

Perception of dental appearance in an out patient population seeking oral healthcare in a Nigerian tertiary Institution.

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ABSTRACT

Objectives: To determine the perception of dental aesthetics among a population of Nigerian general out patients seeking oral care at the National hospital and to explore the correlation between background variables such as age, gender, dwelling place (urban/rural) and educational level with perception of dental aesthetics.

Methods: This was a cross-sectional descriptive study of all first-visit patients either referred from the general outpatient or walk-in-patients at the dental outpatient department of the National hospital, Abuja. The questionnaire used was an adaptation of that from a previously published study and consisted of 3 sections; sociodemographics, perceptions and attitudes to tooth appearance and clinical examination to determine the condition of the anterior teeth. All data was analysed using IBM SPSS 26.0.

Results: Less than half (46.7%) of the respondents were of the opinion that very white teeth are the most beautiful teeth. However, majority of the respondents perceived very white teeth as not being natural (67.5%). There was a decrease in proportion of respondents who disagreed that very white teeth are the most beautiful teeth with increasing age. The status of the anterior teeth of the respondents was associated with the perception that very white teeth are the most beautiful teeth.

Conclusion: Function seems a more important factor than aesthetic appearance in the provision of restorative treatment. Also, perceptive importance of dental appearance is a weighty concept that can easily be overlooked. It varies from age to age; level of education, occupation; and place of abode but not influenced by gender.

Keywords:

INTRODUCTION: Growing evidence abounds that facial physical attractiveness is an important factor in determining an individual's quality of life ¹, whereby the features most commonly associated with facial attractiveness are the eyes and the mouth. Facial appearance is commonly used as a guide to a variety of personal characteristics including personality, integrity,

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social and intellectual competence and mental health ^{2,3}. The changing concept of health as a state of complete physical, mental, social well-being and not merely the absence of disease, underscores the attention contemporary dentistry gives to social and psychological impact of dento-facial appearance. Various studies have demonstrated associations between a person's dental appearance and quality of life as well as general well-being ^{4,7}. Therefore, optimum oral health should include the functional ability to chew and eat the full range of foods native to the diet; to speak clearly; to have a socially acceptable smile and dentofacial profile; to be comfortable and free

from pain, and as well as to have a fresh breath². Dental appearance has indeed been shown to be an important factor in social interaction and success^{8,9}. Clinical aesthetic dentistry has been involved in improving dental appearance. However, dental aesthetic value may vary with levels of education, age, gender and culture^{9,10}. Previous reports showed that Nigerians see midline diastema as a sign of beauty^{11,12} while the traditionally used dental aesthetic index considers it an anomaly with relatively high weight for treatment need. A previous study among a Finish population also suggested the existence of a physical attractiveness stereotype that "very white teeth are beautiful"¹³. Understanding this stereotype is important for planning restorative dental care needs of patients. A person's attitude towards dental appearance has been shown to be very significant with the need for it to be recognized during oral health treatment decisions^{14,15}. Although, human facial attractiveness has been studied extensively in the context of biologically-based preferences¹⁶⁻¹⁸, it has been suggested that preferences may be as a result of cultural experiences¹⁹ and differences. Furthermore, it has been proved that patient's attitude towards dental appearance is very important and should be acknowledged in dental treatment decisions^{14,15}. Hence this study sought to determine the perception of dental aesthetics among a population of Nigerian general outpatients seeking oral care at the National hospital and to explore the correlation between background variables such as age, gender, dwelling place (urban/rural) and educational level with perception of dental aesthetics.

METHODS

This study was undertaken at the dental outpatient department of the National hospital situated in the Nigerian Federal capital city of Abuja. This facility is one of the few public tertiary facilities in the city, which provides for both tertiary care from referrals of people with diverse cultural backgrounds across the country and secondary care from self-referrals, as is commonly the case in the dental department. The population sample consisted of 120 consecutive voluntarily consenting adults over

the age of 18 years attending the dental clinics of the hospital over a period of one month. All first-visit patients either referred from the general outpatient or walk-in-patients were approached for informed consent to participate in the study after a detailed explanation about the objective of the study was provided. The participants were then asked to complete a questionnaire anonymously, and in some cases where a participant was not literate, the research assistant provided assistance in administering the questionnaire. The questionnaire used was an adaptation of that from a previously published study by Vallituu et al.¹³. The questionnaire consisted of 3 sections. The first section sought information on the sociodemographic characteristics of the participants in the form of gender, age, dwelling place, highest level of education and occupation. A dwelling place was categorized as urban if within the Abuja city metropolis and its environs. And rural if patient resided without the city metropolis of Abuja. Occupation was classified into public service occupation (for those in the civil service or public servants), agricultural occupation (farmers, plant and animal husbandry of any type or both), industrial/trading occupation (artisans, business men and women, importers and exporters) and unemployed.

The second section consisted of 16 questions which sought information on perceptions and attitudes to tooth appearance and responses were a 5-point Likert scale response with five fixed responses. The questions were composed of: perceptions of white teeth, importance of teeth appearance and function, effect of teeth on a person's appearance and opinion on satisfaction with appearance of their teeth. The responses were scored as follows; 5= I agree entirely, 4= I slightly agree, 3= undecided, 4= I disagree and 5 = I strongly disagree. The patients were then clinically examined by a clinician and the conditions of the respondent's anterior teeth (mandibular and maxillary anterior teeth) were recorded as either all-natural teeth, presence of a fixed partial denture (FPD), presence of a removable partial denture (RPD) or presence of missing

teeth. The examiner was blinded to contents of the completed questionnaires so as to eliminate examiner bias. All responses were entered in Microsoft Excel and exported to IBM SPSS statistics for windows version 26.0 (IBM Corp. Armonk, N.Y., USA). For the purpose of analysis, the Likert Scale responses agree entirely and slightly agree were categorized as in agreement, while disagree and strongly disagree were categorized as in disagreement. Data analysis was done using descriptive statistics in the form of frequency, counts and percent. Chi square test was used to check for association between background variables and the statements on perception of dental aesthetics with P set at 0.05.

RESULTS

The number of usable responses obtained was 120. The frequency distribution of responses to background variables are as indicated in Table 1. Most of the respondents were women (60.0%) and the age group most represented were those <35 years old (40.0%). Most of the respondents were resident in urban dwelling places (75.0%). Half (50.0%) of the respondents were employed in public service occupations while 12.5% were not in employment of any sort. With regards to the status of the anterior teeth, 50.0% had all-natural teeth that were not restored with prosthesis, 25.0% removable prosthesis, 7.5% had fixed prosthesis and 17.5% had missing teeth (Figure 1). Less than half (46.7%) of the respondents were of the opinion that very white teeth are the most beautiful teeth. However, majority of the respondents perceived very white teeth as not being natural (67.5%). Furthermore, 46.7% preferred having white teeth and 95% felt that it is natural for teeth to become stained with substances like coffee and kolanut. Most (91.7%) of the respondents perceived function to be the most important property of teeth while 90.0% did not see appearance of the teeth as their most important property. Majority (94.2%) opined that patient's appearance should not be considered during treatment by a dental professional. A little above half of the respondents were undecided if it is essential to have regular teeth (55.8%) and wearing off of teeth was perceived to be natural

among 22.5% of the respondents. Majority (78.3%) were in agreement with the proposition that the teeth have great effect on how a person appears to others while 60.0% of the respondents wished to have natural-looking teeth according to their age. With regards to the front teeth, 88.3% claimed not to be bothered if their teeth are a bit worn while 98.3% were bothered if their front teeth are missing. Majority (94.2%) of the respondents perceived diastema as a beautiful feature of teeth and 48.3% desired a diastema. Majority (91.7%) reported being pleased with the appearance of their teeth. (Table 2). There was no statistically significant association between gender and any of the statements among the respondents ($p > 0.05$). There was a decrease in proportion of respondents who disagreed that very white teeth are the most beautiful teeth with increasing age, with a higher proportion (65.6%) of those aged >50 years perceiving very white teeth as not the most beautiful teeth and this was statistically significant ($p = 0.006$) (Figure 2). There was statistically significant association between dwelling place of the respondents and perception that function is the most important property of teeth ($P = 0.008$), with a higher proportion of urban dwellers (95.6%) compared to rural dwellers (80.0%) agreeing that function is the most important property of teeth (Figure 3). There was an increased proportion of respondents with increasing level of education who did not prefer white teeth with 73.7% of those who had tertiary education not preferring white teeth and this was statistically significant ($p = 0.001$) (Table 3). All those with vocational and secondary education seem not to be bothered if their front teeth are a bit worn and this was statistically significant ($p = 0.04$) (Table 3). There was statistically significant association between the class of occupation of the respondents and the perception if very white teeth are natural ($p = 0.008$), with a higher proportion (81.7%) of respondents in service occupation disagreeing compared to 46.7% of unemployed respondents (Table 4). There was also statistically significant association between the class of occupation of the respondents and the perception that it is not essential to have regular teeth ($p = 0.04$), with no respondent in the industrial/trading occupation in agreement while 46.4% of those in agricultural

Table 1. Frequency of background variables among the respondents

Variables	Nominal Scale	Frequency	Percent	Confidence Interval
Gender	Male	48	40.0	31.7 -48.3
	Female	72	60.0	51.7 -68.3
Age (years)	>35	48	40.0	30.8 -48.3
	36 -50	40	33.3	25.0 -42.5
	>50	32	26.7	19.2 -34.2
Dwelling place	Urban	90	75.0	66.7 -82.5
	Non -urban/Rural	30	25.0	17.5 -33.3
Level of education				
	No formal education	44	36.7	28.3 -45.8
	Primary	33	27.5	19.2 -35.8
	Vocational	10	8.3	4.2 -13.3
	Secondary	14	11.7	5.8 -17.5
	Tertiary	19	15.8	9.2 -23.3
Occupational class				
	Service occupation	60	50.0	40.8 -59.2
	Agricultural occupation	28	23.3	15.8 -30.8
	Industrial/trading	17	14.2	8.3 -20.8
	Unemployed	15	12.5	7.5 -18.3
Total		120	100.0	

Table 2 Frequency distribution of responses to tooth appearance perception statements

Statements	Response		
	In agreement	undecided	In disagreement
Very white teeth are the most beautiful teeth	56 (46.7)	15 (12.5)	49 (40.8)
Very white teeth look natural	23 (19.2)	16 (13.3)	81 (67.5)
Prefer having white teeth	56 (46.7)	19 (15.8)	45 (37.5)
It is natural that the teeth may be stained e.g by coffee, kolanut	114 (95.0)	3 (2.5)	3 (2.5)
Function is the most important property of teeth	110 (91.7)	2 (1.7)	8 (6.7)
The appearance of the teeth is their most important property	7 (5.8)	5 (4.2)	108 (90.0)
The patient's appearance should be considered when he/she is treated by a dental professional	4 (3.3)	3 (2.5)	113 (94.2)
It is not essential to have regular teeth	35 (29.2)	67 (55.8)	18 (15.0)
It is natural that the teeth may be worn	27 (22.5)	61 (50.8)	32 (26.7)
The teeth have a great effect on a person's appearance	94 (78.3)	2 (1.7)	24 (20.0)
I wish to have natural -looking teeth according to my age	72 (60.0)	48 (40.0)	0 (0.0)
It does not bother me if my front teeth are a bit worn	106 (88.3)	11 (9.2)	3 (2.5)
It does bother me if my front teeth are missing	118 (98.3)	2 (1.7)	0 (0.0)
Diastema is a beautiful feature of teeth	113 (94.2)	23 (19.2)	5 (4.2)
Desire a diastema	58 (48.3)	26 (21.7)	36 (30.0)
Pleased with appearance of teeth	110 (91.7)	7 (5.8)	3 (2.5)

Table 3: Association between level of education and preference for white teeth and if front teeth is a bit worn is burdensome

Statement	Highest level of education					Total n=120
	No formal education n=44	Primary n=33	Vocational n=10	Secondary n=14	Tertiary n=19	
I prefer having white teeth						*P=0.001
In agreement	24 (54.5)	20 (60.0)	2 (20.0)	7 (50.0)	3 (15.8)	56 (46.7)
Undecided	5 (11.4)	6 (18.2)	5 (50.0)	1 (7.1)	2 (10.5)	19 (15.8)
In disagreement	15 (34.1)	7 (21.2)	3 (30.0)	6 (42.9)	14 (73.7)	45 (37.5)
It does not bother me if my front teeth are a bit worn						*P=0.04
In agreement	41 (93.2)	23 (69.7)	10 (100.0)	14 (100.0)	18 (94.7)	106 (88.3)
Undecided	2 (4.5)	8 (24.2)	0 (0.0)	0 (0.0)	1 (5.3)	11 (9.2)
In disagreement	1 (2.3)	2 (6.1)	0 (0.0)	0 (0.0)	0 (0.0)	3 (2.5)

Fischer's Exact

Table 4. Association between class of occupation and perception if white teeth look natural, if it is not essential to have regular teeth and if is natural that the teeth may be worn.

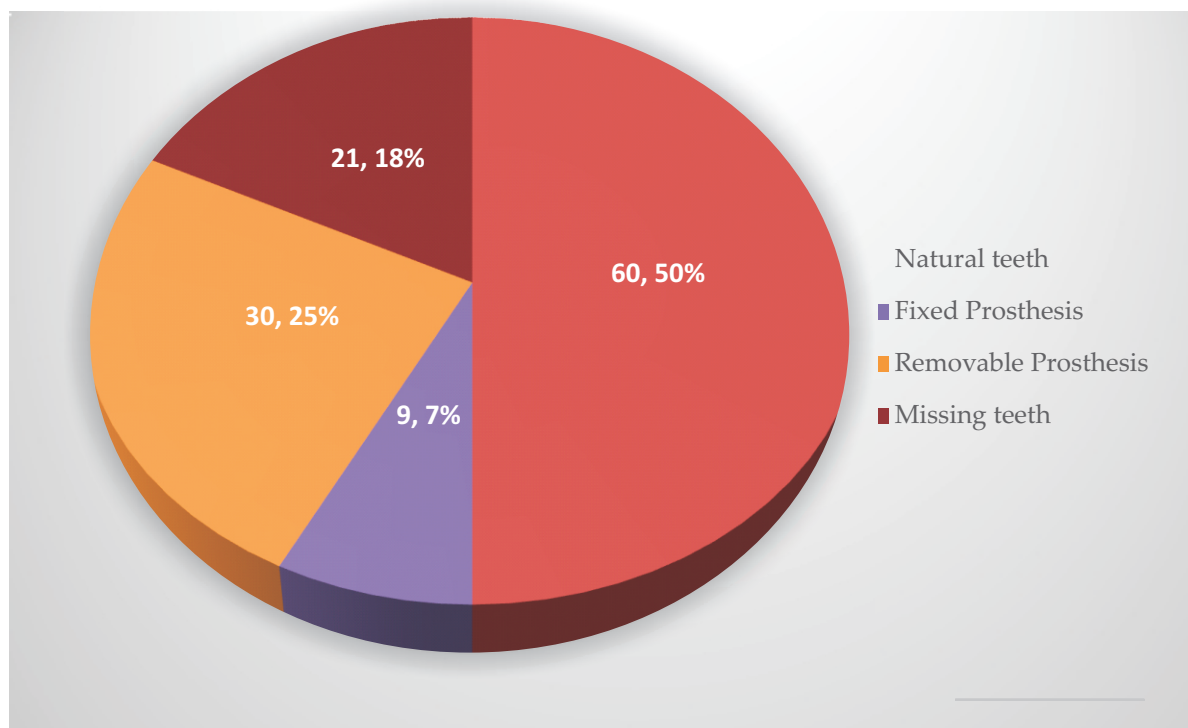
Statement	Class of occupation				Total n=120
	Service n=60	Agricultural n=28	Industrial/trading n=17	Unemployed n=15	
Very white teeth look natural					*P=0.008
In agreement	7 (11.7)	8 (28.6)	3 (17.6)	5 (33.3)	23 (19.2)
Undecided	4 (6.7)	3 (10.7)	6 (35.3)	3 (20.0)	16 (13.3)
In disagreement	49 (81.7)	17 (60.7)	8 (47.1)	7 (46.7)	81 (67.5)
It is not essential to have regular teeth					*P=0.04
In agreement	16 (26.7)	13 (46.4)	0 (0.0)	6 (40.0)	35 (29.2)
Undecided	33 (55.0)	12 (42.9)	14 (82.4)	8 (53.3)	67 (55.8)
In disagreement	11 (18.3)	3 (10.7)	3 (17.6)	1 (6.7)	18 (15.0)
It is natural that the teeth may be worn					*P=0.05
In agreement	16 (26.7)	7 (25.0)	3 (17.6)	1 (6.7)	27 (22.5)
Undecided	27 (45.0)	10 (35.7)	13 (76.5)	11 (73.3)	61 (50.8)
In disagreement	17 (28.3)	11 (39.3)	1 (5.9)	3 (20.0)	32 (26.7)

*Fischer's Exact

Table 5: Association between status of anterior teeth and perception if very white teeth are the most beautiful teeth and if the appearance of the teeth is their most important property

Statement	Status of anterior teeth				Total n=120
	Missing n=21	RPD n=30	FPD n=9	All natural n=60	
Very white teeth are the most beautiful teeth					*P=0.04
In agreement	14 (66.7)	13 (43.3)	3 (33.3)	26 (43.3)	56 (46.7)
Undecided	2 (9.5)	3 (10.0)	4 (44.4)	6 (10.0)	15 (12.5)
In disagreement	5 (23.8)	14 (46.7)	2 (22.2)	28 (46.7)	49 (40.8)
The appearance of the teeth is their most important property					*P=0.002
In agreement	2 (9.5)	0 (0.0)	3 (33.3)	2 (3.3)	7 (5.8)
Undecided	0 (0.0)	1 (3.3)	2 (22.2)	2 (3.3)	5 (4.2)
In disagreement	19 (90.5)	29 (96.7)	4 (44.4)	56 (93.3)	108 (90.0)

Figure 1: status of anterior teeth of the respondents



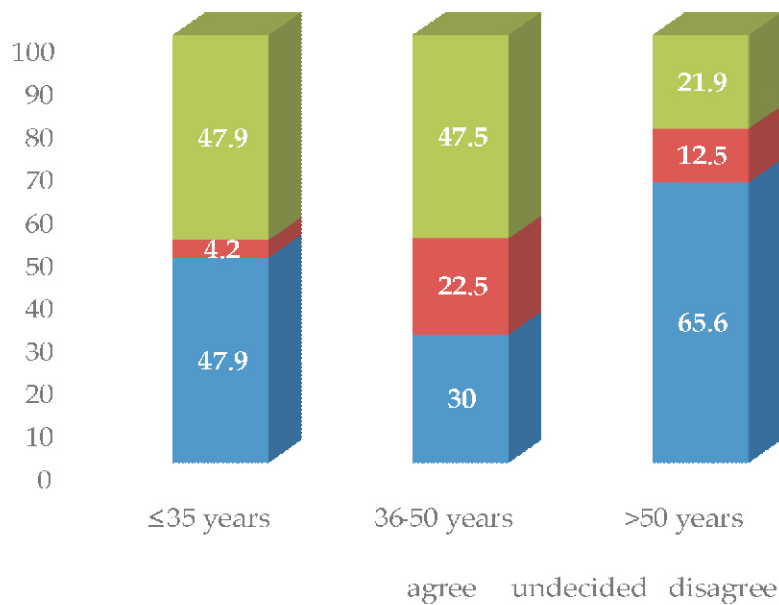


Figure 2: Association between age group of respondents and perception regarding if very white teeth are the most beautiful teeth ($P=0.006$)

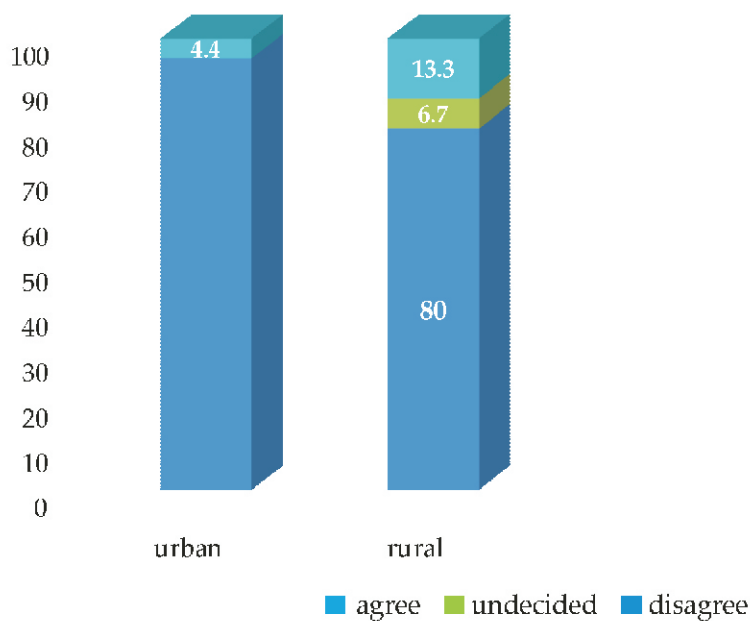


Figure 3: Association between dwelling place of the respondents and perception that function is the most important property of teeth ($*P=0.008$)

*Fischer's Exact

occupation were in agreement (Table 4). Furthermore, there was also statistically significant association between the class of occupation of the respondents and the perception that it is natural that the teeth may be worn ($p=0.05$), with a higher proportion (26.7%) of those in service occupation, followed by 25.0% of those in agricultural occupation, 17.6% of those in industrial/trading occupation and 6.7% of unemployed respondents in agreement (Table 4). The status of the anterior teeth of the respondents was associated with the perception that very white teeth are the most beautiful teeth ($p=0.04$), with a higher proportion (66.7%) of respondents with missing teeth in agreement, while 43.3% each of those with RPD and all-natural teeth and 33.3% of those with FPD were in agreement (Table 5). A statistically significant association between the status of the anterior teeth of the respondents and the perception that the appearance of the teeth is their most important property was observed ($p=0.002$), with no respondent with RPD in agreement and a higher proportion (33.3%) of those with FPD in agreement (Table 5).

DISCUSSION

Rating of dental aesthetics has been shown to be influenced by a variety of factors which determine the harmonious interaction between dental and gingival beauty, tooth colour, size and shape of teeth as well as the visibility of the teeth and soft tissue gums at rest and when smiling^{20,21}. The findings of this study lend credence to previous reports that showed that women utilize oral health care services more frequently than men as demonstrated in other studies^{5,13,22} but it is contrary to a previous study on dental aesthetics where there were more men enrolled in the study²³. The age group most represented were those <35 years old a finding different from a similar study with the most prevalent age group being 36 to 50 year old¹³ probably because the hospital was urbanely situated. Most of the respondents were resident in urban dwelling places making the proximity of the hospital a likely factor but then again, this was a cheaper alternative to the private facilities around resulting in more

patronage from far and near. Diverse occupation was recorded among the respondents in this study with half employed in public service occupations. This may be due to the fact that those employed in public service enjoy some form of health insurance making them seek oral health care more.

With regards to the status of the anterior teeth, 50.0% had all-natural teeth a finding lower than the 79% reported in a previous study¹³. The prevalence of partial prosthesis use in this study is higher than that recorded in a previous study^{13,24}. The prevalence of removable partial denture in this study (25.0%) was higher than the 14.0% reported in a previous study¹³. However, the prevalence of fixed partial denture (7.5%) was close to the 7.0% reported in a previous study¹³. The prosthetic treatment need recorded in this study was lower than that reported in a previous study²⁴. Opinions regarding dental appearance have been found to be influenced by various socio-cultural and individual factors²⁵. The prevalence of satisfaction with dental appearance of 91.7% was higher than the 58.0% reported in India²⁶, 50.0% in Saudi Arabia²⁷ 79.4% [28] and 56.3%¹²³ in Southern Nigeria. Although very white teeth were alleged as not being natural, they were perceived to be the most beautiful teeth in this study with almost half of the respondents desiring whiter teeth. This may be because white is associated with purity, cleanliness, goodness and perfection²⁵. Also, various studies have reported dissatisfaction with tooth colour^{23,29-32} with consequent increase in quest for tooth whitening procedures as reported in previous literature^{32,33}. Ability of teeth to become stained with substances like coffee and kolanut was perceived to be natural. Tea/coffee drinking habits have been shown to have an effect on tooth colour³³. It is important to educate patients on substances that can stain the teeth. Function was perceived to be the most important property of teeth while appearance was not perceived as so important. It has been noted that there is need to assess patients' perceptions and expectations prior to restorative and aesthetic treatment³³. Therefore, it is important to try to meet the

expectations of a patient especially when treatment choices involve picking either functionality or aesthetics. Having regular and well-arranged teeth as an essential part of dental appearance was mainly uncertain. It has been recommended that aspect of aesthetic treatment that is perceived as important to the patient should be priority of treatment³⁴. Hence, the need for regular and well-arranged teeth must be determined prior to orthodontic treatment as only motivated patient will go through treatment procedures that span over a period of time as seen with orthodontic treatment. Wearing off of teeth was perceived to be natural among a few of the respondents with majority claiming not to be bothered if their teeth are a bit worn. Tooth wear has been associated with age changes in dental hard tissues. It is important to educate patients on this naturally occurring phenomenon and identify pathological wear associated with oral habits such as bruxism as early as possible. The teeth were perceived to have great effect on how a person appears to others. This supports previous reports that dental appearance is indeed an important factor in social interaction and success^{8,9} with the appearance of the teeth playing an important role in developing the first impression of an individual³⁵. Almost all of the respondents felt they will be bothered if their front teeth are missing. Anterior teeth make up the aesthetic zone and are crucial in dental aesthetics. When they are missing it is obvious and visible. Missing visible teeth have been shown to be negatively perceived on all social traits³⁶ and play a considerable role in dental aesthetics perception³⁷. Majority of the respondents perceived midline diastema as a beautiful feature of teeth and some desired a diastema. This seems to be the trend in this part of the world as previous Nigerian studies have reported similar findings^{12,38-40}.

This study did not observe any statistically significant association between gender and any of the attitudinal statements. This is similar to previous reports that showed very uniform distribution in perception of dental aesthetics among both sexes⁴¹. However, this is not in consonance with a previous similar study where women were noted to be more concerned [13,31] about their dental appearance and wished to

have natural looking teeth according to their age¹³. Very white teeth were perceived to be the most beautiful teeth among the younger age groups; however, this was not the perception with increasing age. Age has been indicated to be one of the most important influences on a patient's dental perception, with concerns about dental appearance decreasing in priority in older subjects^{29,42,43}. Aging has not necessarily been associated with negative self-perception of tooth colour but suggests that perceived appearance is linked to cognitive factors other than social or cultural ones²⁹. Preference for white teeth was observed more among those with less education. A finding in agreement with a previous study¹³. Also, persons with lower level of education seem not to be bothered if their front teeth are a bit worn. This shows that perception of dental appearance is affected by the level of education of an individual. Occupation was identified has one of the factors determining perception of dental aesthetics. Public service which is mainly white-collar job was found to influence perception of dental aesthetics with more concern expressed over the attitudinal parameters assessed compared to other occupational groups.

The status of the anterior teeth of the respondents was also a determining factor for perception of dental appearance. Missing anterior teeth and any form of replacement of missing teeth seem to be more concerned about the parameters assessed. This may have influenced their quest for replacement of missing teeth. Perception regarding the appearance of the teeth as the most important property of teeth was associated with the status of the anterior teeth. Those with removable partial denture did not perceive appearance of teeth to be the most important property. This may be because they use prosthesis which may not be able to reproduce the true appearance of natural teeth. This finding is contrary to a previous report where those with removable partial denture felt that appearance of teeth was the most important property of teeth¹³.

CONCLUSION

Function seems a more important factor than aesthetic appearance in the provision of restorative treatment. Also, perceptive

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