Clinical Research

Satisfaction with dental appearance and personality traits among a population of Nigerian dental patients

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Abstract

Objective: Facial appearance has been found to have an important social and psychological effect on the human personality. Hence, this cross-sectional analytic questionnaire-based study of dental patients assessed the satisfaction with dental appearance and personality traits among a group of dental patients.

Materials and methods: The questionnaire sought information on the sociodemographic characteristics of the participants; satisfaction with teeth in general and with tooth color in particular; the presence of caries, tooth-colored fillings, and tooth fractures; and desired treatment to improve appearance. A visual analog scale (VAS) was used to determine satisfaction with appearance, and the 10-item version of the Big Five personality inventory data was subjected to analysis in the form of frequency distribution, descriptive statistics, cross tabulations, chi-square, and logistic regression, with *P* set at 0.05.

Results: Those participants not satisfied with their tooth color were less likely to be satisfied with the general appearance of their teeth. A greater proportion of participants who were satisfied with the general appearance of their teeth had low scores on conscientiousness traits and neuroticism traits. Those who had high scores on conscientiousness traits tended to be dissatisfied with their tooth color.

Conclusions: Personality traits affect the perception of satisfaction with tooth appearance, with patients with conscientiousness personality traits who tend toward perfectionism not readily satisfied, while those with neuroticism personality traits who are emotionally stable more readily satisfied with the appearance of their teeth. This information is important when providing esthetic dental treatment to patients, as expectations differ depending on individual personality traits.

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Introduction

One of the most important goals of dental care is attempting to meet patients' acceptable level of satisfaction with their dentition.[1] The status of the dentofacial elements tends to affect patients' appearance, performance, function, and satisfaction with their dentition.[2,3]

Esthetic dentistry acts on the establishment of an esthetically pleasant smile that has positive and attractive characteristics. To successfully achieve that goal, the dentist must recognize the esthetic issues of the dental treatment and determine the treatment plan based on them. Also, the dentist must bear in mind the possible differences in esthetic perception and personality between him/herself and the patient, which may create problems during the treatment if not properly recognized.

Facial appearance has been found to have an important social and psychological effect on the human personality. The facial features most commonly associated with this are the mouth and eyes.[4] When an individual speaks to or approaches another person, the mouth plays a very important role.[5] The psychosocial importance and dental significance of an attractive smile has been buttressed,[6] especially as esthetic alterations of the face can be self-perceived and probably affect quality of life.[7-9]

Dental professionals need an understanding of how patients feel about their dental appearance to appreciate their dental esthetic needs. They also need an understanding of their patients' personality. Some patients demand extensive esthetic corrections in an attempt to fulfil expectations that are seldom reached such as white, aligned, and perfect teeth, while dentists on the other hand are usually concerned with the shape and function of the teeth.[10]

Minor irregularities in dental esthetics may have an impact on oral health-related quality of life, with consequent social appearance trepidations and self-confidence concerns.[11] Attractive children and adults have been found to exhibit more positive behaviors and personality traits.[6] As part of esthetic treatment planning, the dentist tries to ascertain and plan treatment to meet the patient's expectations,[12] given the probability that the esthetic values of the patient may differ from those of the dentist.[13]

Many factors have been evaluated to assess their effect on dental esthetics, including tooth color, position, alignment, and shape as well as the presence and number of fillings.[6,14-19] However, not much has been done to assess the effect of personality alongside these factors. Hence, the objective of this study was to attempt to assess satisfaction with dental appearance taking into account personality traits among a group of dental patients. The working hypothesis was that personality traits have no influence on satisfaction with dental appearance.

Materials and method

This was a cross-sectional analytic study of patients who sought oral health care at the Dental Centre of the University of Benin Teaching Hospital, Benin City, Edo State, Nigeria. Participants were recruited at the records department. Written informed consent was obtained from the participants before the commencement of the study. In order to ensure confidentiality of participants, no identifiers were used.

Using the Cochran's formula for minimum sample-size determination in a cross-sectional study, the minimum sample size was determined to be 180. With a 10% attrition, the sample size was calculated to be 198, which was rounded off to 200. A systematic sampling technique was employed. The average daily number of new patients registered at the records unit was determined, then multiplied by 90 days (a

3-month period was proposed for the study) to determine the total population. The sample interval was determined by dividing the number of the total population by the sample size determined. The nth entry on the list was chosen by simple random sampling in the form of a lucky dip.

The data collection instrument was a pretested, structured, self-administered questionnaire written in English that consisted of three sections. The first section retrieved information on the sociodemographic characteristics of the participants. The second section was adopted from a previous study,[20] and tackled participants' satisfaction with their teeth in general as well as their tooth color, alignment, and position. This section also included items about the participants' self-reported presence of caries, tooth-colored fillings, and tooth fractures as well as items that attempted to identify whether they desired treatment to improve their appearance, including oral prophylaxis, orthodontics, bleaching, dental crowns, tooth-colored fillings, and prosthetic rehabilitations and dentures. This section also included a visual analog scale (VAS) to score the level of the participants' satisfaction with their appearance in general. The VAS ranged from 0 to 10, where 0 = least satisfied with appearance, and 10 = most satisfied with appearance. The third section of the questionnaire consisted of a scale to assess the participants' personality. The 10-item version of the Big Five personality inventory[21,22] was used for this purpose. This inventory is rated on a 5-step scale, from disagree strongly to agree strongly. The participants make a selection (from 1 to 5) for each item, depending on which statement best describes their personality. The inventory assesses personality traits along five dimensions (two items on the inventory assess each dimension), these being openness vs closedness, conscientiousness vs lack of direction, extraversion vs introversion, neuroticism vs emotional stability, and agreeableness vs antagonism. The traits assessed under openness are fantasy, esthetics, feelings, actions, ideas and values. Those observed under extraversion are gregariousness, assertiveness, warmth, activity, excitement seeking and positivity, modesty, and tender-mindedness. Assessed under conscientiousness are competence, dutifulness, order, self-discipline, achievement striving, and deliberation. Finally, the neuroticism dimension assesses hostility, depression, anxiety, anger, self-consciousness, vulnerability, and impulsiveness.[22] Some items are reverse scored; a score above average (for the sample) on each dimension is considered high, and a score below average is considered low. The instrument has been used in the institution where the present study took place.[23]

The questionnaires retrieved were sorted and screened for completeness. Only those properly completed were used for the study. Data was analyzed using IBM SPSS version 21.0. The data were subjected to analysis in the form of frequency distribution and descriptive statistics, including mean and standard deviation. Association between variables was determined using cross tabulations and the chi-square test, with P set at 0.05. Logistic regression was used to identify significant predictors of satisfaction with the general appearance of the teeth.

Results

Of the 200 questionnaires administered, 185 were returned, giving a response rate of 92.5%. Two questionnaires were not properly completed and were thus excluded. Therefore, 183 questionnaires were used for the study.

The age of the respondents ranged from 15 to 82 years, with a mean age of

Table 1 Socio-demographic characteristics of the respondents

Characteristics	Frequency	%
Gender		
Male	99	54.1
Female	84	45.9
Marital status		
Single	108	59.0
Married	57	31.1
Widowed	18	9.8
Highest education attained		
No formal education	3	1.6
Primary education	5	2.7
Secondary education	25	13.7
Tertiary education	150	82.0
Occupation		
Professional	17	9.3
Skilled worker	42	23.0
Semi-skilled worker	14	7.7
Unskilled worker	23	12.6
Dependent	87	47.5
Age (years)		
15–30	95	51.9
31–45	47	25.7
46–60	29	15.8
> 60	12	6.6
Total	183	100.0

34.13 ± 15.29 years. Table 1 depicts the sociodemographic characteristics of the respondents. A greater proportion (54.1%) were males, with a male:female ratio of 1:0.85. Over half (59.0%) were unmarried, and 82.0% had attained tertiary education. Semi-skilled workers were the least represented, accounting for 7.7% of the respondents, while dependents were in the majority, accounting for 47.5%. The age group most represented was 15 to 30 years of age, accounting for 51.9%.

The VAS scores of the respondents' satisfaction with their general appearance ranged from 0 to 10, with a mean score of 7.15 ± 1.91. More than half (56.3%) were satisfied with the general appearance of their teeth, while less than half (44.8%) were satisfied with their tooth color. There was a statistically significant association between satisfaction with the general appearance of the teeth and satisfaction with tooth color, as the majority of those dissatisfied with their tooth color were dissatisfied with the gener-

Satisfaction with general appearance of the teeth	Satisfaction with tooth color		Total n (%)
	Not satisfied n (%)	Satisfied n (%)	
Not satisfied	62 (77.5)	18 (22.5)	80 (100.0)
Satisfied	39 (37.9)	64 (62.1)	103 (100.0)
Total	101 (55.2)	82 (44.8)	183 (100.0)

P < 0.0001

Table 2 Association between satisfaction with general appearance of the teeth and satisfaction with tooth color among the respondents

Treatment	Desired		Total n (%)
	Yes n (%)	No n (%)	
Scaling and polishing	147 (88.0)	20 (12.0)	167 (100.0)
Tooth whitening	103 (61.7)	64 (38.3)	167 (100.0)
Dental crown	36 (21.6)	131 (78.4)	167 (100.0)
Tooth-colored filling	34 (20.4)	133 (79.6)	167 (100.0)
Denture	27 (16.2)	140 (83.8)	167 (100.0)
Orthodontic treatment	27 (16.2)	140 (83.8)	167 (100.0)

Table 3 Treatments desired among the respondents to improve the appearance of the teeth

al appearance of their teeth (*P* < 0.0001) (Table 2). There was also a statistically significant association between marital status as well as age and satisfaction with the general appearance of the teeth, with the majority of married respondents being satisfied (*P* = 0.01) as well as increased satisfaction with the general appearance of the teeth with increasing age (*P* = 0.05).

The majority (84.7%) did not feel their teeth were crowded, with this feeling being statistically associated with satisfaction with the general appearance of the teeth. The majority (89.3%) of those satisfied with the general appearance of their teeth did not feel their teeth were crowded (*P* = 0.049). Similarly, 83.1% did not feel their teeth were poorly aligned/arranged, and 88.5% did not feel their teeth were protruding. There was a statistically significant association between satisfaction with the general appearance of the teeth and the feeling of having poorly aligned/arranged teeth, as 88.3% of those who were satisfied with the general appearance of their teeth did not feel their teeth were poorly aligned/arranged (*P* = 0.03).

Dental caries in the anterior teeth was reported by 30.1% of the respondents, while 12.6% stated they had non-tooth-colored fillings in their anterior teeth. About a quarter (25.1%) claimed they had fractured anterior teeth, and 11.5% claimed they had missing anterior teeth. None of these claims had a statistically significant association with satisfaction with the general appearance of the teeth.

Regarding desired treatment to improve the appearance of the teeth, 91.3% of the respondents desired treatment, with 75.4% desiring multiple treatments. The number of treatments desired to improve the appearance of the teeth ranged from 0 to 6, with a mean of 2.05 $\pm$ 1.24 treatments. Of those who desired treatment, 88.0% desired scaling and polishing, and 61.7% desired tooth whitening. Dentures to replace missing teeth and orthodontic treatment to align teeth were each desired by 16.2% of the respondents (Table 3).

There was a statistically significant association between the desire for treatment to improve the appearance of the teeth and marital as well as educational status. More than half (58.7%) of single respondents desired treatment to improve the appearance of their teeth (P = 0.048). There was an increased desire to receive treatment to improve the appearance of the teeth as educational status increased (P = 0.03).

Logistic regression of the different variables occurred, with the overall percentage of correctly classified cases being 83.1%; a reflection that the model did a good job of correctly predicting satisfaction with tooth appearance among the respondents compared to when no predictor variable is built into the model (overall percentage of correctly classified cases of 56.3%). The Omnibus test of model coefficients (a goodness-of-fit test) had a significance value of P = 0.000, showing that the model was good for predicting satisfaction with tooth appearance among the respondents. Additionally, the Hosmer-Lemeshow test was significant, with a value of P = 0.888, showing that the model is well fitted. Cox & Snell R Square and Nagelkerke R Square showed that between 40.9% and 54.8% of the variability in the dependent variable (satisfaction with tooth appearance) was explained by the model.

Table 4 shows that with a 1-unit increase in the VAS score with which the respondents assessed satisfaction with their general appearance, they were 2,153 times more likely to be satisfied with the general appearance of their teeth. It also shows that those not satisfied with their tooth color were less likely to be satisfied with the general appearance of their teeth. Males were 1,457 times more likely to be satisfied with the general appearance of their teeth.

Regarding personality traits, 47.0% of the respondents scored high on the openness dimension, 36.1% scored high on the conscientiousness dimension, 22.4% scored high on the extraversion dimension, 43.2% scored high on the neuroticism dimension, and 33.9% scored high on the agreeableness dimension.

Table 5 shows the association between personality dimension/traits and satisfaction with the general appearance of the teeth. There was no statistically significant association between status on openness traits, extraversion traits, and agreeableness traits and satisfaction with the general appearance of the teeth, as well as satisfaction with tooth color and a desire to receive treatment to improve the appearance of the teeth. However, there was a statistically significant association between status on conscientiousness traits and satisfaction with the general appearance of the teeth, as a greater proportion of those who were satisfied with the general appearance of their teeth attained a low score on conscientiousness traits (P = 0.01). Similarly, there was a statistically significant association between status on conscientiousness traits and satisfaction with tooth color. Those who obtained a high score on conscientiousness traits tended to be dissatisfied with their tooth color (P = 0.008). There was also a statistically significant association between status on neuroticism and satisfaction with the general appearance of the

Variable	B	Significance	Odds ratio	95% CI
*VAS score	0.77	0.000	2.153	1.59–2.91
Age	0.02	0.412	1.020	0.97–1.07
Gender Male	0.38	0.465	1.457	0.59–3.62
Occupation Professional Skilled Semi-skilled Unskilled	 0.33 -0.36 0.34 -0.56	0.787 0.724 0.665 0.706 0.443	 1.388 0.699 1.406 0.573	 0.22–8.60 0.14–3.54 0.24–8.24 0.14–2.38
Marital status Single Married	 0.37 1.12	0.350 0.732 0.242	 1.45 3.06	 0.18–11.98 0.4 –19.90
Education No formal education Primary education Secondary education	 1.38 -0.62 0.26	0.817 0.518 0.669 0.667	 3.98 0.54 1.30	 0.06–261.69 0.032–9.18 0.39–4.33
Satisfaction with tooth color	-1.47	0.001	0.23	0.1–0.56
Feel teeth are crowded	0.25	0.699	1.29	0.36–4.60
Feel teeth are poorly aligned	0.95	0.086	2.59	0.88–7.69
Feel teeth are protruding	-0.39	0.587	0.68	0.17–2.73
Have dental caries	0.28	0.598	1.32	0.47–3.68
Have non-esthetic fillings	0.72	0.250	2.05	0.60–6.99
Have fractured teeth	0.75	0.129	2.12	0.80–5.58
Have missing anterior teeth	0.81	0.213	2.25	0.63–8.09
Constant	-8.40	0.000	0.000	

*VAS score on satisfaction

Table 4 Logistic regression to determine predictors of satisfaction with dental appearance

Authors, is there no female gender data here?

Table 5 Association between personality traits and satisfaction with general appearance, tooth color, and desire to receive treatment to improve appearance

Personality dimension	Satisfaction with general appearance		Satisfaction with tooth color		Desire to receive treatment		Total n (%)
	No n (%)	Yes n (%)	No n (%)	Yes n (%)	No n (%)	Yes n (%)	
Openness	*P* = 0.68		*P* = 0.65		*P* = 0.43		
High scorers	39 (45.3)	47 (54.7)	49 (57.0)	37 (43.0)	80 (93.0)	6 (7.0)	86 (100.0)
Low scorers	41 (42.3)	56 (57.7)	52 (53.6)	45 (46.4)	87 (89.7)	10 (10.3)	97 (100.0)
Conscientousness	*P* = 0.01		*P* = 0.008		*P* = 0.900		
High scorers	37 (56.1)	29 (43.9)	45 (68.2)	21 (31.8)	60 (90.9)	6 (9.1)	66 (100.0)
Low scorers	43 (36.8)	74 (63.2)	56 (47.9)	61 (52.1)	107(91.5)	10 (8.5)	117(100.0)
Extravertedness	*P* = 0.07		*P* = 0.23		*P* = 0.37		
High scorers	23 (56.1)	18 (43.9)	26 (63.4)	15 (36.6)	36 (87.8)	5 (12.2)	41 (100.0)
Low scorers	52 (40.1)	85 (59.9)	75 (52.8)	67 (47.2)	131(92.3)	11 (7.7)	142(100.0)
Agreeableness	*P* = 0.36		*P* = 0.13		*P* = 0.38		
High scorers	30 (48.4)	32 (51.9)	39 (62.9)	23 (37.1)	55 (88.7)	7 (11.3)	62 (100.0)
Low scorers	50 (41.3)	71 (58.9)	62 (51.2)	59 (48.8)	112(92.6)	9 (7.4)	121(100.0)
Neuroticism	*P* < 0.0001		*P* = 0.19		*P* = 0.27		
High scorers	48 (60.8)	31 (39.2)	48 (60.8)	31 (39.2)	70 (88.6)	9 (11.4)	79 (100.0)
Low scorers	32 (30.8)	72 (69.2)	53 (51.0)	51 (49.0)	97 (93.3)	7 (6.7)	104(100.0)
Total	80 (43.7)	103(56.3)	101(55.2)	82 (44.8)	167(91.3)	16 (8.7)	183(100.0)

teeth, as a higher percentage of those who were satisfied with the general appearance of their teeth attained low scores on the neuroticism dimension (*P* < 0.0001).

Discussion

The appearance of the teeth tends to be of concern to a large number of people seeking dental treatment, with tooth color appearing to be of particular cosmetic importance.[24] The proportion of respondents who were dissatisfied with the appearance of their teeth (43.7%) was higher than that reported in the UK (28%),[14] and that reported in a previous Nigerian study (45.1%).[25] Dissatisfaction with tooth color has been reported to range from 12.1% to 52.6% of various study populations,[26-28] which is lower than that observed in this study (55.2%). Tooth color tends to be one of the most important factors determining satisfaction with dental appearance, which is a finding that supports previous reports.[14,15,19,20]

A stepwise discriminant analysis suggested that 61% and 77% of the variance in perceived attractiveness ratings for women and men, respectively, was accounted for by tooth shade.[29] It has been reported that there is concern about dental appearance in

terms of tooth color, and this is indicated by a dissatisfaction with relatively mild tooth discoloration,[30] with increased demand for tooth whitening as a means of improving dental esthetics.[10,15,31]

Manipulating tooth color to make teeth whiter suggests that it does not make an individual more attractive or appear younger, but may be associated with increased self-esteem.[29] It has been proposed that attractiveness influences personality development and social interaction.[6] Also, self-confidence and self-esteem have been found to depend largely on an acceptable physical appearance and a pleasing, attractive smile in humans.[32]

Among the young, physical attractiveness is an important factor affecting social relationships,[33] so people who are already married may feel more satisfied with the appearance of their teeth as they are not planning to form new social relationships. This may be the reason for the observation in this study that married respondents tended to be more satisfied with the general appearance of their teeth compared with single respondents.

Among the respondents in this study, there was increased satisfaction with the general appearance of the teeth with increasing age. This may be because, during the intense social and affective interactive phase of life, oral esthetics has been said to potentially influence self-perceived appearance.[34]

Tooth discoloration tends to be associated with profound embarrassment and unimaginable psychosocial distress.[14] Negative emotions such as anxiety, depression, fear, and timidity are believed to be exhibited in cases of tooth discoloration.[35]

Attractiveness of the smile plays a key psychosocial role in defining the personality.[6] Social interactions that have a negative effect on self-image, career advancement, and peer group acceptance have been associated with an unacceptable dental appearance.[36-38] Facial attractiveness has been correlated with extraversion and self-confidence.[6]

A significantly higher proportion of those who scored low on the conscientiousness dimension were satisfied with the general appearance of their teeth, while a higher proportion of those who scored high were not satisfied. This may not come as a surprise. The traits assessed under the conscientiousness personality dimension include dutifulness, order, and competence. Therefore, it may be expected that anyone scoring high on these traits may tend toward perfectionism, and that such a person may therefore be more easily dissatisfied with the appearance of the teeth compared to anyone scoring low on these traits. Patients who exhibit this kind of personality trait may be difficult to satisfy with regard to esthetic dental treatment. Similarly, scores on the neuroticism dimension were significantly associated with satisfaction with the general appearance of the teeth. A higher proportion of those who scored low on the neuroticism dimension were satisfied with their general dental appearance. The nature of the traits assessed under the neuroticism dimension may explain this finding. Those who scored low on this dimension were emotionally stable. This emotional stability may confer a sense of general satisfaction with the self, which may also impact on a satisfaction with one's general appearance.

This study has opened up an area of research in dentistry that may have been neglected until now. More studies are needed to examine the association between personality and dental variables or indices. Dental practitioners need to pay attention to the personality traits of their patients, as they may determine the nature of dental services sought and possibly the prognosis of dental interventions.

Conclusion

Satisfaction with tooth color, marital status, and age are associated with satisfaction with the general appearance of the teeth. Treatments to improve the appearance of the teeth are desired by patients, with tooth whitening procedures being very acceptable.

Personality traits affect the perception of satisfaction with the appearance of the teeth, with patients with conscientiousness personality traits who tend toward perfectionism not readily satisfied, while those with neuroticism personality traits who are emotionally stable more readily satisfied with the appearance of their teeth. This is important when providing esthetic dental treatment to patients, as expectations differ with individual personality traits.

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