Original Research

Saudi patients' preference of aesthetic dental treatment at REU teaching clinics

Yasmine Tarek Ahmed[1], Sara Buarish[2], Malak Almomen[3], Heba Albrahim[4], Mariyah Alqudaihi[5], Zenab Alshikh[6]

[1]Lecturer, Riyadh Elm University, Riyadh, Saudi Arabia
[2]Senior Dental Student, Riyadh Elm University, Riyadh, Saudi Arabia
[3]Senior Dental Student, Riyadh Elm University, Riyadh, Saudi Arabia
[4]Senior Dental Student, Riyadh Elm University, Riyadh, Saudi Arabia
[5]Senior Dental Student, Riyadh Elm University, Riyadh, Saudi Arabia
[6]Senior Dental Student, Riyadh Elm University, Riyadh, Saudi Arabia

ARTICLE INFO

ABSTRACT

Aim
To assess self-evaluated smile satisfaction among Saudi patients attending REU teaching clinics and their choice of esthetic treatment.

Methods
This cross-sectional survey was conducted using a structured questionnaire among patients attending REU clinics campus to determine participants' satisfaction with their smiles and what treatments they desired to undergo to improve their esthetics. All Saudi patients ranging from 25 to 45 years were included in the study. Data were analyzed using SPSS Version 21. The significance level was set at $p \leq 0.05$.

Results
In total, 400 participants (28.2% male and 71.8% female) were involved in this study. Participants had dissatisfaction of 47.7% with the color of their teeth despite satisfaction with their smile ($p<0.05$). There was a no statistically significant ($p>0.05$) association between demographic factors (age, gender, marital status, and level of education) and satisfaction with the smile. Furthermore, there was no statistically significant association between participants' satisfaction and the chosen treatment option ($p>0.05$).

Conclusion
The majority of patients at REU clinics were satisfied with their smile however 47.7% reported dissatisfaction with tooth color, and that made teeth whitening the most requested treatment by patients (43.3%).

INTRODUCTION

Smiling is the universal sign of happiness it has a major impact on self-esteem and the overall quality of life. A harmonious smile plays an important role in establishing a good relationship between physical and facial beauty. As the teeth are considered important components in the architecture of facial disposition [1]. Moreover, an esthetic smile is not restricted to tooth factors, such as the tooth color, size, shape, position and visibility [2]. In fact, the soft tissues and lips also are important factors in building up a beautiful smile; the smile is also affected by the curvature of the lips and amount of gingival display [3].

* Corresponding author*: ***Yasmine Tarek Ahmed** , Lecturer, Riyadh Elm University, Riyadh, Saudi Arabia*

Pursuing a beautiful smile is affected by many factors and the socio-economic background factors were considered to have a significant role that affects the association between dental factors and satisfaction towards dental appearance [4-5]. Currently, esthetic dentistry has become a major aspect of dental practice which could be explained by the greater understanding of smile perception, media and advertising, leading to a change in dental treatment priority [6,7]. The aim of our study is to assess self-evaluated smile satisfaction among Saudi patients attending REU teaching clinics and their choice of esthetic treatment.

METHODS

This study was conducted from January to March 2019. Four hundred participants were included in this study (113 male and 287 female). Their ages ranged from 25 to 45 years old. For inclusion in the study, participants had to be Saudi and 25 years old or older to understand and score the questionnaire. A brief explanation of the study was included at the beginning of the questionnaire before participants answered the questions. A structured questionnaire was distributed through patients attending REU clinics campus to determine participants' satisfaction with their smiles and what treatments they desired to undergo to improve their esthetics. The questionnaire was adopted from previous studies, which found it valid and reliable.

The questionnaire included items on the socio demographic data (such as; age (25-30, 31-40, 41-45 years), gender, and level of education (Elementary, High School, Bachelor's degree), tooth color, tooth alignment, and tooth position). Additionally, the questionnaire included items that inquired about the presence of caries, tooth-colored fillings and tooth fractures. Furthermore, the questionnaire included items that attempted to

identify whether participants desired treatment to improve their appearance; such treatments included orthodontics, tooth whitening, veneers or lumineers, dental crowns, tooth-colored fillings and dentures. The questionnaire was modified for this study by including items that tackle patients' satisfactions with their smiles; these items were the number of teeth displayed during smiling, color of the gingiva, amount of gingival displayed during smile, lip position during smiling and veneers or lumineers as a treatment option. The questionnaire was conducted through a google form, each participant was allowed to answer the questionnaire only once.

The English version of the questionnaire was translated into the Arabic language by three experts and fluent bilingual individuals, and it was then translated back into English by another three individuals who were fluent in Arabic and English. Modifications to the questionnaire were made as necessary to ensure comprehension. Ten individuals were asked to score the English format of the questionnaire and were then asked to score the translated Arabic version. The answers of the two formats of the questionnaire were compared using the t-test, and no statistically significant differences were found. The data obtained from the above procedure were not included in the main study. Twenty participants answered the Arabic questionnaire twice with a five-day interval. A reliability test was performed on all questions using correlation coefficients. The association coefficients were high (0.96). Then, the final version of the questionnaire was distributed to the participants in the main study sample.

The data were entered into the computer and analyzed using the SPSS computer software (Statistical Package for the Social Sciences, version 19.0, SPSS Inc., Chicago, IL, USA). First, descriptive statistics were performed to present the overview of the findings. Then,

the association between the variables was analyzed using the Mann Whitney U test, while the Kruskal Wallis H test was used to compare satisfied and dissatisfied patients. Fisher's exact and Pearson Chi-square tests were used to determine the association between the categorical variables. For all statistical analysis, the significance level was set at $p \leq 0.05$. The sample has a power of 90% (n=1129).

RESULTS

In total, 400 participants (28.2% male and 71.8% female) were involved in this study. Their ages ranged from 25 to 45 years old (25-30, 31-40, and 41-45 years; the median age was 31- 40 years). The participants' level of education was as follows: Elementary (18.5%), High school (36.0%), and Bachelor's degree (45.5%). Over half the participants were married (57.5%) and 42.5% were single. There was a no statistically significant (p>0.05) association between demographic factors (age, gender, marital status, and level of education) and satisfaction with the smile (Table 1). Table 2 represents the distribution of the study sample by their answers on the questionnaire.

Table 1: Socio demographic background of participants' who were (n=238) and were not (n=162) satisfied with their smiles

Items		Participant number (n=400) n (%)	Satisfied group $n = 238$ n (%)	Dissatisfied group $n = 162$ n (%)	p value
Age	25 to 30	171 (42.8%)	105 (61.4%)	66 (38.6%)	0.798
	31 to 40	119 (29.8%)	69 (58.0%)	52 (42.0%)	
	41 to 45	110 (27.5%)	64 (58.2%)	46 (41.8%)	
Gender	Male	113 (28.2%)	66 (58.4%)	47 (41.6%)	0.821
	Female	287 (71.8%)	172 (59.9%)	115 (40.1%)	
Marital status	Married	230 (57.5%)	140 (60.9%)	90 (39.1%)	0.538
	Single	170 (42.5%)	98 (57.6%)	72 (42.4%)	
Level of Education	Elementary	74 (18.5%)	41 (55.4%)	33 (44.6%)	0.576
	High school	144 (36.0%)	84 (58.3%)	60 (41.7%)	
	Bachelor's degree	182 (45.5%)	113 (62.1%)	69 (37.9%)	

Table 2: Distribution of the study sample by their answers to the questionnaire item

Item	Participants' Answers (n=400)	
	Yes (%)	No (%)
Satisfied with their smile	238 (59.5%)	162 (40.5%)
Satisfied with their tooth color	157 (39.3%)	243 (60.8%)
Feeling their teeth are crowded or poorly aligned	164 (41.0%)	236 (59.0%)

Feeling their teeth are protruded	136 (34.0%)	264 (66.0%)
Have dental caries or non-aesthetic fillings in their frontal teeth	176 (44.0%)	224 (56.0%)
Have fractures in their frontal teeth	157 (39.3%)	243 (60.8%)
Satisfied with the number of teeth displayed during smiling	242 (60.5%)	158 (39.5%)
Satisfied with the color of your gingiva	257 (64.3%)	143 (35.8%)
Satisfied with the amount of gingival displayed during smiling	265 (66.3%)	135 (33.8%)
Satisfied with the lip position during smiling	281 (70.3%)	119 (29.8%)

Participants had dissatisfaction of 47.7% with the color of their teeth despite satisfaction with their smile (p<0.05). Furthermore, 37.3% lacked crowding or poorly aligned teeth (p>0.05), 36.4% did not feel that their teeth were protruded (p<0.05), 34.9% had an appropriate tooth size (p<0.05), 37.5% did not report caries or non-esthetic filling in their anterior teeth (p>0.05), 37.4% did not have fractures in their anterior teeth (p>0.05), 34.3% were satisfied with the number of teeth displayed during smiling (p<0.05), 30.7% were satisfied with the color of their gingiva (p<0.05), 34.7% were satisfied with the amount of gingiva displayed during smiling (p<0.05), and 34.9% were satisfied with their lip positioning during smiling (p<0.05) although they all had dissatisfaction with their smiles (Table 3).

Table 3: Profile of participants who were (n=238) and were not (n=162) satisfied with their smiles

Questions	Answer	Satisfied with their smile n = 238 n (%)	Dissatisfied with their smile n = 162 n (%)	p value
1- Are you satisfied with your tooth color?	Yes	122 (77.7%)	35 (22.3%)	0.000
	No	116 (47.7%)	127 (52.3%)	
2- Do you feel your teeth are crowded or poorly aligned?	Yes	90 (54.9%)	74 (45.1%)	0.122
	No	148 (62.7%)	88 (37.3%)	
3- Do you feel your teeth are protruded?	Yes	70 (51.5%)	66 (48.5%)	0.024
	No	168 (63.6%)	96 (36.4%)	
4- Do you think your tooth size is	Small	57 (62.0%)	35 (38.0%)	0.000
	Appropriate	157 (65.1%)	84 (34.9%)	
	Big	24 (35.8%)	43 (64.2%)	
5- Do you have dental caries or non-aesthetic filling in your frontal teeth?	Yes	98 (55.7%)	78 (44.3%)	0.183
	No	140 (62.5%)	84 (37.5%)	
6- Do you have fractures in your frontal teeth?	Yes	86 (54.8%)	71 (45.2%)	0.144
	No	152 (62.6%)	91 (37.4%)	

7- Are you satisfied with the number of teeth displayed during smiling?	Yes	159 (65.7%)	83 (34.3%)	0.002
	No	79 (50.0%)	79 (50.0%)	
8- Are you satisfied with the color of your gingiva?	Yes	178 (69.3%)	79 (30.7%)	0.000
	No	60 (42.0%)	83 (58.0%)	
9- Are you satisfied with the amount of gingiva displayed during smiling?	Yes	173 (65.3%)	92 (34.7%)	0.001
	No	65 (48.1%)	70 (51.9%)	
10- Are you satisfied with your lip position during smiling?	Yes	183 (65.1%)	98 (34.9%)	0.001
	No	55 (46.2%)	64 (53.8%)	

Table 4: Participants' desired dental treatment with their smile satisfaction (n=400)

Items	Treatment Options	Participants' Number (n=400) n (%)	Satisfied with their smile $n = 238$ n (%)	Dissatisfied with their smile $n = 162$ n (%)	p value
Treatments may undergo to improve your smile	Orthodontic treatment to realign teeth	105 (26.3%)	62 (26.1%)	43 (26.5%)	0.110
	In office teeth whitening	98 (24.5%)	57 (23.9%)	41 (25.3%)	
	Over the counter tooth whitening agent	75 (18.8%)	49 (20.6%)	26 (16.0%)	
	Tooth-colored restoration	45 (11.3%)	21 (8.8%)	24 (14.8%)	
	Porcelain veneers or lumineers	32 (8.0%)	16 (6.7%)	16 (9.9%)	
	I do not want treatment	45 (11.3%)	33 (13.9%)	12 (7.4%)	

Just over one quarter of the participants chose to undergo orthodontic treatment to realign teeth (26.3%) as a treatment to improve their smiles, which was followed by in office teeth whitening (24.5%), over the counter tooth whitening agent (18.8%), tooth colored restoration (11.3%), participants who were unwilling to undergo any treatment (17.5%), and porcelain veneers or lumineers (8.0%). There was no statistically significant association between participants' satisfaction and the chosen treatment option (p>0.05) (Table 4). Table 5 reveals that there is no statistically significant association (p>0.05) between the participants who were dissatisfied with their tooth color and had crowding.

Table 5: Background of participants who had crowding with their satisfaction of tooth color

Question		Do you feel your teeth are crowded or poorly aligned?		*p* value
		Yes (n=164)	No (n=236)	
Are you satisfied with your tooth color?	Yes (n=157)	61 (38.9%)	96 (61.1%)	0.533
	No (n=243)	103 (42.4%)	140 (57.6%)	

DISCUSSION

In this study we have found that the majority (59.5%) of participants were satisfied with their smile, this is close to the finding of a previous study which reported 61.1% of their participants were satisfied with their smile. Despite the high satisfaction percentage, 47.7% of our participants had dissatisfaction with the color of their teeth this finding was in line with previous study. Their participants also had dissatisfaction of 51.2% with the color of their teeth despite satisfaction with their smile [8]. Our satisfaction with smile rate was found to be higher than past study in Al-Jouf, Saudi Arabia (50%) [9].

Tooth color is considered of major impact on smile satisfaction as found in many studies as a critical factor influencing satisfaction with smile appearance which came in agreement with our findings as tooth whitening (in office and over the counter) was the most chosen treatment by participants to improve their smile (43.3%) [8-11]. Teeth misalignment and crowding are considered two of the most common malocclusion traits reported in the literature which was reflected in our study as orthodontic treatment came in second with just over one quarter of the participants chose to undergo orthodontic treatment to realign teeth (26.3%) as a treatment to improve their smiles [12-13]. However, we have found that no statistically significant association (p>0.05) between the participants who were dissatisfied with their tooth color and had crowding.

Teeth decay, fractures, and non-esthetic fillings in the anterior teeth definitely had a negative impact on some of our patients' satisfaction with their smile, 44.3% were dissatisfied due to dental decay or non-esthetic fillings in their anterior teeth and 45.3 % had fractures in their front teeth. Gingival display and lip position play and important role in overall smile esthetics that came in agreement with our findings with the vast majority of our participants reported satisfaction with the color of their gingiva (64.3%) the amount of gingiva displayed during smiling (66.3%), and with their lip position during smiling (70.3%)

CONCLUSION

In our study we have found that the majority of patients (59.5%) at REU clinics were satisfied with their smile however 47.7% reported dissatisfaction with tooth color, and that made teeth whitening the most requested treatment by patients (43.3%). Based on the previously stated findings: REU students should discuss tooth color satisfaction and its treatment options with their patients and consider teeth whitening as part of their treatment plan.

REFERENCES

1. Jørnung J, Fardal Ø. Perceptions of patients' smiles: a comparison of patients' and dentists' opinions. The Journal of the American Dental Association. 2007; 138(12):1544-1553.

2. Van der Geld P, Oosterveld P, Van Heck G, Kuijpers-Jagtman AM. Smile attractiveness: self-perception and influence on personality. The Angle Orthodontist. 2007; 77(5):759-765.

3. Moskowitz M, Nayyar A. Determinants of dental esthetics: a rational for smile analysis and treatment. Compendium of continuing education in dentistry (Jamesburg, NJ: 1995). 1995; 16(12):1164, 1166, passim; quiz, 1186-1164, 1166, passim; quiz 1186.

4. Xiao J, Zhou X, Zhu W, Zhang B, Li J, Xu X. The prevalence of tooth discolouration and the self‑satisfaction with tooth colour in a Chinese urban population. Journal of oral rehabilitation. 2007; 34(5):351-360.

5. Mehl C, Wolfart S, Vollrath O, Wenz HJ, Kern M. Perception of dental esthetics in different cultures. International Journal of Prosthodontics, 2014, 27(6).

6. Kiyak HA. Does orthodontic treatment affect patients' quality of life? Journal of dental education. 2008; 72(8):886-894.

7. Samorodnitzky-Naveh GR, Geiger SB, Levin L. Patients' satisfaction with dental esthetics. The Journal of the American Dental Association. 2007; 138(6):805-808.

8. Aldakheel MD, Ahmed MA, Alduraiby RI. Satisfaction of a Saudi Population with their Smiles.

9. Al-Zarea BK. Satisfaction with appearance and the desired treatment to improve aesthetics. International journal of dentistry, 2013, 2013.

10. Qualtrough A, Burke F. A look at dental esthetics. Quintessence international, 1994, 25(1).

11. Tin-Oo MM, Saddki N, Hassan N. Factors influencing patient satisfaction with dental appearance and treatments they desire to improve aesthetics. BMC oral health. 2011; 11(1):6.

12. Jonsson T, Arnlaugsson S, Karlsson KO, Ragnarsson B, Arnarson EO, Magnusson TE. Orthodontic treatment experience and prevalence of malocclusion traits in an Icelandic adult population. American Journal of Orthodontics and Dentofacial Orthopedics. 2007; 131(1):8, e11-8, e18.

13. Borzabadi-Farahani A, Borzabadi-Farahani A, Eslamipour F. Malocclusion and occlusal traits in an urban Iranian population. An epidemiological study of 11-to 14-year-old children. The European Journal of Orthodontics. 2009; 31(5):477-484.