



Survey among Middle and Secondary School Students about their Attitudes toward Esthetics and Perception of the Desired Treatment to Improve Dental Appearance: A Cross-sectional Study

Nabila Ahmed Sedky

ABSTRACT

Objectives: To assess disparities in attitudes concerning importance of dental appearance in middle and secondary school students, to evaluate students' satisfaction with their current dental esthetic and to determine preferred dental treatment to improve appearance.

Materials and methods: Eighteen self-administered anonymous questionnaire was randomly administered to 2250 middle and secondary school students in Buraidah city, Qassim Province, with a response rate of 100%. All statistical analyses were carried out at $p < 0.05$ and 0.01 .

Results: The majority of secondary school students registered higher responses to the four statements asking about importance of dental appearance. Dissatisfaction with oral condition and general appearance of teeth was reported by 39.47% of total number of participants. Older students registering higher levels of dissatisfaction (50.42%) with a significant difference between both groups ($p < 0.01$). Dissatisfaction with dental appearance was mainly related to teeth color, poor alignment/crowding of teeth, anterior teeth protrusion, caries, fractures and non-esthetic fillings. Teeth whitening, orthodontic treatment, and esthetic fillings represented the high majority of treatments perceived more by secondary school students, while dental crowns were more demanding by middle school students. A strong correlation was found between level of education and satisfaction with oral condition, the reasons for dissatisfaction with general appearance and perception of desired treatment to improve dental appearance.

Conclusion: Older students were more concerned about the significance of dental appearance. Secondary school students were more dissatisfied with their dental appearance. Displeasure with tooth color was correlated with increased desire for tooth whitening. Dental crowns were more required by younger students.

Keywords: Attitude, Dental appearance, Desired treatment, Esthetics, Perception, Students.

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INTRODUCTION

Dental appearance is an essential feature in establishing the appeal of a face, and thus plays a central role in human social relations. Among the important aspects influencing the overall dental appearance are tooth color, shape, and position; quality of restoration; and the general arrangement of the dentition, particularly of the anterior teeth. While every aspect may be considered exclusively, all factors must act collectively to generate a harmonic and symmetric structure that generates the ultimate esthetic outcome.¹

Attitudes concerning the significance of typical appearance have revealed speedy variations over the past decades. Changes have been discovered not only by the time but also with regard to age, gender, and different groups of persons.^{2,3} Whether the condition is comparable concerning dental appearance does not appear to have been researched, although concentration in dental esthetics has improved promptly throughout the past few decades between both patients and dentists.⁴

Studies have shown associations among dental appearance and quality of life and general welfare.^{5,6} It has also been recommended that decisions regarding the subjective features of others are prompted by dental appearance.⁷ Yet, there is often a difference between the dentist's and the patient's insight of treatment need and estimations on dental esthetics.⁸⁻¹¹

Esthetics has become as essential as function, structure and biology, up to around the preceding two decades, in dental practice¹² as generally modern publicity and the media accentuate the influence of a satisfying appearance for the reason of its significance in lots of daily circumstances.¹³ This reality leads to variations in patients' esthetic desires and outcome of dental treatment priority.¹²

Associate Professor

Department of Community Dentistry and Oral Epidemiology
Qassim University College of Dentistry, Qassim, Saudi Arabia

Corresponding Author: Nabila Ahmed Sedky, Associate Professor, Department of Community Dentistry and Oral Epidemiology, Qassim University College of Dentistry, Qassim, Saudi Arabia, Phone: 0163260536, e-mail: nasedky@yahoo.com



Throughout the last 20 years, the Kingdom of Saudi Arabia has had a noticeable growth in population and an enormous development in many features of life.¹⁴ Subsequently, an increase in the requirement for health services comprising oral health became obvious.

Nowadays, cosmetic dentistry has become an essential feature of dentistry. Anterior teeth restoration, tooth whitening treatments, labial veneers crowns, and orthodontic treatment are repeatedly required by patients who concerned in developing their dental appearance.¹²

The appearance of the teeth could be affected by gender, age and educational level. Females are registered to be more perceptive than males for the appearance of teeth and the significance of teeth reduces with aging and higher education levels.¹³ Perceived dental treatments on anterior teeth also have an influence on dental esthetics, which is influenced by individual favorites and cultures. Inappropriately, in some cases, dentists may create an esthetic appearance varying from the patient's perceptions, developing communication difficulties and unexpected complications.¹⁵

Since esthetics is an essential aspect in dental practice and could be related to individual preferences, the aims of the present study were to assess the disparities in attitudes concerning the importance of dental appearance in the middle and secondary school students. Moreover, to evaluate the students' satisfaction with their current dental esthetic and finally to determine the preferred dental treatment to improve their appearance.

MATERIALS AND METHODS

This cross-sectional survey was conducted in Buraidah city, Qassim Province, Kingdom of Saudi Arabia, with students in public middle and secondary schools from 1st through 3rd grades.

A total sample of 2250 middle and secondary school students was selected. A list of all public schools in the mentioned city was provided by the Ministry of Education. Simultaneously with each school name was included the name of the district where the school was located, the number of first through third grade classes, the number of the corresponding students, and the school identification number.

A systematic random sampling technique was used to select the study sample ensuring a representation which reflected gender, geographic area and class grades. The sampling interval was decided based on the number of classes in each grade, with every second class was chosen to participate. Two framed lists, one for boys and one for girls selected classes within each school were organized by grade and geographical location. Then correspondingly subsamples were taken from each stratum. For

logistical purpose, no subsampling within class was implemented, as all students from selected classes were taken into the sample. No potential bias with regard to the selection of the study population was predicted and the samples were representative of the reference population. The study protocol was approved by the Dental Ethical Committee prior to initiating the study.

Data were collected during the Fall semester of the academic years 2014/2015. The students were asked to complete an anonymous self-administered questionnaire consisting of 18 questions at the same meeting. The purpose of the study was communicated well in advance to the students, each contributor was supplied with a complete explanation of the questionnaire in addition to the method of its scoring. The process of completing the questionnaire was observed by the researcher. No clinical examination was conducted.

The questionnaire used a simple tick-box format, with sections for demographic items (such as age, gender and year of study). Students were questioned on the importance of dental appearance, the satisfaction with oral conditions as teeth color and the alignment of teeth. Finally, the students were questioned about the desired treatments to improve dental appearance as having an orthodontic treatment, teeth whitening, esthetic fillings and dental crowns. Questionnaires were reviewed to ensure their completion before their receipt from the students.

This study has concentrated on answers to four statements on the importance of dental appearance in which the first statement was: 'Minor esthetic imperfections of the teeth have no importance, only they function well', the second was: 'A tooth loss that is visible is something to be ashamed of'. Then, the 3rd statement was: 'It does not matter how you look, only that you can chew what you like', and the last one was: 'To have beautiful and perfect teeth is very important for how you are treated by other people'.

The responses to the statements were based on a four-point Likert scale with response options of (1) strongly agree, (2) agree somewhat, (3) disagree somewhat, and (4) strongly disagree.

The English version of the questionnaire was translated into Arabic language and pre-tested on randomly selected 225 samples (10%) to ensure its comprehension, practicability, validity, interpretation of responses, and reliability (Cronbach's alpha $\alpha = 0.932$).

STATISTICAL ANALYSIS

Statistical analysis was conducted using the SPSS program (SPSS 19.0 for windows, SPSS Inc., Chicago, USA). All statistical analyses were carried out at a significance level of 0.01 and 0.05. The collected data were analyzed

by descriptive statistics and presented in frequency tables. Results were compared by means of cross-tabulation. The Chi-square test was used to test associations between the level of education and the independent variables. Finally, Pearson's correlation coefficient was used to investigate associations between variables.

RESULTS

All the 2250 students surveyed completed their questionnaires representing a 100% response rate. Of the respondents, 45.07% were male and 54.93% were female students. Concerning the level of education, 51.87% of the participating students were in the middle schools and 48.13% were in the secondary schools. The mean age of participants was 15.49 years (SD + 1.68 years; range 13–18.5 years).

Table 1 revealed the difference in attitudes toward dental appearance according to level of education. The results demonstrated that the majority of secondary school students (83.66%) disagree that 'Minor esthetic imperfections of the teeth have no importance, only they function well', the findings reported that 53.46% of the secondary school students 'Strongly disagree', whereas 34.19% of the middle school students 'somewhat disagree' that

statement, with a statistically significant difference between groups ($\chi^2 = 124.967, p < 0.001$). Additionally, 80.06% of secondary school students agreed that 'A tooth loss that is visible is something to be ashamed of', where 51.80% of the students reported that they 'Strongly agree' the statement. Also a statistically significant difference was found ($\chi^2 = 143.228, p < 0.001$). On the other hand, 93.07% of secondary school students recorded that they disagreed that 'It does not matter how you look, only that you can chew what you like', as 67.59% of the students 'Strongly disagree' the statement, with a statistically significant difference between groups ($\chi^2 = 164.351, p < 0.001$). Finally, 82.27% of the secondary school students agreed that 'To have beautiful and perfect teeth is very important for how you are treated by other people', with 45.98% of the students 'Strongly agree' this statement. A statistically significant difference between groups was found ($\chi^2 = 100.895, p < 0.001$).

Enquiry about the satisfaction with oral condition and general appearance of teeth with regard to level of education, 29.31% of the middle school students and 50.42% of the secondary school students were dissatisfied, indicating a statistically significant difference between groups ($\chi^2 = 34.925, p < 0.001$). The total percentage of

Table 1: The difference in attitudes toward dental appearance according to level of education

| Statement | Stat | Middle school students (n = 1167) | | | | Secondary school students (n = 1083) | | | | χ^2 (p) |
|---|-------------------------------|-----------------------------------|-----------|--------------|----------|--------------------------------------|-----------|---------------|----------|---------------------|
| | | Agree | | Disagree | | Agree | | Disagree | | |
| | | Strongly | Some-what | Some-what | Strongly | Strongly | Some-what | Some-what | Strongly | |
| 1. Minor esthetic imperfections of the teeth have no importance, only they function well. | Count | 240 | 318 | 399 | 210 | 81 | 96 | 327 | 579 | 124.967* (0.000) |
| | (% within level of education) | (20.57%) | (27.25%) | (34.19%) | (17.99%) | (7.48%) | (8.86%) | (30.19%) | (53.46%) | |
| | Total | 558 (47.82%) | | 609 (52.18%) | | 177 (16.34%) | | 906 (83.66%) | | |
| 2. A tooth loss that is visible is something to be ashamed of. | Count | 261 | 423 | 39 | 444 | 561 | 306 | 135 | 81 | 143.228* (0.000) |
| | (% within level of education) | (22.37%) | (36.25%) | (3.34%) | (38.05%) | (51.80%) | (28.25%) | (12.47%) | (7.48%) | |
| | Total | 684 (58.61%) | | 483 (41.39%) | | 867 (80.06%) | | 216 (19.94%) | | |
| 3. It does not matter how you look, only that you can chew what you like. | Count | 414 | 150 | 183 | 420 | 27 | 48 | 276 | 732 | 164.351* (0.000) |
| | (% within level of education) | (35.48%) | (12.85%) | (15.68%) | (35.99%) | (2.49%) | (4.43%) | (25.48%) | (67.59%) | |
| | Total | 465 (48.33%) | | 603 (51.67%) | | 75 (6.93%) | | 1008 (93.07%) | | |
| 4. To have beautiful and perfect teeth is very important for how you are treated by other people. | Count | 177 | 480 | 291 | 219 | 498 | 393 | 111 | 81 | 100.895* (0.000) |
| | (% within level of education) | (15.17%) | (41.13%) | (24.94%) | (18.77%) | (45.98%) | (36.29%) | (10.25%) | (7.48%) | |
| | Total | 657 (56.30%) | | 510 (43.70%) | | 891 (82.27%) | | 192 (17.73%) | | |

*p < 0.001



dissatisfaction with oral condition and general appearance of teeth was 39.47%, (Table 2).

Table 3 portrayed the reasons for dissatisfaction of the studied group of students with their oral condition and general appearance of the teeth according to level of education. More than half of the students (64.86%) were dissatisfied with their teeth color, the secondary school students (66.48%) were more dissatisfied with their teeth color than middle school students (62.28%), with no significant difference between groups. The second reason for dissatisfaction was that the students thought that their teeth are poorly aligned (35.47%). Both secondary and middle school students were dissatisfied concerning this item (35.71% and 35.09%, respectively) with no significant difference between groups. The third dissatisfying reason was that the students felt that their teeth are crowded (31.08%), where 35.71% of the secondary school students as well as 23.68% of the middle school students registered that this was the reason of dissatisfaction with their dental appearance, with a statistically significant difference ($\chi^2 = 4.736$, $p < 0.05$). This is followed by that they thought

that their anterior teeth are protruding (30.41%). The least dissatisfying reasons were 'caries in the anterior teeth', 'fractures in the anterior teeth' and 'nonesthetic filling in the anterior teeth', (10.47, 9.80 and 8.11%, respectively).

Regarding the perception of the desired treatment to improve dental appearance according to level of education, Table 4 demonstrated that teeth whitening followed by orthodontic treatment, then esthetic fillings constituted the high majority of treatments perceptible by the studied group of students with the secondary school students recorded greater percentages (67.58, 54.95 and 36.81%, respectively), with a statistically significant difference with regard to teeth whitening as well as esthetic fillings and the level of education ($\chi^2 = 3.945$, $p < 0.05$ and $\chi^2 = 4.138$, $p < 0.05$, respectively). Dental crowns were more necessitating by middle school students (14.04%) than their secondary counterparts, no statistical difference was found between groups.

Table 5 represents Pearson's correlation coefficient between level of education and different studied variables. The results revealed strong correlation between level of

Table 2: Satisfaction with oral condition and general appearance of the teeth regarding level of education

| Variable | Stat | Satisfaction with oral condition and general appearance of teeth | | χ^2 (p) | |
|--------------------|----------------------|--|---------------|--------------|-----------------|
| | | Satisfied | Dissatisfied | | |
| Level of education | Middle (n = 1167) | Count (% within level of education) | 825 (70.69%) | 342 (29.31%) | 34.925* (0.000) |
| | Secondary (n = 1083) | Count (% within level of education) | 537 (49.58%) | 546 (50.42%) | |
| | Total | Count (% within level of education) | 1362 (60.53%) | 888 (39.47%) | |

* $p < 0.001$

Table 3: Reasons for dissatisfaction with oral condition and general appearance of the teeth according to level of education (multiple response)

| Reasons for dissatisfaction | Total dissatisfaction (n = 888) Count (% within whole study groups) | Level of education | | χ^2 (p) |
|--|--|-------------------------------------|-------------------------------------|----------------|
| | | Middle (n = 342) | Secondary (n = 546) | |
| | | Count (% within level of education) | Count (% within level of education) | |
| Dissatisfied with the teeth color | 576 (64.86%) | 213 (62.28%) | 363 (66.48%) | 0.543 (0.461) |
| Thinking that the teeth are poorly aligned | 315 (35.47%) | 120 (35.09%) | 195 (35.71%) | 0.012 (0.913) |
| Felt that the teeth are crowded | 276 (31.08%) | 81 (23.68%) | 195 (35.71%) | 4.736* (0.030) |
| Thought that the anterior teeth are protruding | 270 (30.41%) | 99 (28.95%) | 171 (31.32%) | 0.186 (0.666) |
| Caries in the anterior teeth | 93 (10.47%) | 48 (14.04%) | 45 (8.24%) | 2.509 (0.113) |
| Fractures in the anterior teeth | 87 (9.80%) | 36 (10.53%) | 51 (9.34%) | 0.112 (0.738) |
| Nonesthetic filling in the anterior teeth | 72 (8.11%) | 30 (8.77%) | 42 (7.69%) | 0.110 (0.741) |

* $p < 0.05$

Table 4: Perception of the desired treatment to improve dental appearance according to level of education (multiple response)

| Perception of the desired treatment to improve dental appearance | Level of education | | χ^2 (p) |
|--|-------------------------------------|-------------------------------------|----------------|
| | Middle (n = 342) | Secondary (n = 546) | |
| | Count (% within level of education) | Count (% within level of education) | |
| Teeth whitening | 192 (56.14%) | 369 (67.58%) | 3.945* (0.047) |
| Orthodontic treatment | 177 (51.75%) | 300 (54.95%) | 0.287 (0.592) |
| Esthetic fillings | 87 (25.44%) | 201 (36.81%) | 4.138* (0.042) |
| Dental crowns | 48 (14.04%) | 54 (9.89%) | 1.184 (0.276) |

* $p < 0.05$

Table 5: Pearson's correlation coefficient between gender, level of education, satisfaction with oral condition and different studied variables

| | Level of education | Satisfaction with oral condition | Dissatisfied with the teeth color | Felt that the teeth are crowded | Thinking that the teeth are poorly aligned | Thought that the anterior teeth are protruding | Caries in the anterior teeth | Non-esthetic filling in the anterior teeth | Fractures in the anterior teeth | Orthodontic treatment | Teeth whitening | Esthetic fillings |
|--|----------------------|----------------------------------|-----------------------------------|---------------------------------|--|--|------------------------------|--|---------------------------------|-----------------------|------------------|-------------------|
| Level of education | r P | | | | | | | | | | | |
| Satisfaction with oral condition | r 0.216** P 0.000 | | | | | | | | | | | |
| Dissatisfied with the teeth color | r 0.186** P 0.000 | 0.911** 0.000 | | | | | | | | | | |
| Felt that the teeth are crowded | r 0.178** P 0.000 | 0.943** 0.000 | 0.794** 0.000 | | | | | | | | | |
| Thinking that the teeth are poorly aligned | r 0.201** P 0.000 | 0.937** 0.000 | 0.795** 0.000 | 0.891** 0.000 | | | | | | | | |
| Thought that the anterior teeth are protruding | r 0.199** P 0.000 | 0.944** 0.000 | 0.825** 0.000 | 0.880** 0.000 | 0.886** 0.000 | | | | | | | |
| Caries in the anterior teeth | r 0.223** P 0.000 | 0.979** 0.000 | 0.870** 0.000 | 0.910** 0.000 | 0.929** 0.000 | 0.938** 0.000 | | | | | | |
| Non-esthetic filling in the anterior teeth | r 0.214** P 0.000 | 0.984** 0.000 | 0.910** 0.000 | 0.916** 0.000 | 0.909** 0.000 | 0.917** 0.000 | 0.961** 0.000 | | | | | |
| Fractures in the anterior teeth | r 0.214** P 0.000 | 0.980** 0.000 | 0.872** 0.000 | 0.913** 0.000 | 0.934** 0.000 | 0.945** 0.000 | 0.982** 0.000 | 0.961** 0.000 | | | | |
| Orthodontic treatment | r 0.190** P 0.000 | 0.916** 0.000 | 0.732** 0.000 | 0.914** 0.000 | 0.907** 0.000 | 0.938** 0.000 | 0.897** 0.000 | 0.878** 0.000 | 0.917** 0.000 | | | |
| Teeth whitening | r 0.167** P 0.000 | 0.911** 0.000 | 0.949** 0.000 | 0.819** 0.000 | 0.802** 0.000 | 0.815** 0.000 | 0.873** 0.000 | 0.911** 0.000 | 0.869** 0.000 | 0.726** 0.000 | | |
| Esthetic fillings | r 0.179** P 0.000 | 0.941** 0.000 | 0.850** 0.000 | 0.871** 0.000 | 0.889** 0.000 | 0.899** 0.000 | 0.955** 0.000 | 0.952** 0.000 | 0.954** 0.000 | 0.853** 0.000 | 0.854** 0.000 | |
| Dental crowns | r 0.219** P 0.000 | 0.977** 0.000 | 0.913** 0.000 | 0.911** 0.000 | 0.904** 0.000 | 0.911** 0.000 | 0.951** 0.000 | 0.957** 0.000 | 0.953** 0.000 | 0.869** 0.000 | 0.914** 0.000 | 0.907** 0.000 |

**Correlation is significant at the 0.01 level (2-tailed)

education and satisfaction with oral condition meaning that whether the students are satisfied or dissatisfied. Also a strong correlation was detected between the reasons for dissatisfaction represented by dissatisfaction with the teeth color, the feeling that the teeth are crowded, the thinking that the teeth are poorly aligned, the thought that the anterior teeth are protruding, presence of caries in the anterior teeth, presence of nonesthetic filling in the anterior teeth and fractures in the anterior teeth. Moreover, the level of education had strong correlation with the desired treatments in the form of orthodontic treatment, teeth whitening, esthetic fillings and dental crowns.

DISCUSSION

Attitudes and perceptions toward dental appearance differ among populations and among individuals in a population.¹³ In the current study, attitudes toward dental appearance were detected through students' replies to four statements concerned with the importance of dental appearance. Regarding the level of education, the outcomes of this work demonstrated that older students (secondary school students) were more interested to statements on the importance of dental appearance than the younger ones. Secondary school students accentuated the importance of dental appearance more than the middle



school students for the second and fourth statements. Yet, younger students agreed more than older ones to the first and third statements that were concerned with tooth function.

Statements 1 and 3 tried to explore opinions on the relative importance of esthetics *vs* function. Concerning the 1st statement, the majority of the participating students disagreed that minor esthetic imperfections of the teeth have no importance; they only have to function well (83.66 and 52.18% of the secondary and middle school students, respectively). For the 3rd statement, the mainstream of the sharing subjects (93.07 and 51.67% of the secondary and middle school students, respectively) also disagreed that it does not matter how you look, only that you can chew what you like. This means that both older and younger students cannot step down the esthetic appearance of the teeth, even in the form of simple defects and that they seek both the beauty and function of the teeth. These findings are in accord with that of Tin-Oo et al¹⁶ where they discovered that age was not associated with satisfaction with dental appearance proposing that dental appearance is becoming equally essential in both older and younger adults. On the other hand, the results of the present study are in contrast to that of Carlsson et al⁴ where they found that about 90% of the participants agreed with the 1st statement and 25% agreed with the 3rd statement.

Additionally, statements 2 and 4 investigated the significance of esthetics. With regard to the answers of these two statements, the majority of the students agreed that 'A tooth loss that is visible is something to be ashamed of' and 'To have beautiful and perfect teeth is very important for how you are treated by other people', with the older students registered higher percentage of responses than the younger ones. The current findings are compatible with that of Carlsson et al⁴ in relation to the 4th statement where they reported that the great majority of those who answered the questions agreed the statement. Furthermore, there seems to be widespread conformity on the importance of dental appearance. In a study implemented in six countries, about 95% of the participants replied 'very important' or 'important' to the question 'How important is the appearance of your teeth to you?'¹⁷

The present study examined satisfaction with oral condition and general appearance of the teeth, the reasons for dissatisfaction with the current esthetic status, as well as the perception of the desired treatment to improve dental appearance. The outcomes of the current study illustrated that 60.53% of the contributors were satisfied with their oral conditions and the general appearance of teeth. These findings are inconsistent with the results of

earlier studies,^{16,18,19} which could be related to the application of different procedures to assess satisfaction in addition to other contributing factors as cultural and ethnic factors.^{16,20} Moreover, younger students were more potentially satisfied with their dental appearance than older ones (70.69 and 49.58%, respectively). These results are in contrast to that previously reported in former studies,^{18,19} in which they found that older people were more prone than the younger to be contented with their dental appearance. Another study discovered that age was not related with satisfaction with dental appearance indicating that dental appearance is becoming evenly essential in both older and younger adults.¹⁶

The results of the present study revealed that 39.47% of the contributors were dissatisfied with their oral condition and general appearance of teeth with the older students expressed greater dissatisfaction than younger ones. This dissatisfaction was chiefly reported with the teeth color, followed by poor alignment of teeth, teeth crowding, anterior teeth protrusion, caries in anterior teeth, fractures in anterior teeth and finally nonesthetic fillings in anterior teeth. This means that the participants' first priority of interest was directed toward the color and alignment of teeth as well as the presence of malocclusion. Then comes as a second priority the presence of cavities in the front teeth or broken teeth as a result of decay or other reasons, and their last interest is the presence of unesthetic fillings in anterior teeth, which reflects the lack of awareness to maintain good oral and dental health to avoid the occurrence of advanced stages of oral and dental diseases that will lead to tooth loss and consequently lack of esthetic appearance and facial attractiveness. The present results are consistent with that of a previous study carried out in Ankara, Turkey.¹⁹ Moreover, poor tooth alignment and crowding are among the most common malocclusion attributes registered in the literature,^{21,22} and tooth color is a crucial factor affecting satisfaction with smile appearance,¹ which may clarify the current results of the presence of correlation between the reasons for dissatisfaction with general appearance and students' perceptions of having these attributes.

Nowadays, cosmetic dentistry has become an important feature of dentistry. Tooth whitening, anterior teeth restoration, labial veneers crowns, and orthodontic treatment are repeatedly requested by patients who are concerned in improving their dental appearance.¹² Regarding the perception of the studied group of participants about the desired treatment to improve dental appearance, the outcomes of this study illustrated that teeth whitening was perceived more among the older students as the first type of treatment desired followed

by orthodontic treatment and then esthetic fillings. Dental crowns were the last desired treatment and was more required by the younger students, reflecting the lack of awareness and perception of modern techniques in dental treatments among this group of students that aiming to apply noninvasive and conservative procedures. These findings additionally supports the influence of tooth color on satisfaction with dental appearance and these results are in accord with the findings of earlier studies.^{12,16,23} Furthermore, the results of the current study revealed that satisfaction with dental appearance was significantly correlated with the feeling of presence of poor tooth alignment and/or protrusion, as well as nonesthetic fillings and/or fractured anterior teeth. This could be due to that poor tooth alignment and anterior tooth fractures change the appearance of teeth causing them to be less appealing. This was supported by the finding that satisfaction with dental appearance had significant correlation to the desire for orthodontic treatment, esthetic fillings and dental crowning so as to enhance the appearance of teeth. These results are in harmony with the findings of a former study¹² but not in accord with others.^{16,19}

CONCLUSION

Based on the findings of the current study, older students were more concerned about the magnitude of dental appearance than their younger counterparts. With regard to the statements that investigate thoughts on the significance of esthetics contrasted with function, mutually older and younger students cannot compromise the esthetic manifestation of the teeth, even if simple defects occur and they request beauty of the teeth in addition to their function. Furthermore, secondary school students agreed more for the statements explored the importance of esthetics.

Most of the participants were satisfied with their oral conditions and the general appearance of their teeth. More than one third of the students were dissatisfied with their dental appearance with the secondary school students registering higher responses. Discontent with tooth color, malalignment, crowding and protruding of anterior teeth had negative impact on student satisfaction with their dental appearance. Also, some problems related to anterior teeth as caries, fractures and nonesthetic fillings promoted the increased dissatisfaction with general appearance of teeth.

Teeth whitening, orthodontic treatment as well as esthetic fillings composed the popular treatments perceived by the students with the older students recorded higher percentages, whereas dental crowns were more demanding by younger students.

Additionally, a strong correlation was reported between level of education and satisfaction with oral condition, as well as the reasons for dissatisfaction with general appearance and perception of the desired treatment to improve oral and dental appearance.

RECOMMENDATIONS

- There is a need to improve the oral and dental health knowledge, attitude and practices among the targeted population to increase their awareness in order to sustain good oral health to overcome oral diseases and accordingly maintain esthetic appearance.
- Raise the awareness among middle school students about modern techniques in dental treatments to preserve their natural teeth.
- Considerate patients' perceptions of their dental appearance is an essential feature of patient management that may help dentists in planning treatments that are satisfactory to the patients directing to better levels of patient satisfaction.
- Further studies should be organized in other areas of the Saudi community as well as other countries representing the different socioeconomic status of the population and the various health care providers sector of the population.

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