Perception of Facial Attractiveness among A Young Nigerian Population

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Abstract

Background: Facial aesthetics have always been an important concern among orthodontists. Current orthodontic treatment philosophies strive for occlusal goals that match with facial attractiveness. A thorough facial assessment should include not only the clinician's knowledge of perceived normality but also the patient's perception of attractiveness. Therefore, it is important to identify and define characteristics of not only a functioning occlusion but also that of a pleasing face. Questionnaires, Visual Analog Scale and objective facial measurements have been used to evaluate opinions regarding facial aesthetics. We therefore set out to assess facial attractiveness of a cohort of young Nigerians.

Methods: This study was a descriptive cross sectional study carried out among the undergraduate medical and dental students to determine the perception of facial attractiveness. A total of 400 subjects, 211males and 189 females aged 18 – 30 years old from two tertiary institutions using multistage sampling technique were evaluated. Their perception of facial attractiveness was derived from questionnaires and a 100mm visual analog scale. An objective soft tissue facial measurement to determine the facial index was carried using calipers. Data was processed and analyzed using SPSS16 software Chicago II statistical package.

Results: The majority of the subjects (97.2%) were satisfied with their facial appearance. Twenty- eight (13. 3%) males were not pleased with their faces in photographs while only 9 (4.8%) females were not pleased with their faces in photographs (p=0.003). There was statistically significant difference in the subjects subjective and objective assessment of their face shape (p= o.ooo1) using the facial index. Subjects rated skin (82.2%), shape of head (81.7%), teeth (81.3%), eyes (77.9%) respectively as the most important features that make up an attractive face on a 100 mm visual analog scale (VAS).

Conclusions: We therefore concluded that there was significant difference between the subjective perception and objective measurements of facial shape of subjects. The subjects could not accurately describe their face shape. Almost all subjects perceived their faces to be attractive. There was no gender difference. The facial feature subjects would like to change most was their teeth and this may predict increase demand for dental services in the future.

Key words: Facial attractiveness, Young adults , Face shape

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Introduction

Perception is a single, unified awareness derived from sensory processes while a stimulus is present. Psychologists say that our perception of forms depends on form concepts[1] . A person's self perception is of utmost importance as it influences the direction of a man's mind concerning his appearance, and not his appearance itself so much as his conviction that it is attractive or unattractive[2]. Psychologically, there are two dimensions to self perception of facial attractiveness[3]. The first dimension being the perception of attractiveness of the face. This perception is defined by the opinion of others as well as cultural norms and today, as cultures are changing, the perception of attractiveness is also being modified[4]. The second dimension in self perception of facial attractiveness is satisfaction with its appearance and this perception is from the internal view that is the inner experience of the individual dimension (field of personality) [3].

Orthodontic therapy is normally started for aesthetic considerations[5]. Dento facial problems causing cosmetic impairment are detrimental because of the adverse effect on a patient's self-esteem and possible unfavorable social responses in form of blatant teasing and ridicule or more subtly as social bias[6]. Studies have proven that perception of facial aesthetics influence psychological

development from early childhood to adulthood[6,7]. Infants show visual preference for human faces and by age 8 years, children's criteria for facial attractiveness are the same for adults[8]. A teacher's perception of a student's attractiveness can influence the teacher's expectation and evaluation of the student[5]. Children perceived as more attractive are not only more socially acceptable by their peers, but also believed to be more intelligent and to possess better social skills. In, addition, employees perceived as more attractive by their supervisors are given better job performance ratings than less attractive employees[7] . Thus, those who are perceived by their teachers, peers, employers, and themselves to be more attractive are more likely to experience positive social interactions and evaluations.

The main determinants of facial attractiveness are symmetry, youthfulness and averageness8. Facial attractiveness plays a key role in social interaction and it influences mating success, kinship opportunities, personality evaluations, performance and employment opportunities[3]. Furthermore, attractiveness influences personality development and social interaction[9]

Historically, orthodontists have not reconciled the paradox that their diagnostic and treatment decisions are based largely on objective morphological considerations and their patients' decision – making centres on aesthetic expectation and other subjective factors related to self image. The key to unraveling this discrepancy is a greater understanding of the role of perception by self in orthodontic diagnosis and treatment; hence the justification to study the self perception of facial attractiveness.

Materials And Methods

Approval was obtained from Research and Ethics Committee of the Lagos University Teaching Hospital and College of Medicine, and University of Ilorin Teaching Hospital to carry out the study. Written consent was also sought and obtained from the subjects after explaining the nature of the study.

The study was a descriptive cross sectional study carried out among the 18 – 30 years old medical and dental undergraduate students in both Lagos University Teaching Hospital and University of Ilorin Teaching Hospital from 100 to 600 levels. A total of 400 undergraduate medical and dental students were recruited from both institutions using multistage sampling technique. Equal number of students (200) were selected from each study institution and this included 83 males and 117 females from Lagos University Teaching Hospital and 128 males and 72 females from University of Ilorin Teaching Hospital.

All information collected were recorded on a structured survey form which had an identification number. The data collection form had four sections. The first section consisted of socio-demographic information. The second section consisted of a self administered questionnaire on perception of facial attractiveness and was completed by the subject. The third section was a 100mm-visual analog scale on the importance of the features that make up an attractive face while the fourth section was the record of facial measurements of the subjects completed by the investigator. Soft tissue facial measurements were carried out on the subjects by noting surface landmarks, careful inspection and palpation of the face. The cutaneous surface was marked using a marker. The subjects were seated in habitual occlusion in an upright position with Frankfort plane parallel to the floor[10] . Sliding and spreading calipers were used to measure the distances between the points and the measurement taken to the nearest 0.5mm. Each measurement was performed twice using standard examination techniques[11] .

Proscopic or Facial index=

$$\frac{\text{maximum vertical length of the face (n-gn)} \times 100}{\text{maximum horizontal width of the face (zg-zg)}}$$

Evaluation of the face using the facial index[12], was calculated for each subject and based on this index, the types of face shape were categorized according to Banisters classification[13] :

Results

The majority of the subjects were in the 18-20 year and 21-23year age groups with 139 (34.8%) and 132 (33%) in each age group respectively. One

Table I: Standard Values for Face Types

Face shape	Proscopic index range%
(very broad face)	<79.9
Euryproscopic (short and broad)	80-84.9
Mesoproscopic (medium)	85-89.9
Leptoproscopic (long and narrow)	90 – 94.9
Hyper leptoproscopic	> 95

hundred and one (25.2%) subjects were in 24-26 years age group and 28(7.0%) were in age group 27-30 years (Table II).

Objective and subjective assessment facial assessment.

Thirty–two (8%) subjects described their face shape as euryproscopic (short and broad) whereas 180 (45%) subjects had euryproscopic faces. Three hundred and nineteen (79.8%) described their face shape as mesoproscopic (medium) whereas 143(35.8%) subjects had mesoproscopic face shape and 49 (12.2%) subjects described their face shape as leptoproscopic (long and narrow), however 77 (19.2%) subjects had leptoproscopic face shape. Overall, there was statistically significant difference between subjective perception and objective measurement of face shape (P=0.0001).

Table II: Distribution of The Subjects According To Age And Gender

Age Years	Male n (%)	Female n (%)	Total n (%)
18-20	59(28.0)	80(42.3)	139(34.8)
21-23	65(30.8)	67(35.5)	132(33.0)
24-26	63(29.8)	38(20.1)	101(25.2)
27-30	24(11.4)	4(2.1)	28(7.0)
Total	**211(52.8)**	**189 (47.2)**	**400(100)**

Using Pearson correlation analysis, there was a very weak and negative correlation between the actual facial measurement and subjects responses ($r = -0.078$, $p = 0.117$) (Table III).

Perception of subjects about their facial appearance.

Three hundred and eighty four (96.0%) subjects consisting of 201 (95.3%) males and 183(96.8%) females felt their facial appearance was attractive while 16 (4.0%) subjects consisting of 10 (4.7%) males and 6 (3.2%) females felt their facial appearance was unattractive. There was no statistically significant difference between gender (p= 0.425).

Three hundred and eighty-eight (97.0%) subjects consisting of 203(96.2%) males and 185(97.9%) females were happy with their facial appearance, while 12 (3.0%) subjects consisting of 8(3.8%) males and 4(2.1%) females were unhappy about their appearance. There was no statistically significant gender difference (p= 0.321).

Three hundred and eighty nine (97.2%) subjects consisting of 203 (96.2%) males and 189(98.4%) females were pleased to see their faces in the mirror, 11 (2.8%) subjects consisting of 8(3.8%) males and 3(1.6%) females were not pleased. There was no statistically significant gender difference (p= 0.169).

Of the study population, 363 (90.8%) subjects consisting of 188 males and 180 females were very pleased to see their faces in photographs, while 37 (9.2%) subjects consisting of 28 males and 9 females were not pleased with their faces in photographs. A higher proportion of the females (95.2%) compared to the males (86.7%) were pleased with their faces in photographs and there was statistically significant gender difference (p= 0.003).

Only sixty-three (15.8%) subjects consisting of 31 (14.7%) males and 32(16.9%) females felt inhibited by social contacts. However, 337 (84.2%) subjects were not inhibited by social contacts. Out of

Table III: Correlation Between Objective And Subjective Assessment of Face Shape

Face shape	Subjective perception n(%)	Objective Measurement n(%)
Hyper and Euryproscope (Short and Broad)	32(8)	180 (45)
Mesoproscope (Medium)	319(79.8)	143(35.8)
Hyper and Leptoproscope (Long and Narrow)	49(12.2)	77(19.2)
Total	400(100)	400(100)

$\chi^2 = 176.59$ df =2 p= 0.0001*

Association between subjective measurement and objective perception of face shape.
Pearson Correlation Coefficient (r) = -0.078

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this, 180 (85.3%) were males while 157 (83.1%) were females. There was no statistically significant gender difference (p=0.539).

The majority, 341(85.2%) of subjects consisting of 179 (84.8%) males and 162 (85.7%) females liked to show their faces, while 59 (14.8%) subjects consisting of 32 (15.2%) males and 27 (14.3%) females did not like to show their faces. There was no statistically significant gender difference (p= 0.804). Three Hundred and sixty - eight (92.0%) subjects consisting of 195 (92.4%) males and 173 (91.5%) females were satisfied, with the arrangement of their teeth, while 32 (8.0 %) subjects consisting of 16 (7.6%) males and 16 (8.5%) females were not satisfied. There was no statistically significant difference between genders (p= 0.745).

Table IV: Perception of Facial Appearance

Variable	Male(%)	Female(%)	Total	p-value
How conscious do you feel about your facial appearance?				
Attractive	201(95.3)	183(96.8)	384(96.0)	
Unattractive	10(4.7)	6 (3.2)	16 (4.0)	
		χ^2=0.636	df = 1	0.425
How happy are you about your facial appearance				
Happy	203(96.2)	185(97.9)	388(97.0)	
Unhappy	8 (3.8)	4 (2.1)	12 (3.0)	
How would you describe the shape of your face	Likelihood	χ^2=0.984	df =1	0.321
Short and broad	11(5.2)	21(11.1)	32 (8.0)	
Medium	177(83.9)	142(75.1)	319(79.8)	
Long and narrow	23(10.9)	26(13.8)	49(12.2)	
		χ^2=5.957	df = 2	0.051
Pleased with face in mirror				
Pleased	203(96.2)	186(98.4)	389(97.2)	
Not pleased	8 (3.8)	3 (1.6)	11 (2.8)	
Pleased with face in photograph	Likelihood	χ^2= 1.891	df = 1	0.169
Pleased	183(86.7)	180(95.2)	363(90.8)	
Not pleased	28 (13.3)	9 (4.8)	37(9.2)	
Inhibited in social contact		χ^2=8.598	df = 1	0.003*
Yes	31 (14.7)	32 (16.9)	63 (15.8)	
No	180(85.3)	157(83.1)	337(84.2)	
		χ^2=0.337	df = 1	0.539
Like to show your face in public ?				
Yes	179(84.8)	162(85.7)	341(85.2)	
No	32 (15.2)	27 (14.3)	59 (14.8)	
		χ^2=0.061	df = 1	0.804
Satisfied with the arrangement of your teeth				
Satisfied	195(92.4)	173(91.5)	368(92.0)	
Dissatisfied	16 (7.6)	16 (8.5)	32 (8.0)	
		χ^2=0.106	df = 1	0.745
Satisfied with general appearance				
Satisfied	204(96.7)	185(97.9)	389(97.2)	
Dissatisfied	7 (3.3)	4 (2.1)	11 (2.8)	
	Likelihood	χ^2= 0.546	df = 1	0.460

*Significant P-value

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Three hundred and eighty-nine (97.2 %) subjects consisting of 204 (96.7%) males and 185 (97.9%) females were satisfied with general facial appearance, while 11 (2.8 %) subjects consisting of 7 (3.3%) males and 4 (2.1%) females were not satisfied. There was no statistically significant difference between genders (p=0.460)

There was no significant age difference in subjects' perception of facial attractiveness. (Table IV).

Area of face most liked by subjects.

One hundred and two (25.6%) subjects liked the shape of their face most, consisting of 76 males and 26 females, followed by seventy-seven (19.2%) subjects that liked their eyes most consisting of 38 males and 39 females, sixty-nine (17.2%) subjects liked their lips most consisting of 29 males and 40 females, while fifty (12.5%) subjects liked the shape of their teeth most consisting of 19 males and 31 females. Overall, there was statistically significant gender difference on the area of face most liked by subjects (p =0.000) (Table V).

What subjects would like to change about their faces.

The most important facial feature the subjects wanted to change was their teeth, 89 (22%) subjects, consisting of 51 males and 38 females. This was followed by hair, 74 (18.5%) subjects consisting of 39 males and 35 females, skin, 66 (16.5%) subjects consisting of 34 males and 32 females, nose was 60(15%) subjects consisting of 26 males and 34 females. Thirteen subjects (3.2%) would like to change their ears, consisting of 12 males and 1 female subject (Table VI)

Table V:: What Subjects Like Most About Their Face

	Male n %	Female n %	Total n %
shape of face	76 (36.0)	26 (13.8)	102(25.6)
Teeth	19 (9.0)	31 (16.4)	50(12.5)
Lips	29 (13.8)	40 (21.2)	69(17.2)
Nose	18 (8.5)	17 (9.0)	35(8.8)
Hair	19 (9.0)	14 (7.4)	33(8.2)
Eyes	38 (18.0)	39 (20.6)	77(19.2)
Skin	9 (4.3)	19 (10.1)	28(7.0)
Ears	3 (1.4)	• (0.5)	4(1.0)
None	0	2 (1.0)	2(0.5)
Total	211(100)	189(100)	400(100)

Likelihood χ^2=35.262 df 7. p-value 0.000*

*Significant P-value

Subjects scores for the importance of features that make up an attractive face.

The skin had the highest score with a total of 82.2%, males 80.8% and females 83.6% followed by the shape of the head, total rating of 81.7%, males 82.9% and females 80.4% and this was followed by the teeth, total rating of 81.3%, with males rating 79.8% and females 82.7%. There was statistically significant difference in subjects' scores for eyes, (p value = 0.038).

Table VI:: What Subjects Would Like To Change About TheirFace

Facial Feature	Male n %	Female n %	Total n%
Shape of face	12(5.7)	7 (3.7)	19(4.8)
Teeth	51(24.2)	38 (20.1)	89(22.2)
Lips	14(6.5)	10 (5.3)	24(6.0)
Nose	26(12.3)	34(18.0)	60(15.0)
Hair	39(18.5)	35(18.5)	74(18.5)
Eyes	8(3.8)	8(4.2)	16(4.0)
Skin	34(16.1)	32(17.0)	66(16.5)
Ears	12(5.8)	1 (0.5)	13(3.2)
None	15(7.1)	24(12.7)	39(9.8)
Total	211(100)	189(100)	400(100)

χ^2 = 15.446, df =8 , p= .051

In males, the facial feature rated as the most important were in the following order: shape of head (82.9%), skin (80.8%), teeth (79.8%) and eyes (76.0%). However in females the ratings were skin (83.6%), teeth (72.4%), shape of head (80.4%), eyes (79.8%) and lips (78.6%) (Table VII).

Discussion

A total of 400 students constituted the subjects from the two recruitment centers. There were equal samples from Lagos and Ilorin centers; though the

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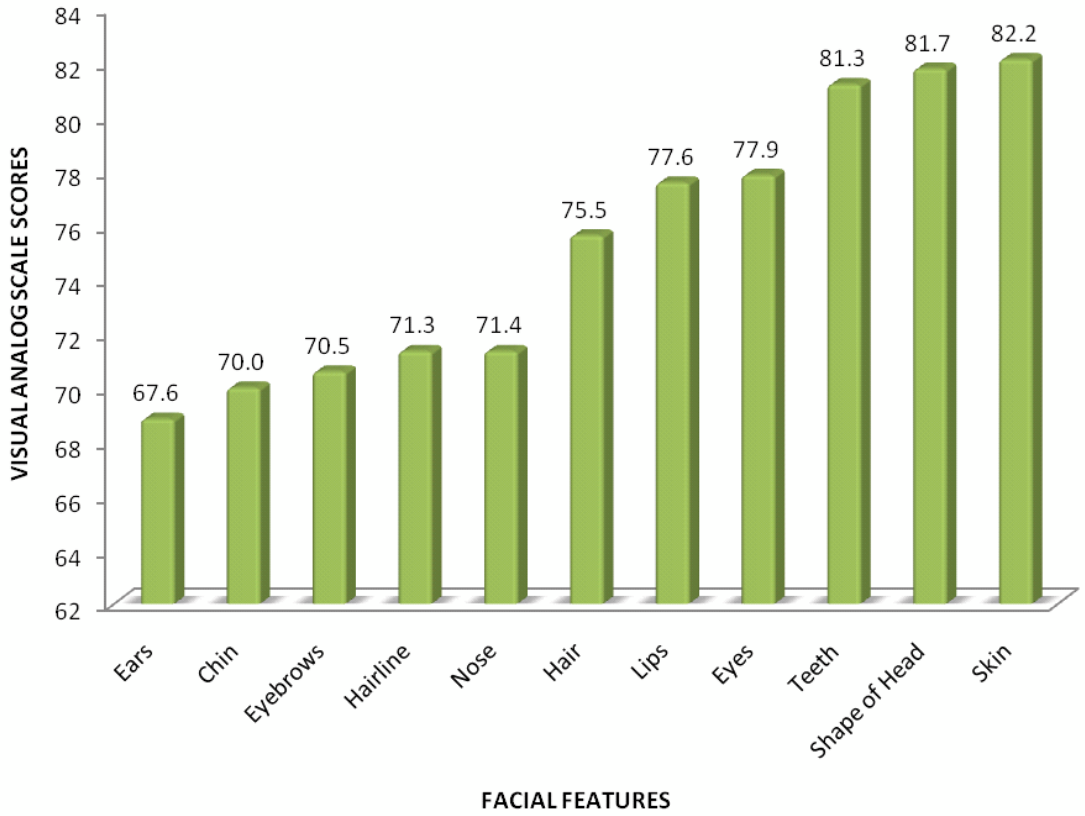

Figure 1: Importance of Facial Features In Determining Facial Attractiveness In Present Study

Table VII: Subjects Scores For The Importance of The Features That Make Up An Attractive Face In Present Study.

Facial	Male	Female	Total	t-test	P-value
Hair	73.4 ± 20.95	77.5 ± 19.18	75.5 ± 20.21	-2.034	0.430
Hairline	71.6 ± 20.91	71.1 ± 20.50	71.3± 20.69	0.244	0.808
Eyes	76.0± 18.78	79.8 ±17.88	77.9 ± 18.44	-2.079	0.038*
Eyebrows	71.1 ± 21.20	69.9 ± 21.30	70.5± 21.23	0.537	0.592
Nose	71.4±20.21	71.2±19.65	71.4±19.92	0.103	0.918
Skin	80.8±18.14	83.6±17.00	82.2 ±17.65	-1.610	0.108
Ears	67.8 ±19.93	67.3±22.82	67.6 ±21.32	0.242	0.809
Lips	76.6±18.61	78.6±18.58	77.6±18.60	-1.040	0.299
Teeth	79.8±17.46	82.7±16.59	81.3±17.09	-1.691	0.092
Chin	70.6 ±19.29	69.3±20.94	70.0±20.07	0.625	0.533
Head Shape	82.9±17.62	80.4 ±18.90	81.7±18.26	1.377	0.169

*Significant P-value

males were more than the females from Ilorin centre.

The majority of the subjects in this study were satisfied with their facial appearance. Only a small percentage of the respondents were dissatisfied with their facial appearance. The probable reasons for the good perception of facial attractiveness in this study may be due to the fact that the society does not believe in saying negative things about oneself or psychological factors which have been shown to have both negative and positive effects on perception of facial attractiveness.

Twenty–eight (13.3%) males were not pleased with their faces in photographs while only 9(4.8%) females were not pleased with their faces in photographs. However, there was statistically significant gender difference on how pleased they were with their faces in mirror. Females are known to care for their faces at regular intervals and might have freshened up before taking photographs.

The majority of the subjects were not inhibited in social contacts and they liked to show their faces. Inhibition in social contacts may be due to defect in the face or skin diseases that individual perceived may not be socially acceptable or due to some emotional psychosocial problems that the individual may be experiencing. Since most of the respondents liked their faces, it is unlikely they would be inhibited in social contacts and they would therefore like to show them. Being satisfied with one's face is a positive emotional booster that had been earlier alluded to by Klages et al[16] .

The majority of subjects were satisfied with the arrangement of their teeth, however there was no significant gender difference. His result is similar to a Nigerian study by Onyeaso and Sanu[17] and another Nigerian study by Ajayi and Ajayi[18] .

Shape of face

Majority of the subjects in this study could nut accurately describe their face shape.

There was statistically significant difference in the subjective and objective assessment of the face shape. This confirms findings of other studies carried out by Hershon and Giddon19 in which individuals were not able to accurately evaluate their facial profile and another study by Tufekci et al 20 in which about half of the subjects could not correctly describe their facial profile when asked. This is somewhat expected as individuals do not see themselves from the profile and, unless it is pointed out by a clinician, they may not be aware of their own profile.

The most important facial feature that subjects wanted to change most about their face was their teeth, followed by their hair, skin and nose respectively. This finding is consistent with those of other workers [21,22,23,24] and may indicate a future increase demand for dental services.

Subjects rated skin (82.2%), shape of head (81.7%), teeth (81.3%) and eyes (77.9%) respectively as the most important features in the face on a 100mm visual analog scale (VAS) (Table 6). This result is similar to a study done in Norway in 2007, in which patients rated teeth (81.5%) and eyes (75.7%) as the most important feature in a face [21]. It is noteworthy that the subjects in the Norwegian study were dental patients while those in this study were medical and dental students.

In the present study, males rated shape of head, skin, teeth and eyes respectively as the most important facial feature while in the Norwegian study; males rated eyes, teeth, skin and lips as the most important facial features. Females rated skin, teeth, head shape and eyes as the most important facial feature in the present study, however in the Norwegian study the female rating was as follows; teeth, eyes, skin, hair respectively.

In a Nigerian study by Otuyemi et al [24,25] on orthodontic attitudes and perception, facial features most important in determining facial beauty were rated by respondents in the following order, teeth had the highest rating of (54.8%) followed by face shape (32.9%), complexion (5.7%), jaws (3.3%), nose (2..4%) and hair (1.0%) respectively. There was no statistically significant gender difference in the rating. Other studies have also shown that teeth were very important when people judged their faces. However, this study was in contradistinction to a Swedish study by Josefsson et al [15] , where both boys and girls rated their hair more important than their teeth. York and Holtzman26 (1999) found that dental appearance affected judgment of facial attractiveness regardless of gender or the attractiveness of other facial features. Furthermore, Newton et al [27] concluded that the judgment a person makes concerning the personal characteristics of others was influenced by dental appearance. There was no significant gender difference between the scores for features that make up an attractive face except that for eyes. A similar study by Jemung and Fardal28 in Norway reported a statistically significant gender difference for the rating for teeth ($p= 0.0003$) and hair ($p= 0.0102$).

There was no statistically significant difference in subjects' perception of facial appearance by age, although all the subjects in this study were young adults (18-30 years). There could probably be more

striking differences if the age groups involved children who are still actively growing and older adults that may have had their anatomy disrupted by various dental illnesses and probable degenerative changes.

In summary, orthodontic treatment planning should not only be limited to patient's perception of their dental aesthetics but also the perception of their facial attractiveness before and after treatment. Therefore, the self-perceived need of the patient on facial attractiveness should be taken into account when planning treatment. We therefore concluded that there was significant difference between the subjective perception and objective measurements of facial shape of subjects. The subjects could not accurately describe their face shape. Almost all subjects perceived their faces to be attractive. There was no gender difference. The facial feature subjects would like to change included teeth 22.2%, hair 18.5%, skin 16.5% and nose 15% as compared to the other facial features. This may predict increase demand for dental services in the future.

Contributors

EMA initiated, designed, data collection and writeup
SOO, UIL contributed to design and writeup
INM contributed to design and writeup

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Conflict of Interest

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QUESTIONNAIRE

Section 1: To be completed by the subject.
Subjects: perception and opinion about their facial aesthetics.

1. Identification number:……
2. Age as at last birthday (in years): ……
3. Gender
   1 =Male
   2=Female
4. Institution
   1= Lagos
   2= Ilorin
5. Ethnicity
   1= Ibo
   2= Yoruba
   3= Hausa
   4= Others Specify ……
6. Height……
7. Weight ……
8. Body mass index ……

Section 2
1. How conscious do you feel about your facial appearance?
(a)Very attractive (b) attractive (c) Unattractive (d) Very unattractive
2. How happy are you about your facial appearance?
(a)Very happy (b) Happy (c) Unhappy (d) Very unhappy
3. How will you describe the shape of your face?
1. Short and broad 2.Medium 3.Long and narrow
4. Are you pleased to see your face in the mirror
(a)Very pleased (b) Pleased (c) Not pleased (d) Very unpleased
5. Are you pleased with your face in photographs?
(a)Very pleased (b) Pleased (c) Not pleased (d) Very unpleased
6. Are you inhibited in social contacts?
   Yes No
7. Do you like to show your face?
   Yes No
8. Are you satisfied with the arrangement of your teeth?
(a)Very satisfied (b) Satisfied (c) Dissatisfied (d) Very dissatisfied
9. How satisfied are you with your general facial appearance
(a)Very satisfied (b) Satisfied (c) Dissatisfied (d) Very dissatisfied
10. What do you like most about your face.
(Tick one)
(a)Shape of your face (b) Teeth © Lips
(d) Nose (e)Hair (f) Eyes (g) Skin (h) Ears
11. What would you like to change most about your face.(Tick one)
a) Shape of your face (b) Teeth (c) Lips (d) Nose (e)Hair (f) Eyes (g) Skin (h) Ears

Section 3
How important are the following features for an attractive face. Please indicate along the following line in each case(0 – 100mm).

HAIR
|…….....……|
Not important Very important
HAIRLINE
|……|
Not important Very important
EYES
|……|
Not important Very important
EYEBROWS
|……..|
Not important Very important
NOSE
|……..|
Not important Very important
SKIN
|……|
Not important Very important
EARS
|……..|
Not important Very important
LIPS
……|
Not important Very important
TEETH
|……|
Not important Very important
CHIN
|……..|
Not important Very important
SHAPE OF HEAD
|……..|
Not important Very important

ORIGINAL ARTICLE