$, $r^2 = 0.05$) (Table 3).

Results of the Chi-square test showed that significantly more females reported having nonesthetic restorations in their anterior teeth ($p = 0.012$). Furthermore, results showed that significantly more female patients received esthetic restorations and orthodontic treatment than male patients ($p = 0.011$, 0.001 respectively). Significantly more females than males desired to have orthodontic treatment, crowns or veneers and esthetic restorations ($p = 0.001$, 0.017 , 0.035 respectively), (Table 4).

DISCUSSION

Patients' satisfaction with their dental appearance has been of a major concern for the dentists, as it is the key for success for any treatment plan especially when it includes the esthetic region. In this study, the overall rating of satisfaction with dental appearance was 69.3%. Compared with our results, previous studies showed that satisfaction with dental appearance was lower in some populations, for example 57.3% in Turkey,¹⁵ 47.2% in Malaysia¹⁶ and 50% in Saudi Arabia,¹⁷ while it was closer

Table 3: Percentages and p-values of satisfaction and dissatisfaction and received and desired esthetic treatments in the total sample

Variable	Response n (%)		95% CI	p
	No	Yes		
Satisfaction with teeth color	189 (42)	261 (58)	0.376–0.390	0.000*
Feeling teeth are crowded	308 (68.4)	142 (31.6)	0.203–0.390	0.000*
Feeling teeth are poorly aligned	262 (58.2)	188 (41.8)	–0.030 to 0.088	0.182
Having dental caries	318 (70.7)	132 (29.3)	–0.080 to 0.015	0.120
Having non esthetic restoration	329 (73.1)	121 (26.9)	0.068–.076	0.152
Hiding teeth during smiling	320 (71.1)	130 (28.9)	0.216–0.041	0.000**
Received esthetic restorations	271 (60.2)	179 (39.8)	–0.036 to 0.083	0.813
Received orthodontic treatment	330 (73.3)	120 (26.7)	1.438–1.587	0.519
Received crowns or veneers	332 (73.8)	118 (26.2)	–0.652 to 0.030	0.925
Received whitening of teeth	304 (67.6)	146 (32.4)	0.061–0.216	0.002*
Desire for whitening	201 (44.7)	249 (55.3)	–0.119 to 0.075	0.293
Desire for orthodontic treatment	288 (64)	162 (36)	0.238–0.700	0.019*
Desire for crowns or veneers	300 (66.7)	150 (33.3)	–0.805 to 0.280	0.843
Desire for esthetic restorations	282 (62.7)	168 (37.3)	0.286–0.460	0.004*

95% CI: 95% confidence interval; *Factor with a significant effect on general satisfaction with dental appearance ($p \leq 0.05$); **Hiding teeth during smiling is a consequence of dissatisfaction not a cause of it

Table 4: Percentages and p-values of satisfaction and dissatisfaction and received and desired esthetic treatments among males and females

Variable	Response n (%)				OR [†] (95% CI)	p
	Male		Female			
	No	Yes	No	Yes		
Satisfaction with dental appearance	86 (28.9)	212 (71.1)	52 34.2	100 65.8	1.282 (0.844–1.948)	0.244
Satisfaction with teeth color	116 (38.9)	182 61.1	73 48	79 52	0.977 (0.977–2.151)	0.064
Feeling teeth are crowded	211 70.8	87 29.2	97 63.8	55 36.2	0.739 (0.489–1.118)	0.152
Feeling teeth are poorly aligned	174 58.4	124 41.6	88 57.9	64 42.1	0.980 (0.660–1.456)	0.920
Having dental caries	215 72.1	83 27.9	103 67.8	49 32.2	0.825 (0.540–1.260)	0.373
Having non esthetic restoration	229 76.8	69 23.2	100 65.8	52 34.2	0.579 (0.377–0.891)	0.012*
Hiding teeth during smiling	220 73.8	78 26.2	100 65.8	52 34.2	0.682 (0.447–1.041)	0.075**
Received esthetic restorations	192 64.4	106 35.6	79 52	73 48	0.597 (0.402–0.889)	0.011*
Received orthodontic treatment	234 78.5	64 21.5	96 63.2	56 36.8	0.469 (0.305–0.721)	0.001*
Received crowns or veneers	227 76.2	71 23.8	105 69.1	47 30.9	0.699 (0.452–1.080)	0.106
Received whitening of teeth	209 70.1	89 29.9	95 62.5	57 37.5	0.710 (0.470–1.071)	0.102
Desire for whitening	139 46.6	159 53.4	62 (40.8)	90 59.2	0.788 (0.531–1.170)	0.237
Desire for orthodontic treatment	229 76.8	69 23.2	59 38.8	93 61.2	0.475 (0.311–0.725)	0.001*
Desire for crowns or veneers	210 70.5	88 29.5	90 59.2	62 40.8	0.608 (0.404–0.915)	0.017*
Desire for esthetic restorations	197 66.1	101 33.9	85 55.9	67 44.1	0.650 (0.436–0.970)	0.035*

The percentages were calculated relative to the total number of male and female subjects; 95% CI: 95% confidence interval; *Factor with a significant effect on general satisfaction with dental appearance ($p \leq 0.05$); **Hiding teeth during smiling is a consequence of dissatisfaction not a cause of it; [†]Odds ratio

to other population, 76% in UK.¹⁸ This may be related to the fact that the perception of dental appearance may be affected by individual and cultural factors,^{7,11} and even it can be changed in the same population over time.¹⁹

Only 58% of the patients were satisfied with the color of their anterior teeth. This may be related to the findings that individuals may prefer white and shiny teeth rather than natural appearance, and patients tend to rate the shade of their teeth darker than the professional or the actual shade,²⁰ which should be taken into consideration when selecting tooth shade for treatment purposes. The results of this study also showed that the patients' general satisfaction with dental appearance was influenced significantly by anterior teeth color ($p < 0.05$, $r = 0.561$, $r^2 = 0.315$). The correlation illustrated in this study is consistent with that of previous studies that tooth color is a very important contributor in the general satisfaction with dental appearance.^{4,14,16} In addition, the patients' general satisfaction with dental appearance was highly correlated with previously receiving whitening procedures, and whitening of teeth was the most desired treatment to improve dental esthetics, which is consistent with the findings of other studies.^{4,16} This may be due to the increased interest in tooth whitening as a conservative approach for improvement of dental esthetics and the increase in their popularity either through professionally applied products or through over-the-counter products.²¹

The most desired treatment to improve esthetics was tooth whitening, but the esthetic treatment with the significant effect was esthetic restorations and orthodontic treatment. This may be related to the findings that factors which significantly affected general satisfaction with dental esthetics were tooth color and crowding. Previous studies found that feeling of presence of poor tooth alignment was associated with patients satisfaction.^{4,17} In this study, anterior tooth crowding was significantly correlated with the general dissatisfaction with dental esthetics. This may be because tooth crowding is easily noticed by patients and can lead to unattractive appearance. It was also found that being embarrassed and hiding teeth during smiling was also significantly connected with patients' satisfaction, which is considered as a drawback of dissatisfaction with dental appearance, which was also noticed by previous studies.^{4,13,15}

Data from previous studies regarding the correlation between sociodemographic factors and patients' perception of dental esthetics were contradictory.¹⁶ While patients with a high level of education in some studies were found to be more satisfied with their dental esthetics,¹⁴ other studies did not find any correlation between the two factors, which is in agreement with

the findings of this study.¹⁵ Patients' satisfaction with dental esthetics was found to be age independent, which is also consistent with the findings of some previous studies.^{7,16}

The correlation between gender and dental satisfaction was not clear in the previous studies and requires further exploration. When the sociodemographic factors were evaluated separately, it was found that there was no significant impact of patients' gender on their general satisfaction with dental appearance. However, upon comparing the responses of male and female patients with the survey questions, female patients reported more dissatisfaction with dental esthetics, but there were no statistically significant differences. This finding is in agreement with Akarslan et al¹⁵ who found that although females were more dissatisfied with dental appearance than males, the difference was not significant. On the contrary, female patients significantly reported having more nonesthetic restorations and receiving more esthetic restorations. This may be because females are more critical in judging their dental appearance²² and men and women evaluate their dental appearance using different esthetic parameters.²³ In addition, the desire for having esthetic treatment was significantly more in female than male patients, which reflects the increase in concerns and demands of female patients for dental esthetics. The finding of this study is in agreement with Tin-Oo et al¹⁶ who found that women expressed greater dissatisfaction with dental appearance and tooth color than men.

This study was a cross-sectional study that used a single unit measurement to evaluate patients' general perception of dental appearance. Using this single measurement may have the advantage of being simple and useful in evaluating the overall perception of dental appearance, but it may hide other factors, as the demand for esthetic dentistry may be more complex and exceed conventional perceptions.⁷ Furthermore, all of the responses in this study were self-reported by the patients, and no attempts were made to correlate patients' perceptions of dental appearance responses with their records or professional assessment to their problems and treatment needs, as the main aim of this study was to evaluate the patients' personal satisfaction with dental appearance.

Future studies should determine how the dental profession and society might address the increased demand for esthetic dental treatment. Also, further studies are needed to include other factors that can affect esthetic perception such as emotional and personality factors and expand the survey population to different social and psychological backgrounds that represents the general population.

CONCLUSION

Satisfaction with dental appearance was affected by teeth color, feeling teeth are crowding, desire for esthetic restorations and orthodontic treatment. A high percentage of patients were not satisfied with the color of their teeth.

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