IBOM MEDICAL JOURNAL
Vol.18 No.4 | October - December 2025 | Pages 621-627
www.ibommedicaljournal.org

Beyond Aesthetics: Understanding the Impact of Intrinsic Tooth Discoloration on Wellbeing of Patients in a Nigerian Population

Mabiaku Y.O[1], Mabiaku T.O[2], Ibhawor L.O[3]

[1]*Department of Restorative Dentistry, Delta State University, Abraka, Delta State, Nigeria.*
[2]*Department of Family Medicine, Faculty of Clinical Sciences, Delta State University Abraka, Delta State, Nigeria.*
[3]*Department of Restorative Dentistry, Faculty of Dentistry, University of Benin, Edo State, Nigeria.*

Abstract

Background: Dental aesthetics plays a crucial role in facial aesthetics and influences personality assessment, giving an advantage to the more attractive individual. Tooth discoloration mares dental aesthetics, creating an aesthetic disadvantage to affected persons. This study sort to assess the impact of intrinsic tooth discoloration on the overall quality of life of those affected in a Nigerian population.
Methodology: The OHIP-aesthetics questionnaire consisting of seven domains was used in this study to collect data for analysis.
Results: Seventy (70) patients participated fully in the study, 46 females to 24 males, and an overall mean age of 26.80 ± 6.75 years. Most (60.0%) participants were of social class III. The overall mean score of OHIP-aesthetics was 30.66±1.32, functional limitation had the highest mean score of 6.76±0.21, while physical pain had the lowest 2.36±0.25, younger participants reported higher OHIP scores (32.19±2.14) than those in the older range (29.44±1.64.), lower levels of educational attainment, reported higher scores (30.63±1.42), than those with higher levels ((31.80±1.74), social classes (III\IV), reported higher scores ((31.80±1.74), than class I\II (28.73±1.97), females reported a higher mean score (30.72±1.59) than males (30.54±2.39) in this study. However, the differences in domain mean scores were not statistically significant ($p>0.05$).
Conclusion: In this study, the participants reported a high negative impact of intrinsic tooth discoloration on their overall quality of life, particularly in the functional limitation domain translating to a low self-assessment of their physical appearance, their sense of self-esteem and confidence.

Key Words: Dental Aesthetics, Intrinsic Tooth Discoloration, Quality of Life.

Context

Dental aesthetics refers to the assessment and appreciation of the beauty of the dentition[1,2]. It is also defined as the science of copying or harmonizing our work with nature and rendering our art inconspicuous about the appearance of dental restorations as achieved through its color and form[3,4]. Dental aesthetics is a component of facial aesthetics, and various studies have shown that social behavior is markedly affected by the perception of facial aesthetics[5-8]. Several studies have shown that more attractive individuals are perceived as being more intelligent, more interesting, and of a higher social class[9-13]. The perception of dental aesthetics is influenced by psychosocial attributes and factors such as culture, age, gender, and educational status[14-16]. A related study reported that among the significant factors affecting overall dental appearance were tooth color, shape, and position; quality of restoration; and the general arrangement

Corresponding Author:
Dr. Mabiaku Y.O
Department of Restorative Dentistry, Delta State University, Abraka, Delta State, Nigeria.

yvonnemabiaku@gmail.com

DOI: 10.61386/imj.v18i4.801

of the dentition, especially of the anterior teeth[1,17]. Furthermore, an aesthetically pleasing smile, also referred to as "smile power," was found to depend on tooth color, size, shape, and position, upper lip position, visibility of teeth and amount of gingival display[18,19]. Although each factor may be considered individually, all components must act together to create a harmonic and symmetric entity that produces the final aesthetic effect1. Generally, people desire pearly white teeth, and tooth color is one of the most important factors determining satisfaction with dental appearance[20].

Self-satisfaction with tooth color decreases with increasing severity of tooth discoloration[21]. White teeth have been positively correlated with high ratings of social competence, intellectual ability, psychological adjustment, and relationship status[2,22]. Hence, treatments which improve satisfaction with dental aesthetics have been found to improve a patient's quality of life, especially the psychological component[23,24].

Intrinsic tooth discoloration presents a significant aesthetic and psychological challenge, often leading to diminished oral health-related quality of life among affected individuals. The impact ranges from dental through medical, to include psychological, social, and physical effects[25-27], thus qualifying it as a form of disability[28]. This challenge spans beyond mere cosmetic concern, affecting functional, psychological, and social aspects of an individual's life[20]. The impact may vary within the different domains of an individual's well-being, hence, it deserves being investigated, especially within different cultures and populations. The concept of quality of life, especially as it relates to dental aesthetics, has been well researched[29], leading to the development of the Oral Health Related Quality of Life assessment tool (OHIP-aesthetics questionnaire), which is an abridged version of the original OHIP-49. This has been used in some studies[29,30] and cited in others[31,32]. OHIP-aesthetics addresses specific aesthetic issues in seven domains: functional limitation, physical pain, psychological discomfort, physical disability, psychological disability, social disability, and handicap[33].

There are few qualityof life studies on the impact of intrinsic tooth discoloration in individuals from sub-Saharan Africa, Nigeria in particular, hence this study was conducted. The aim was to elucidate the degree of impact on these individuals, amidst socio-economic difficulties.

Methodology:

This study was carried out at the Conservative Dentistry Clinic, in the Department of Restorative Dentistry, University of Benin Teaching Hospital, in Edo State, Southern Nigeria. The study was an observational cross-sectional study examining the effect of intrinsic tooth discoloration on the quality of life of patient. The sample size was determined using the statistical formula for international study in a clinic- based setting and calculated by Fischer's Formula (Cochran, 1997)[34] $n = Z^2pq/d^2$.

Ohip-aesthetics questionnaire

The selected patients were given the OHIP-aesthetics questionnaire to fill, in order to assess the degree of impact the condition has had on their quality of life, which prompted their desire for treatment.

The 14 items OHIP-aesthetics questionnaire is organized in seven dimensions namely; functional limitation, physical pain, psychological discomfort, physical disability, psychological disability, social disability and handicap. The responses were scored on a 5-point Likert scale ranging from 0 = "never" to 4 = "very often" (0 = never, 1 = hardly ever, 2 = occasionally, 3 = fairly often, 4 = very often). Each domain had two questions, giving a range of possible scores to be between a maximum score of 8 and a minimum score of 0, for each domain. A high score represents a low "Oral Health Related Quality Of Life" (OHRQoL), while, a low score represents a high OHRQoL.

In view of the analysis of socio-demographic factors, social class in particular, participants were categorized as social class I, II, III and IV using Arowojolu classification[35] which is a modification of classification by Famuyiwa and Olorunshola in 1988[36]: Class I: Executive managers, Company Directors, Professionals (Doctors, Lawyers, Engineers), University Professors, Traditional Chiefs.

Class II: Civil servants, nurses, professional teacher, secretaries, Clergymen, Businessmen and pensioners. Class III: (Semi-Skilled)-Tailors, Bricklayers, Carpenters, Typists, Sewing

Mistresses, Clerk, House wife. Class IV: (Unskilled)- Messengers, Roadside traders, Cleaners, Night-guards, Farmers.

Data analysis

The data collected was analyzed using Statistical Package for Social Science (SPSS) version 16.0. Discrete variables were tested using Chi-square while continuous variables were tested using Student t-test and One Way ANOVA. The results were presented in form of frequencies, percentages, means and standard error of mean (SEM), pie charts and tables.

Result

Seventy (70) patients participated fully in the study, with a gender distribution of 46 females to 24 males, and an overall mean age of 26.80 ± 6.75 years. The mean age of male participants was 26.58 ± 6.21 years while that of the female participants was 26.91 ± 7.08 years. Most participants (32.9%) were in the age range of 26-30 years. Most (60.0%) participants were of social class III.

Among the participants; 22.8% presented with single tooth discoloration, while others had multiple and generalized pattern of tooth discoloration, distributed equally (38.6% respectively) (Fig 1). Only 17.2% of the participants had associated symptoms, which range from pain, shocking sensation, pus discharge to swollen gums at base line.

The overall mean score of OHIP-aesthetics was 30.66±1.32 (Table 1). Of the 7 domains of OHIP-aesthetics, functional limitation had the highest mean score of 6.76±0.21, while physical pain had the lowest mean score of 2.36±0.25 (Table 1). Participants aged 25 years and below had a higher mean score of 32.19±2.14 in overall OHIP-aesthetics while participants older than 25 years scored 29.44±1.64. However, there was no statistically significant association between age, the domains of OHIP-aesthetics and overall OHIP-aesthetics score (Table 2). Also, female participants had a higher overall OHIP-aesthetics mean score (30.72±1.59) when compared to the male participants (30.54±2.39) in this study. There was no statistically significant association between gender, and the different domains of OHIP-aesthetics and the overall OHIP-aesthetics score (Table 3). Participants with lower levels of education had higher mean score (30.80±3.76) in overall OHIP-aesthetics compared to those with tertiary level of education (30.63±1.42). The relationship between educational attainment, all domains of OHIP-aesthetics and overall OHIP-aesthetics was not statistically significant (Table 4).

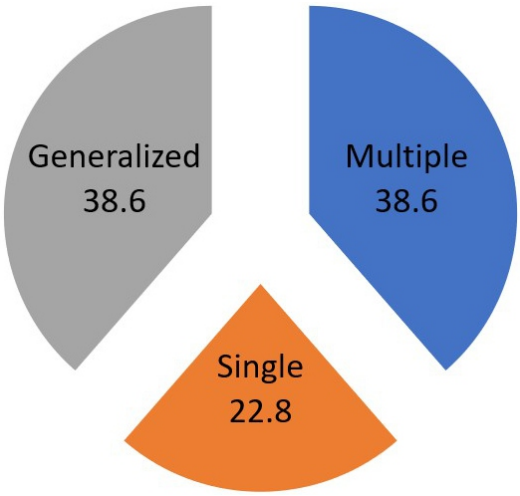

Figure 1: Distribution of intrinsic tooth discoloration among the Participants

Table 1: Mean scores of the domains and overall mean score of OHIP-aesthetics

Variable	Score Mean±SEM
Functional limitation	6.76±0.21
Physical pain	2.36±0.25
Psychological discomfort	5.89±0.24
Physical disability	3.31±0.24
Psychological disability	4.74±0.25
Social disability	3.09±0.28
Handicap	4.41±0.30
OHIP-aesthetics	30.66±1.32

Table 2: Relationship between age, the domains and overall OHIP-aesthetics

Domain	≤ 25 years Mean ± SEM	> 25 years Mean ± SEM	t	P-value
Functional limitation	6.58±0.32	6.90±0.27	-0.762	0.449
Physical pain	2.55±0.40	2.21±0.32	0.681	0.498
Psychological discomfort	6.06±0.31	5.74±0.35	0.663	0.510
Physical disability	3.65±0.34	3.23±2.05	0.871	0.387
Psychological disability	4.81±0.37	4.69±0.34	0.226	0.822
Social disability	3.68±0.47	2.62±0.32	1.918	0.059
Handicap	4.87±0.49	4.05±0.38	1.349	0.182
OHIP-aesthetics	32.19±2.14	29.44±1.64	1.041	0.301

Table 3: Relationship between gender, the domains and overall OHIP-aesthetics

Domain	Male Mean ± SEM	Female Mean ± SEM	t	P-value
Functional limitation	6.58±0.38	6.85±0.24	-0.607	0.546
Physical pain	2.58±0.45	2.24±0.30	0.653	0.516
Psychological discomfort	5.67±0.43	6.00±0.29	-0.658	0.513
Physical disability	3.50±0.43	3.37±0.28	0.261	0.795
Psychological disability	4.21±0.39	5.02±0.31	-1.567	0.122
Social disability	3.25±0.47	3.00±0.35	0.421	0.675
Handicap	4.75±0.54	4.24±0.37	0.797	0.428
OHIP-aesthetics	30.54±2.39	30.72±1.59	-0.063	0.950

Table 4: Relationship between educational status, domains of OHIP-aesthetics and overall OHIP-aesthetics at pre-treatment stage

Domain	Less than tertiary Mean ± S.D	Tertiary Mean±S.D	t	P-value
Functional limitation	7.10±0.50	6.70±0.23	0.677	0.501
Physical pain	2.90±0.90	2.27±0.25	0.888	0.069
Psychological discomfort	6.00±0.71	5.87±0.26	0.193	0.378
Physical disability	3.90±0.64	3.33±0.25	0.838	0.405
Psychological disability	4.60±0.70	4.77±0.27	-0.233	0.817
Social disability	2.90±0.75	3.12±0.30	-0.269	0.789
Handicap	3.40±0.98	4.58±0.30	-0.373	0.174
OHIP-aesthetics	30.80±3.76	30.63±1.42	0.044	0.965

Table 5: Relationship between social class, domains of OHIP-aesthetics and overall OHIP-aesthetics at pre-treatment stage

Domain	Class I/Class II Mean ± SEM	Class III/Class IV Mean ± SEM	t	P-value
Functional limitation	6.69±0.37	6.80±0.25	-0.240	0.811
Physical pain	1.88±0.37	2.64±0.33	-1.469	0.146
Psychological discomfort	5.61±0.44	6.05±0.28	-0.866	0.390
Physical disability	3.04±0.37	3.64±0.30	-1.229	0.223
Psychological disability	4.46±0.46	4.91±0.29	-0.867	0.389
Social disability	2.73±0.41	3.30±0.37	-0.973	0.334
Handicap	4.31±0.45	4.48±0.41	-0.268	0.789
OHIP-aesthetics	28.73±1.97	31.80±1.74	-1.127	0.264

Participants of social class III/IV had higher mean score (31.80±1.74) in overall OHIP-aesthetics and in all the domains of OHIP-aesthetics compared to participants of social class I/II (28.73±1.97). However, there was no statistically significant association between social class, all domains of OHIP-aesthetics and overall OHIP-aesthetics. (Table 5). Those with single tooth discoloration had a higher overall OHIP-aesthetics score (31.19±2.76), than those with multiple and generalized tooth discoloration (30.07±1.92 and 30.93±2.36). There was no statistically significant association between the distribution of tooth discoloration, the domains of OHIP-aesthetics and overall OHIP-aesthetics (Table 6).

Table 6: Relationship between distribution of discolouration, domains of OHIP-aesthetics and overall OHIP-aesthetics at pre-treatment stage

Domains	Single Mean±SEM	Multiple Mean±SEM	Generalized Mean±SEM	F	P-value
	6.87±0.38	6.59±0.31	6.85±0.38	0.197	0.822
Physical pain	2.75±0.54	2.22±0.39	2.26±0.42	0.363	0.697
Psychological discomfort	5.63±0.59	6.11±0.33	5.81±0.41	0.317	0.730
Physical disability	4.13±0.61	3.15±1.50	3.26±0.39	1.380	0.259
Psychological disability	5.00±0.41	4.44±0.40	4.89±0.45	0.458	0.634
Social disability	3.00±0.52	3.11±0.50	3.11±0.44	0.013	0.987
Handicap	3.81±0.60	4.44±0.47	4.74±0.53	0.668	0.516
OHIP-aesthetics	31.19±2.76	30.07±1.92	30.93±2.36	0.063	0.939

Discussion

The percentage of female participants (65.7%) was higher than that of the males (33.3%) in this study. This could be because females have been reported to have worse self-esteem than males when affected by physical injuries, and they are more dissatisfied about the general appearance of their teeth[14,2]. This is similar to the reports of a previous study[37] with a female population of 68%, but in contrast with another similar study with a higher male ratio of 50.9%. A majority, 60 (85.7%) of the participants had attained a tertiary level of education. This affirms the report that illiteracy is a barrier to accessing information about oral health care and utilization[39]. Consequently, a higher level of education creates an advantage in accessing health information and service utilization.

The analysis of the impact scores in this study revealed that the functional limitation domain reported the highest impact of the disease, with a domain score of 6.76±0.25. This could be because this domain addresses the aspect of self-awareness and appraisal, as well as the presence of a disorder and its effect on the appearance. Intrinsic tooth discoloration is an aesthetic disorder of the hard

dental tissue that affects facial aesthetics, and aesthetics deals with the appreciation of appearance as perceived by self or others[2]. Tooth discoloration mares dental aesthetics, and studies have shown that people with poor dental aesthetics are poorly appraised and are associated with poor personality trait[40,41].

In this study, the psychological domains consisting of psychological discomfort, psychological disability, and handicap domains were the next in order of highest impact, with mean scores of 5.89±0.24, 4.74±0.25, and 4.41±0.30, respectively. This could be because intrinsic tooth discoloration negatively affects the psychological status of an individual[27,42]. These domains deal with emotional behavior, difficulty relaxing, feeling ashamed, and being disadvantaged in life. Similar studies on the effect of intrinsic tooth discoloration in adolescents and young adults, reported different types of psychological impact in the life of the subjects, such as being teased by friends, avoidance of smiling, avoidance of answering questions and others[43,44,27]. The next domains in descending order were physical disability, social disability, and physical pain.

The lowest mean score was in the physical pain domain with an impact score of 2.36±0.25. This could be due to the fact that intrinsic tooth discoloration is basically an aesthetic problem which may be with asymptomatic presentation. However, presentations may be complicated by physical pain from pulpal pathology or supporting soft tissue. In this study, only 17.2% of the participants had associated symptoms at base line. Most patients were asymptomatic except that there was dentinal exposure or soft tissue inflammation, as in some cases of enamel hypoplasia and pulp necrosis.

The overall mean score of OHIP-aesthetics was 30.66±1.32. This was indicative of a high degree of negative impact of intrinsic tooth discoloration on the quality of life of the subject. Other related studies with similar findings that dental aesthetics affects quality of life[45] while another also reported the highest domain score in the functional limitation domain, and the lowest scores in the physical pain domain[37].

It is notable to report that in this study, the younger participants below 25years of age reported a higher impact of the condition compared to those who were older, a finding that may be due to the higher level of self-awareness among teenagers and young adults, compared to older adults.

Furthermore, the analysis revealed that patients who presented with a single tooth discoloration reported a higher impact score when compared to those with multiple or generalized tooth discoloration. This might be due to the fact that, single discolored tooth presents a more distinct color aberration, especially in the anterior segment, when compared to the multiple or generalized distribution. This was, however, not statistically significant; hence, the distribution of tooth discoloration in this study was not a determinant of the severity of impact of the condition on the patient's life.

Limitation of The Study: The study was conducted in a tertiary health institution situated in a University Community, hence, limiting the majority of the participants to the literate category.

Conclusion: The results of this study revealed that intrinsic tooth discoloration impact negatively on all domains of the quality of lives of the patients in this study. The highest impact was reported in the functional limitation domain which records aspects of their self-assessment, viz-a-viz, their self-esteem and confidence.

Declaration of conflict of Interest: The authors declare no potential conflicts of interest with respect to the research, authorship and/or publication of this article.

References

1. Qualtrough A, Burke F. A Look At Dental Esthetics. Quintessence Int.1994; 25: 7-14.
2. Akaslan ZZ, Sadik B, Erten H, Karabulut E. Dental Esthetic Satisfaction Received And Desired Dental Treatment For Improvement Of Esthetics. Indian J Dent Res. 2009; 20: 195-200.
3. Molin M. Cosmetic And Aesthetic Considerations. In: A Textbook Of Fixed Prosthodontics. Karlsson S, Nilner K, Dahl BJ, Editors. Stockholm. 2000; 246-276.
4. Barkat HA, Vats A, Singhal N, Vijayran VK, Bhardwaj N. Esthetic Rehabilitation With

Direct Composite Veneering: Two Case Reports. Int J Of Applied Dent Sci. 2022; 8(4):178-180.
5. Dion K, Berscheid E, Walster E. What Is Beautiful Is Good? J Pers Soc Psychol. 1972; 24: 285-290.
6. Esposito S. Esthetic For Denture Patients. J Prosthet Dent. 1980; 44: 608-615.
7. Rudiger H, Frauke M. Clinical Studies On The Appearance Of Natural Anterior Teeth In Young And Old Adults. Gerodontol. 2004; 21: 10-16.
8. Mathew, R. A. Esthetics In Primary Teeth. Int Res J Of Pharm. 2013; 4(8), 80. Https://Doi.Org/10.7897/2230-8407.04813
9. Shaw C, Rees G, Dawe M, Charles R. The Influence Of Dentofacial Appearance On The Social Attractiveness Young Adults. Am J Orthod. 1985; 87: 21-26.
10. Cunningham R. Measuring The Physical In Physical Attractiveness: Quasi–Experiments On The Sociobiology Of Female Facial Beauty. J Pers Soc Psychol. 1986; 50: 925-935
11. Lew K. Attitudes And Perceptions Of Adults Towards Orthodontic Treatment In An Asian Community. Community Dent Oral Epidemiol.1993; 21: 31-35.
12. Sellen P, Jagger C, Harrison A. Computer Generated Study Of The Correlation Between Tooth, Face, Arch Form And Palatal Contour. J Prosthet Dent. 1998; 8: 163-168.
13. Acar, Ö., & Uluçam, S. H. Esthetic Analyses In Dentistry. Int J Of Prosth And Rest. Dent. 2019; 9(3):10019-1238.
14. Vallittu P, Vallittu A, Lassila V. Dental Aesthetics--A Survey Of Attitudes In Different Groups Of Patients. J Dent. 1996; 24: 335–338.
15. Hassel A, Wegener I, Rolko C, Nitschke I. Self-Rating Of Satisfaction With Dental Appearance In An Elderly German Population. Int Dent J. 2008; 58: 98–102.
16. Carlson G, Johansson A, Johansson A, Ordell S, Ekbäck G, Unell L. Attitudes Toward Dental Appearance In 50- And 60-Year-Old Subjects Living In Sweden. J Esthet Restor Dent. 2008; 20: 46–55.
17. Ogunsuji OO, Molokwu CF, Oyedeji, Et Al. Psychosocial Impact Of Tooth Discoloration Among 12 To 15 Year Old School Children In Ibaban North West Nigeria. Oral Health Dental Sci. 2021;5(3):1-7.
18. Van Der Geld P, Oosterveld P, Van Heck G, Kuijpers-Jagtman A. Smile Attractiveness. Self Perception And Influence On Personality. Angle Orthod. 2007; 77:759-765.
19. Oral Health In America: A Report Of The Surgeon General. Rockville, Maryland, US Department Of Health And Human Services, National Institute Of Dental And Craniofacial Research, National Instit¬tute Of Health, 2000:7 (NIH Publication 00–4713).
20. Samorodnitzky-Naveh GR, Geiger SB, Levin L. Patients' Satisfaction With Dental Esthetics J Am Dent Assoc. 2007; 138: 805-808.
21. Alkhatib A, Manton DJ, Burrow MF, Saber-Samandari S, Palamara JE, Gross KA Et Al. Effects Of Bleaching Agents And Tooth Mousse On Enamel Hardness. J Invest Clin Dent. 2013; 4:94-100
22. Kershaw S, Newton JT, Williams DM. The Influence Of Tooth Color On The Perceptions Of Personal Characteristics Among Female Dental Patients: Comparisons Of Unmodified Decayed And Whitened Teeth. Br. Dent J. 2008; 204:256-257.
23. John M, Slade G, Szentpétery A, Setz J. Oral Health-Related Quality Of Life In Patients Treated With Fixed, Removable, And Complete Dentures 1 Month And 6 To 12 Months After Treatment. Int J Prosthodont. 2004; 17: 503-511.
24. Tammineedi S, Tammineedi S, Basam L, Et Al. Impact Of Aesthetic Intervention Of Discoloured Teeth On Mental Health-A Cross-Sectional Study In Guntar. J. Evid. Based Med Health. 2021; 8(26): 2328-2332.
25. Welbury RR, Shaw LA. Simple Technique For Removal Of Mottling, Opacities And Pigmentation From Enamel. Dent Update. 1990; 17:161-163.
26. Graffin SO, Beltran ED, Lockwood SA, Barker LK. Aesthetically Objectionable Fluorosis Attributable To Water Fluoridation. Community Dent Oral Epidemiol; 30:199-209.
27. Ibiyemi O, Taiwo JO (2011). Psychological Aspect Of Anterior Tooth Discoloration Among Adolescents In Igbo-Ora, South-Western Nigeria. Ann Ibd Pg Med. 2011; 9:94-99.
28. Spanemberg J, Cardoso J, Slob E, López-López,

J. Quality Of Life Related To Oral Health And Its Impact In Adults. J Of Stomatol Oral And Maxillo Surg. 2019; 120(3), 234-239.
29. Wong AHH, Cheung CS, Mcgrath C. Developing A Short Form Of Oral Health Impact Profile (OHIP) For Dental Aesthetics: OHIP-Aesthetic. Community Dent Oral Epidemiol. 2007; 35: 64-72.
30. Larsson P, John MT, Nihttps://Doi.Org/10.1016/J.Jormas.2019.02.004.Lner K, List T. Reliability And Validity Of The Orofacial Esthetic Scale In Prosthodontics Patients. Int J Prosthodont. 2010; 23: 257-262.
31. Jamieson ML, Robert-Thomson KF, Sayers SM. Risk Indicators For Severe Impaired Oral Health Among Indegenious Australian Young Adults. BMC Oral Health. 2010; 10:1-11.
32. Feu D, De Olivera BH, Almeida MA, Kiyak HA, Miguel JAM. Oral Health Related Quality Of Life And Orthodontic Treatment Seeking. Am J Orthod Dentofacial Orthop. 2010; 138: 152-159.
33. Slade GD. Derivation And Validation Of A Short-Form Oral Health Impact Profile. Community Dent Oral Epidemiol. 1997; 25: 284-290.
34. Cochran WG. Sampling Techniques (3rd Ed) New York. John Wiley And Sons. 1997; 1-25.
35. Arowojolu MO. Effect Of Social Class On The Prevalence And Severity Of Periodontal Diseases. Nig Med Pract. 2001; 39:26-28.
36. Famuyiwa OO, Olorunshola DA. Some Family Factors In Sickle Cell Anaemia In Lagos, Nigeria. Nig Med Pract. 1998; 35:70-73.
37. Mcgrath C, Wong AH, Lo EC, Cheung CS. The Sensitivity And Responsiveness Of Oral Health Related Quality Of Life Measure To Tooth Whitening. J Dent. 2005; 33: 697-702.
38. Santa-Rosa TTA, Ferreira RC, Drummond AMA, Demajalhaes CS, Vargas AMD, Ferreira EFE. Impact Of Aesthetic Restorative Treatment On Anterior Teeth With Fluorosis Among Residents Of An Endemic Area In Brazil: Intervention Study. BMC Oral Health. 2014; 14:52-59.
39. Biradar AS, Hiremath SS, Puranik MP, Sowmya KR, Sourabba KG. Social Factors Affecting Oral Health. J Med Edu Res. 2013; 3:1-12.
40. Newton JT, Prabhu N, Robinson PG.The Impact Of Dental Appearance On The Appraisal Of Personal Characteristics. Ht J Prosthodont. 2013; 16: 429-434.
41. Shakeerah O. Gbadebor, Deborah Mojirade Ajayi. Self-Reported Tooth Discoloration Among Patients Seen At Dental Center University College Hospital, Ibadan, Nigeria. J West Africa Coll. Surg. 2015;5(3);66-77.
42. Sujak SL, Kadir RA, Mohd Dom TN. Esthetic Perception And Psychosocial Impact Of Developmental Enamel Defects Among Malaysian Adolescents. J Oral Sci. 2004; 46: 221-226.
43. Chankanka O, Levy SM, Warren JJ, Chalmers JM. A Literature Review Of Aesthetic Perceptions Of Dental Fluorosis And Relationships With Psychosocial Aspects/Oral Health-Related Quality Of Life. Community Dent Oral Epidermiol. 2009; 38: 97-109.
44. De Paula Junior DF, Santos NC, Da Silver ET, Nunes MF, Leles CR. Psychosocial Impact Of Dental Aesthetics On Quality Of Life In Adolescents. Angle Ortho. 2009; 79:1188-1193