

Influence of Dental Education on the Perception of Dental Aesthetics among Undergraduate Dental Students in a Nigerian University

Ameh GG, Enabulele JE

Department of Restorative Dentistry, School of Dentistry, University of Benin, Benin-City

Correspondence: Enabulele JE

Email: enabulele@uniben.edu

Abstract

Background: Literature has shown the existence of difference in perception of esthetics between dentists and lay people. Could this difference be attributable to undergraduate dental education? This study aims to determine the influence of dental education on the relative perception of dental aesthetics among undergraduate dental students.

Materials and methods: A cross-sectional study was carried out amongst all dental students attending a Nigerian University. The dental aesthetics self-perception questionnaire originally designed by Goldstein was administered to subjects. The data were subjected to descriptive analysis. Independent sample t-test and one-way analysis of variance were used to compare means across groups. Due to the multiple comparisons a post-hoc test (Bonferoni) was carried out with the one-way analysis of variance. Chi square was used to determine association between variables with p set at 0.05.

Results: A total of 132 students participated in the study. Majority (91.7%) were self-confident about smiling. More than half (54.5%) of the respondents believed there was someone with a better smile. With regards to wish of whiter teeth, 67.4% wished their teeth were whiter. The aesthetic self-perception scores of the respondents ranged from 0-12 with a mean score of 4.28 ± 2.64 . There was no statistically significant association between the mean aesthetic self-perception score and the level of study of the participants

Conclusion: A positive aesthetic self-perception was observed in dental students when it comes to their smile. However, there was no statistically significant association between the level of study of the respondents and the self-perception of dental student

Key words: Dental education, dental aesthetics, dental students.

Introduction

Aesthetics has been defined as a branch of philosophy that deals with questions of beauty and artistic taste¹. It also refers to concerns about beauty, the appreciation of beauty, a pleasant appearance and a set of principles behind the work of a particular artist or artistic movement². Self-perceived image of dental aesthetics has been shown to remarkably affect an individual's social and psychological well-being which may reflect in their behaviour and consequently affect their self-confidence³. The present generation gives importance to their personality² with patients becoming more aware of their dental aesthetics and seeking treatment to achieve their idea of ideal aesthetics^{4,5}.

In modern competitive society a pleasing appearance often means the dissimilarity between success and failure in both personal and professional lives with men and women being very conscious about their appearance². Enhancing and promoting total health of patients through management of oral health is the primary goal of dentistry. Competent practitioners are expected to have a complete understanding of the situations where intervention should be made and where patients' referral is appropriate or when no intervention is needed⁶.

Due to the advancements in dentistry, people tend to be eager to understand how dentistry would help in enhancing their smiles and dental aesthetics with

cosmetic dentistry striving to merge beauty and function with value as well as the individual needs of every patient².

The professional development of the dental students has been reported to be a continuous process starting the day the students commence the dental programme and ends at retirement from the profession with the first milestone in the developmental journey of the dentist being to obtain the dental degree⁶.

The general assembly of the Association of Dental Education in Europe and American Dental Education Association in North America had identified the core and supporting dental competences that a graduate dental student should obtain^{7,8}. Among the competences stated, was the ability of the graduate to identify patients' aesthetic requirements and determine the degree to which these requirements or desires can be met^{7,8}. Incorporation of this competency is based on the fact that aesthetic dentistry is a fast growing dental field with the demand for elective and cosmetic procedure continuously increasing⁶.

Literature has shown the existence of difference in perception of esthetics between dentists, dental students and lay people⁹⁻¹². Could this difference be attributable to undergraduate dental education? This study therefore was designed to determine the influence of dental education on the relative perception of dental aesthetics among dental students.

Methodology

The study was a cross-sectional study carried out amongst all undergraduate dental students of the School of Dentistry, University of Benin, Benin City. Permission was obtained from the Dean, School of Dentistry before the administration of the questionnaires. Written informed consent was duly obtained from the study participants before the commencement of the study. Confidentiality and privacy of respondents were respected during the study. In order to ensure confidentiality of respondents, no identifier was used. Respondents were informed that they had the right to decline participation or to withdraw from the study at any time they wish. Respondents were also informed that there were no penalties or loss of benefits for refusal to participate in the study or withdrawal. Ethical approval was obtained from the Ethics and Research Committee of the College of Medical Sciences, University of Benin.

The data collection tool was a self-administered questionnaire that consisted of 2 sections. The first section sought information on demographics (gender, age and class) of the participants. The second section was a dental aesthetics self-perception questionnaire originally designed by Goldstein¹³. A pre-test of the questionnaire was carried out using fresh dental graduates from the University of Benin, Benin City, Nigeria to enhance comprehensibility, validity, reliability and sensitivity of the data tool. Observed errors were corrected enhancing the tools before its use in the actual study.

The questionnaires were administered to subjects in a single opportunity after a regular lecture by one of the authors. The questionnaires were collected after being filled by the students within the hour of administration with all the students seated and interaction between students discouraged.

The questionnaire consisted of 15 YES or NO questions that inquired about: confidence when smiling, whether the subject puts the hand over the mouth when he/she smiles, whether he/she believes someone else has a better smile, whether the subject looks at magazines and wishes he/she had a smile as pretty as the models, whether he/she is satisfied with the size and shape of his/her teeth and gums. Questions 1, 9 and 15 are considered negative questions and scored 1 when the answer is NO. The remaining questions are scored 1 when the answer is YES. The lowest score attainable is 0 and the highest score attainable is 15. A score of 0 is regarded as a totally positive and 15 a totally negative aesthetic self-perception.

The filled and returned questionnaires were screened for completeness by the researcher, coded and entered into a personal computer that is password protected. Statistical analysis was carried out using the IBM-SPSS statistics 21.0 software. The data were subjected to descriptive analysis in the form of frequencies, percentages, cross tabulations, mean and standard deviation. Independent sample t-test and one-way analysis of variance was used to compare means across groups. Chi square was used to determine association between variables with p set at 0.05. Due to the multiple comparisons a post-hoc test (Bonferoni) was carried out with the one-way analysis of variance to compare the means of the different levels.

Results

A total of 132 students agreed to participate in the study. All returned their questionnaire properly filled

giving a 100% response rate. The ages of the respondents ranged from 15-36 years with a mean age 22.45 ± 3.56 years. There was observed male preponderance with a female: male ratio of about 2: 1

(**Figure 1**). The highest number of respondents was in 400 level accounting for 22.7% (**Figure 2**). Majority of respondents (95.5%) were unmarried (**Figure 3**).

Figure 1: Gender distribution of the respondents

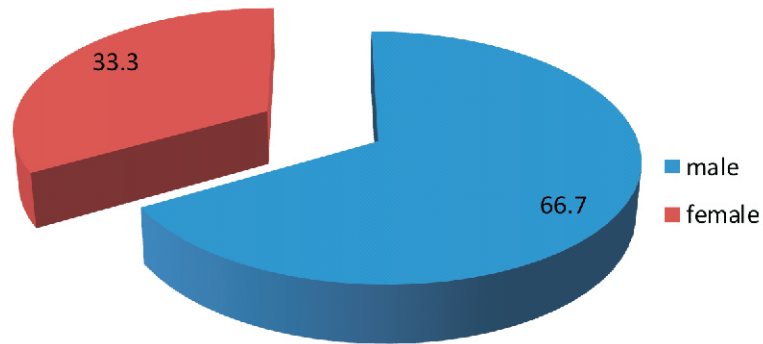


Figure 2: Class distribution of the respondents

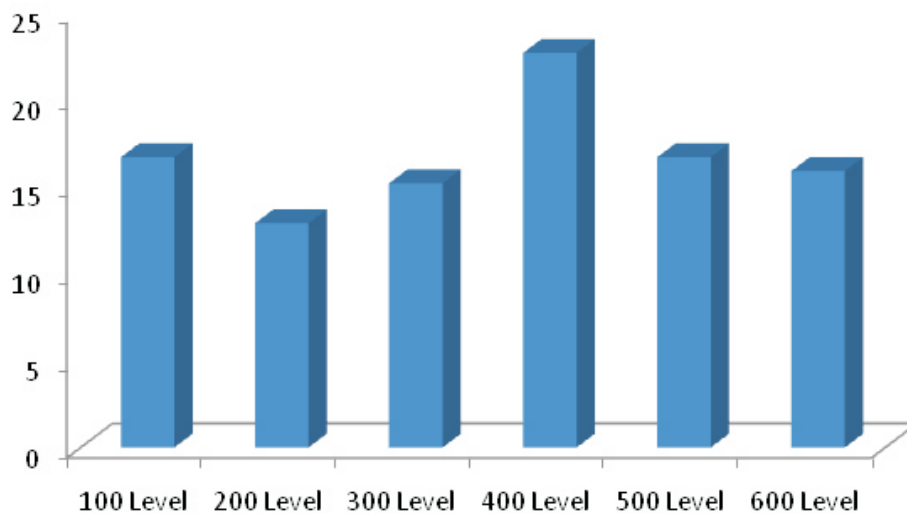


Figure 3: Marital status of the respondents

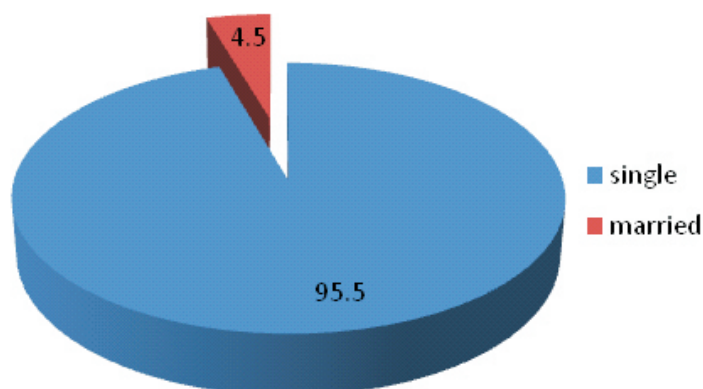


Table 1 shows the respondents' response to the questions assessing their self-perception of dental aesthetics. (Table 1).

Table 1: Respondents responses to questions on self perception of Dental Aesthetics

Question	Responses of respondents	
	Yes (%)	No (%)
Are you self-confident about smiling?	121(91.7)	11(8.3)
Do you ever put your hand over your mouth when you smile?	19(14.4)	113(85.6)
Do you photograph better from one side of your face?	46(34.8)	86(65.2)
Is there someone you believe has a better smile than you?	72(54.5)	60(45.5)
Do you look at magazines and wish you had a smile as pretty as the models?	37(28.0)	95(72.0)
When you read a fashion magazine are your eyes drawn to the models' smiles?	78(59.1)	54(40.9)
When you look at your smile in the mirror, do you see any defects in your teeth of gums	40(30.3)	92(69.7)
Do you wish your teeth were whiter?	89(67.4)	43(32.6)
Are you satisfied with the way your gums look?	116(87.9)	16(12.1)
Do you show too many or too few teeth when you smile?	37(28.0)	95(72.0)
Do you show too much or too few teeth when you smile?	34(25.8)	98(74.2)
Are your teeth too wide or too narrow?	26(19.7)	106(80.3)
Are your teeth too long or too short?	19(14.4)	113(85.6)
Are your teeth too square or too round?	20(15.2)	112(84.8)
Do you like the way your teeth are shaped?	111(84.1)	21(15.9)

Majority (91.7%) were self-confident about smiling. More than half (54.5%) of the respondents believed there was someone with a better smile than theirs. With regards to wish of whiter teeth, 67.4% wished their teeth were whiter. Majority (89.9%) of the respondents were satisfied with the way their gums

look. Likewise, 84.1% liked the way their teeth are shaped.

More 600 Level (81.0%), 300 Level (65.0%) and 400Level (63.3%) students believed that there was someone else with a better smile and this was statistically significant (Table 2).

Table 2: Number and percentage of YES and NO answers to question 4: Is there someone you believe has a better smile than you?

Levels	Yes (%)	No (%)	Total (%)
100	9(40.9)	13(59.1)	22(100.0)
200	5(29.4)	12(70.6)	17(100.0)
300	13(65.0)	7(35.0)	20(100.0)
400	19(63.3)	11(36.7)	30(100.0)
500	9(40.9)	13(59.1)	22(100.0)
600	17(81.0)	4(19.0)	21(100.0)
Total	72(54.5)	60(45.5)	132(100.0)

P=0.009

There was increasing desire to have smiles as pretty as models in magazines as study level increased with a decline in 200 level and this was statistically significant ($P=0.05$) (Table 3).

Table 3: Number and percentage of YES and NO answers to question 5; Do you look at magazines and wish you had a smile as pretty as the models?

Levels	Yes (%)	No (%)	Total (%)
100	3(13.6)	19(86.4)	22(100)
200	1(5.9)	16(94.1)	17(100)
300	5(25.0)	15(75.0)	20(100)
400	10(33.3)	20(66.7)	30(100)
500	9(40.9)	13(59.1)	22(100)
600	9(42.9)	12(57.1)	21(100)
Total	37(28.0)	95(72.0)	132(100.0)

$P>0.05$

The perception of showing too many or too few teeth while smiling decreased with increasing study level till 600 Level which showed an increase and this was statistically significant ($P=0.02$) (Table 4).

Table 4: Number and percentage of YES and NO answers to question 10; Do you show too many or too few teeth when you smile?

Levels	Yes (%)	No (%)	Total (%)
100	12(54.5)	10(45.5)	22(100.0)
200	6(35.3)	11(64.7)	17(100.0)
300	6(30.0)	14(70.0)	20(100.0)
400	6(20.0)	24(80.0)	30(100.0)
500	2(9.1)	20(90.9)	22(100.0)
600	5(23.8)	16(76.2)	21(100.0)
Total	37(28.0)	95(72.0)	132(100.0)

$P=0.02$

There was increasing likeness of participants shape of teeth as their study levels increased till the third year and a decline as the study levels increased beyond the third year with the 5th year participants displaying the least likeness ($P=0.05$) (Table 5).

Table 5: Number and percentage of YES and NO answers to question 15; Do you like the way your teeth are shaped?

Levels	Yes (%)	No (%)	Total (%)
100	17(77.3)	5(22.7)	22(100.0)
200	15(88.2)	2(11.8)	17(100.0)
300	19(95.0)	1(5.0)	20(100.0)
400	27(90.0)	3(10.0)	30(100.0)
500	14(63.6)	8(36.4)	22(100.0)
600	19(90.5)	2(9.5)	21(100.0)
Total	111(84.1)	21(15.9)	132(100.0)

$P=0.05$

The aesthetic self-perception scores of the respondents ranged from 0-12 with a mean score of 4.28 ± 2.64 . A few (6.8%) of the respondents had a totally positive aesthetic self-perception while no respondent had a totally negative aesthetic self-perception.

There was no statistically significant association between the mean aesthetic self-perception score and the level of study of the participants ($p=0.77$) (**Table 6**).

Table 6: One-way analysis of variance of the mean of self perception aesthetic score by class of respondents

	Degree of freedom	F value	P value
Between groups	5	0.513	0.766
Within groups	126		
Total	131		

$p=0.766$

Discussion

It has been conceptualized that the first impact a person makes is because of his appearance which lasts for a long time³. Awareness and attitudes regarding the form of the smile vary from one person to another and tend to be subject to factors that affect the individuals in diverse ways, depending on age, gender, marital status, socioeconomic status, level of education, occupation, influence of family peers, colleagues, cultural aspects and the mass media^{11,14}. Hence, attempts to evaluate the aesthetic self-perception of a given population is challenging as well as the comparison of results, which rarely present similarities¹⁵.

Most of the respondents were self-confident about smiling which is similar to findings in a previous study on Brazilian dental students¹⁵. This may be because the respondents were adolescents and young adults, a period of development that involves definition of one's personality within which smile plays a critical psychosocial role¹⁶.

A previous study¹⁵ reported that 90% of the dental students thought someone else had a better smile. This is different from the findings of this study where 54.5% of the respondents believed there was someone with a better smile than theirs. This may be due to the difference in cultural aspects of the populations studied. There was statistically significant association between level of study of the participants and the belief that there was someone else who had a better smile. This may be due to their knowledge of dental aesthetics which gets better as level of education gets higher.

Tooth colour is one of the most important factors determining satisfaction with dental appearance^{17,20}. The way the eye perceives tooth colour is affected by the multi-layered structure of varying thickness,

opacities and optical surface characteristics of the teeth²¹. Previous reports^{10,12,22} observed a stronger preference for whiter teeth by non-dentists than by dentists. This may be attributed to the process of becoming a dentist as dental students tend to have a better understanding of the appearance of the natural teeth, including the colour. It is expected that the understanding of the colour characteristics of dental structures, the physiological process of colour change and the 'natural' tooth colour by dental students might reduce the demand for tooth whitening among future dentists. However, this is not really the case as 67.4% of respondents still wished for whiter teeth. This may be due to the fact that the respondents in this study are adolescents and young adults who are highly influenced by external factors such as the media¹⁶ as well as inference from previous reports that younger subjects prefer whiter teeth better than older ones²³.

The satisfaction with dental appearance is influenced by gingival architecture, tooth colour, size, shape, strength and arrangement²⁴. As opposed to what was observed concerning tooth colour, majority of the respondents were satisfied with the way their gums look. Likewise, 84.1% of respondents liked the way their teeth were shaped. Though tooth shape and alignment are considered important as aesthetic variables it has been observed that they are not as important as tooth colour¹⁹.

The aesthetic self-perception mean score of the respondents of 4.28 ± 2.64 was lower than the 5.85 reported in Brazil¹⁵. However, none of the respondents had a totally negative aesthetic self-perception which is encouraging. Dental education had no significant influence on aesthetic self-perception mean score. This suggests that receiving dental education does not completely change an individual's perception of dental aesthetics.

Conclusion

A positive aesthetic self-perception was observed in dental students when it comes to their smile. However, there was no statistically significant association between the level of study of the respondents and the self-perception of dental students.

References

1. English Oxford Living Dictionaries. Available at <https://en.oxforddictionaries.com/definition/aesthetics>. Accessed 14th January 2017.
2. Manipal S, Anand Mohan CS, Lokesh Kumar D, Priyanka KC, Ahmed A, Adusimilli P. The Importance of dental aesthetics among dental students assessment and knowledge. *J Int Soc Prev Community Dent* 2014;4:48-51.
3. Afroz S, Rathi S, Rajput G, Rahman SA. Dental esthetics and its impact on psycho-social well-being and dental self-confidence: a campus based survey of North Indian University. *J Indian Prosthodont Soc* 2013;13:455-460.
4. Cooper GE, Tredwin CJ, Cooper NT, Petrie A, Gill DS. The influence of maxillary central incisor height-to-width ratio on perceived smile aesthetics. *Br Dent J* 2012;212:589-599.
5. Eltejaye L, Binthani F. Perception of dental aesthetics among dental patients in Kuwait. Available at www.hsc.edu.kw/fod/research/PDF_Files/FB_LE_13.pdf. Accessed on 8th July 2016
6. Omar H, Tai YT. Perception of smile aesthetics among dental and non-dental students. *J Educ Ethics Dent* 2014; 4-54-60
7. Spielman AI, Fulmer T, Eisenberg ES, Alfano MC. Dentistry, nursing and medicine. A comparison of Core competencies *J Dent Educ* 2005; 38:1-18
8. Kalkwarf KI, Haden NK, Valachoric R.W, ADEA commission on change and innovation in dental education. *J Dent Educ* 2005; 69:1085-1087.
9. Kokich VO, Kiyah HA, Shapiro PA. Comparing the perception of dentists and lay people to altered dental esthetics. *J Esthet Dent* 1999;11:311-324.
10. Shulman JD, Maupome G, Clark DC, Levy SM. Perception of desirable tooth colour among parents, dentists and children. *J Am Dent Assoc* 2004;135:595-604.
11. Jornung J, Fardal O. Perceptions of patients' smiles: a comparison of patients' and dentists opinion. *J Am Dent Assoc* 2007; 138:1544-1553
12. Talic N, Alomar S, Almaidhan A: Perception of Saudi dentists and lay people to altered smile aesthetics. *The Saudi Dental Clinic*. North Am 1989; 33, 157-164.
13. Goldstein ER. *Change your smile*. 3. ed. Chicago: Quintessence Books; 1997. 324 p.
14. Vallittu PK, Vallittu ASJ, Lassila VP. Dental aesthetics – a survey of attitudes in different groups of patients. *J Dent*. 1996;24:335-338.
15. Silva DC, de Castilhos ED, Masotti AS, Rodrigues-Junior SA. Dental Aesthetics self- perception of Brazilian dental Students. *RSBO* 2012;9:375-381.
16. Van der Geld P, Oosterveld P, Van Heck G, Kuijpers-Jagtman MA. Smile attractiveness. *Angle Orthod*. 2007;77(5):759-765.
17. Qualtrough AJ, Burke FJ. A look at dental aesthetics. *Quintessence Int* 1994;25:7-14.
18. Tin-Oo MM, Saddki N, Hassan N. Factors influencing patient satisfaction with dental appearance and treatments they desire to improve aesthetics. *BMC Oral Health* 2011;11:6. Doi; 10.1186/1472-6831-11-16.
19. Samorodnitzky-Naveh GR, Geiger SB, Levin L. Patients' satisfaction with dental aesthetics. *J Am Dent Assoc* 2007; 138:805-808.
20. Al-Zarea BK. Satisfaction with appearance and the desired treatment to improve aesthetics. *Int J Dent* 2013. Doi <http://dx.doi.org/10.1155/2013/912368>.
21. Christopher-CK HO. Shade selection. *Aust Dent Prac* 2007;116-119.
22. Tortopidis D, Hatzikyriakos A, Kokoti M, Menexes G, Tsiggos N. Evaluation of relationship between subjects' perception and professional assessment of aesthetic treatment needs. *J EsthetRestor Dent*. 2007;19: 335-338
23. Joiner A. Tooth colour: a review of the literature. *J Dent*. 2004;32:3-12.
24. Azodo CC, Ogbomo AC. Self-Evaluated Dental Appearance Satisfaction among Young Adults. *Ann Med Health Sci Res*. 2014;4:603-607