

SATISFACTION WITH DENTAL AESTHETICS AMONG GHANAIS AND THEIR DESIRED TREATMENT OUTCOME

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ABSTRACT

INTRODUCTION: Orofacial aesthetics perception of an individual has a direct effect on his or her psychosocial well being. The color, shape, position, general arrangement of the dentition (especially of the anterior teeth), the smile profile, and the quality of restorations significantly affect an individual's overall dental appearance and aesthetics.

AIM: To assess the dental aesthetic satisfaction among Ghanaians and their desired aesthetic treatments.

METHOD: This was a descriptive quantitative cross-sectional study, which utilized a closed-ended online questionnaire constructed on Google form. A sample size of 278 was statistically determined. A convenient sampling technique was used.

RESULTS: A response rate of 91.7 % (255 respondents) was achieved. The majority of respondents, 175 (68.8%), were aged between 23 - 30 years. Females were predominant; 132(51.6%). Although 196 (77.0%) did not feel the arrangement and color of their teeth affected their confidence to smile publicly, 59 (23.0%) felt they could not smile confidently in public because of their dental aesthetics.

CONCLUSION: Respondents in this study expressed satisfaction with their dental aesthetics and appearance. Most of the respondents indicated the desire to have their teeth scaled, polished, and whitened.

KEYWORDS: Aesthetics, Treatment, Satisfaction, Oro-facial, Psychosocial

INTRODUCTION

Orofacial aesthetics has a direct effect on the psychosocial wellbeing of an individual. Facial attractiveness correlates with self-esteem and is equally important for men and women.¹ The definition of good oral health now recognizes the individual's good psychosocial wellbeing as far as his or her orofacial aesthetic is concerned.² Aesthetic is not absolute but highly personal and subjective. Studies conducted globally to evaluate patients' level of satisfaction in terms of their dental aesthetics^{3, 4}. Among the significant factors affecting overall dental appearance and aesthetics are tooth colour, shape, position, the general arrangement of the dentition (especially of the anterior teeth), the smile profile, and the quality of restorations, if any.⁵ An aesthetically pleasing smile depends on tooth colour, size, shape and position, upper lip position, visibility of teeth, and amount of gingival display.⁶ Each of these factors may be considered individually; however, all components must act together to create a harmonic and symmetric entity that produces the final aesthetic effect. Pleasant teeth play an essential role in social interactions; they can influence achievements and success in relationships, self-confidence, and the availability of opportunities, personality evaluations, and possible employment.^{7, 8, 9} Bersezio et al. 2018 reported that home-whitening procedures positively affected patients' oral health-related quality of life, psychology, and aesthetic perception.¹

The recent advancement in cosmetic dentistry has increased the opportunities for patients to improve their dental appearances significantly^{10, 11}. Patients as such frequently demand procedures such as tooth whitening, anterior teeth restoration, labial veneers, crowns, and orthodontic treatment.⁹ A study conducted by Grand View Research, Inc. estimated the global cosmetic dentistry market to reach 27.95 billion dollars by 2024¹². Another study in 2016 forecasted a compound annual growth rate of 4% through the year 2020 for the global oral hygiene market.¹³ The cause of this increasing demand is multifactorial, with the desire for a perfect smile being significant. The American Academy of Cosmetic Dentistry estimates that around 99% of people think their smile is their most important social asset¹⁴. Generally, people have a desire for pearly white teeth. Thus, tooth colour is one of the most critical factors determining satisfaction with dental appearance.^{7, 9} Self-satisfaction with tooth colour has decreased with increasing severity of discolouration.¹⁵ A study involving 235 Malaysian individuals indicated 56.2% were not happy with their tooth colour.¹⁶ Another study conducted in Poland showed 61.0% of the subjects were dissatisfied with the colour of their teeth.¹⁷ A Brazilian study compared the patients' willingness to undergo bleaching treatment based on satisfaction levels. Patients who were unsatisfied with their aesthetic appearances were highly interested in receiving this treatment compared to those who were satisfied.

The study also revealed that many dental patients had already undergone teeth whitening procedures.¹⁸ These studies mentioned above and many others have demonstrated the importance of tooth colour in evaluating dental aesthetics. Furthermore, poorly arranged teeth, protruding anterior teeth, untreated dental caries, unaesthetic or discoloured anterior teeth restorations, and missing anterior teeth have all been reported as causing dissatisfaction with dental appearance among patients.^{3,7-9}

This study explores the level of self-perceived satisfaction with dental appearance among Ghanaians and the desired aesthetic treatment to improve their dental aesthetics. This study has become relevant, especially in the wake of the increased demand for aesthetic dental treatments among patients.

MATERIALS AND METHODS

This was a descriptive quantitative cross-sectional study, which utilized a closed-ended online questionnaire constructed on Google form. A sample size of 278 was determined from a targeted study population of 1000 Ghanaian adults based on the inclusion criteria from www.surveymonkey.com using a confidence level of 95% and a confidence interval of 5. The inclusion criteria included;

Respondents who were 18 years and above and should have a Gmail account. Respondents who could read and understand the English language.

The questionnaire was in the English language and comprised of 14 questions which included socio-demographics, personal oral hygiene practices and past dental history, self-perception of dental appearance, and the desired treatment to improve their dental aesthetics. The socio-demographic variables included sex, age, level of education, and past dental history. In addition, they indicated their satisfaction with tooth colour, the shape of their anterior teeth, arrangement of the teeth (crowding, poorly aligned, or protruding), and their effect on their confidence to smile. Finally, the options they desired for aesthetic treatment(s) such as orthodontic treatment, crowns, tooth whitening, and tooth coloured restorations.

Data was collected online by inviting respondents through a WhatsApp broadcast message to respond to the questionnaire. Respondents were required to sign-in using Gmail accounts, this helped eliminate multiple responses. Furthermore, to ensure the confidentiality of responses, only the researcher was allowed to access the data. Data collected were analyzed using SPSS, and the results presented as tables and charts.

RESULTS

Background characteristics of study respondents.

The response rate was 91.7 % (255 respondents). The

ages of respondents ranged between 18 – 50 years. The majority of respondents, 175 (68.8%), were in the 23 - 30 age range. Females were predominant; 132(51.6%). Almost all (247, 96.9%) of the respondents had received tertiary education.

Oral hygiene practices and past dental history.

The majority of respondents, 138 (54.3%), brushes twice daily. Past dental visit history showed 110 (43%) had visited the dental clinic thrice or more in their lifetime, while 83 (32.4%) had never visited the dental clinic. Scaling and polishing (cleaning) (131, 35.5%) was the most received dental treatment among respondents who had received dental treatment(s), followed by tooth extraction (64, 17.3%). Eighty-seven (23.6%) had not received any dental treatment, as shown in Table 1.0 below

Table 1.0 Oral hygiene practices and past dental history of study respondents. .

Oral hygiene practices and past dental history	Responses	Frequency	Percentage (%)
How many times do you brush your teeth daily?	Once	110	43.0
	Twice	138	54.3
	Thrice	7	2.7
	Total	255	100
How many times have you visited the dental clinic?	Never	82	32.0
	Once	38	15.0
	Twice	25	10.0
	Thrice or more	110	43.0
Total	255	100	
Which of the following dental treatment (s) have you received?	Extraction	64	17.3
	Scaling and polishing	131	35.5
	Whitening	16	4.3
	Filling (Restorations)	46	12.5
	Braces (Orthodontics)	25	6.8
	None	87	23.6
	Total	369	100

Satisfaction with dental aesthetics.

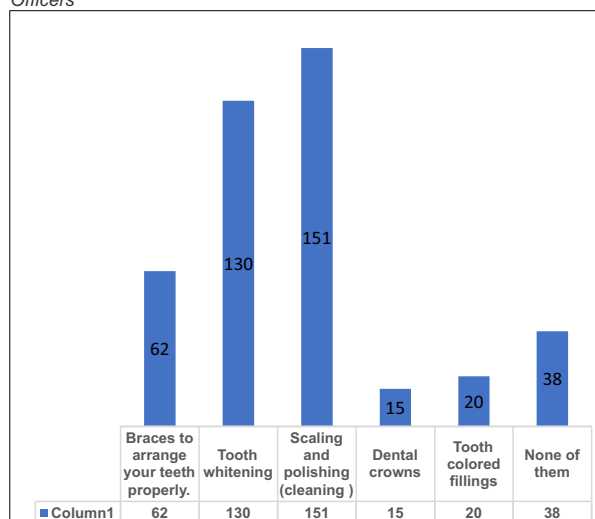
The majority of respondents were generally satisfied with their teeth' appearance, colour, shape, and arrangement. Although 196 (77.0%) of them did not feel the arrangement and colour of their teeth affected their confidence to smile publicly, 59 (23.0%) felt they were unable to smile confidently in public because of their dental aesthetics, as shown in Table 2.0 below;

Table 2.0. Satisfaction with dental aesthetics among study respondents.

Question	Responses	Number of Respondents	Percentage (%)
Are you satisfied with the general appearance of your teeth?	Yes	159	62.3
	No	96	37.7
	Total	255	100
Are you satisfied with the colour of your teeth?	Yes	138	54.1
	No	117	41.9
	Total	255	100
Are you satisfied with the shapes of your teeth?	Yes	193	75.7
	No	62	24.3
	Total	255	100
Do you feel your teeth are crowded?	Yes	28	11.0
	No	227	89.0
	Total	255	100
Do you feel your teeth are protruding?	Yes	36	14.1
	No	219	85.9
	Total	255	100
Are you satisfied with the arrangement of your teeth?	Yes	189	74.1
	No	66	25.9
	Total	255	100
Are you able to smile confidently in public?	Yes	196	77.0
	No	59	23.0
	Total	255	100

Desired dental treatment (s) to improve their dental aesthetics.

Scaling and polishing (cleaning) was the most desired aesthetic treatment among respondents, followed by teeth whitening (130, 50.8%). However, 38 (14.8%) of respondents did not want to undergo any treatment to improve their dental aesthetics, as shown in figure 1.0 below;ulation of about 400 wh"House Officers/Senior House Officers

**Figure 1.0. Desired dental treatment to improve dental aesthetics.**

DISCUSSION

This study sought to determine the satisfaction Ghanaians have about their dental appearance and the desired aesthetic treatment(s) to improve it. How an individual perceives his or her dental aesthetics significantly influences the quality of life of the person.

The age and gender distribution of respondents observed in this study are similar to the findings among a Malaysian study 16 but contrary to Saudi Arabian studies.^{19,20} Males were predominant in the latter studies, and the average ages outside the range of 23-30 years. The results of this study showed good oral hygiene practice and attitude among study respondents as 255 (55.7%) brushes more than once daily, and 172(67.6%) had visited the dentist at least once in their lifetime. Normay N., 2016, Wahid and Alshamran, 2018, have reported similar findings. In the former study, 72.8% had visited the dentist five (5) or more times. Scaling and polishing (131, 51.2%) was the most received dental treatment among respondents, followed by tooth extraction (64, 25%) in this study, as shown in Table 1.0.

The results of studies evaluating patients' levels of satisfaction with their dental appearance have shown contradictory results. While the majority of respondents reported an unsatisfactory general dental appearance in the studies by Tin-Oo et al., 2011; Nomay¹⁹ and Mufareh et al. 2016, a higher level of satisfaction was reported among the respondents in the studies conducted by Wahid and Alshamrani 2018²⁰; Ajayi et al., 2021;²¹ Akarlan et al., 2009 and Alkhatib et al., 2005. In our study, 159 (62.35%) respondents indicated their satisfaction with their general dental appearance. This finding was consistent with their response on satisfaction with the specifics of dental aesthetics considered, as shown in Table 2.0 In the study by Tin-Oo et al., 2011, dissatisfaction with tooth colour was the most common (56.2%) among the various factors considered. Additionally, some patients regarded their teeth as poorly aligned (32.3%), crowded (26.4%), and protruding (23.4%). Similarly, only a third of the respondents (32.3%) in the study by Wahid and Alshamran, 2018 were not happy about their teeth appearance. The dissatisfaction among them included teeth colour, which was the primary reason with a percentage of 46.3%, followed by tooth decay (13.7%) and size (2.3%).

Among the various components of dental aesthetics, tooth colour appeared to be a critical factor influencing satisfaction with dental appearance, as shown by the percentages associated with tooth colour dissatisfaction among the various factors.^{16,17,18} Naturally teeth are not to be completely white, and in most cases, the natural colour of teeth is within a range of light greyish-yellow shades. Teeth naturally darken with age, and their appearance is affected by the accumulation of surface stains acquired from tobacco products and the consumption of certain foods or drinks. In addition, the perception of tooth colour is severely influenced by skin tone and make-up.

Although the higher level of satisfaction with general dental appearance found in this study is solely not attributed to tooth colour satisfaction (Table 2.0), it can be considered an essential contributory factor. In contrast, a study done by Höfel et al.²² reported that perceptions of facial attractiveness were independent of tooth colour. Thus, that satisfaction with dental appearance may not correlate positively with facial attractiveness.

Although a high level of satisfaction with dental appearance was found among study respondents, only 38 (14.9%) of the respondents were unwilling to undergo any dental treatment(s) to improve their dental appearance and aesthetics. Among the desired aesthetic dental treatments, tooth colour treatments (scaling and polishing to remove stains and calculus and tooth whitening) were the most desired (Figure 1.0). This finding further stresses the importance of tooth colour in the perception of dental appearance and aesthetics among patients. Teeth bleaching or whitening is a procedure patronized to improve the colour of the tooth by most patients. An evaluation of the level of desire to undergo teeth whitening to improve their dental aesthetic was similar for both genders in Saudi Arabia (Aldakheel et al, 2018, Al-Nomay., et al.) and higher among post-secondary patients in Nigeria.^{18, 19} On the contrary, females demanded more tooth whitening as compared to males.²³ Similarly, a Hong Kong-based study showed that age was an important predictor for increased demand for tooth whitening.²⁴

The findings of this study are based entirely on reports through a self-administered questionnaire. However, a detailed dental examination of the respondents in this study may objectively reveal otherwise. Respondents having to sign in with a Gmail account was a limitation, as it eliminated those without Gmail account and those who could not read and write and those without smartphones.

CONCLUSION

The findings of this survey further enhance the importance of tooth colour in the perception of dental aesthetics. In addition, most of the respondents indicated their desire to have their teeth scaled, polished, and whitened. These results provide valuable indications of the potential demands for dental treatment, mainly aesthetic treatment. Therefore, understanding patients' self-perceived dental appearance is a critical component in providing treatment acceptable to patients.

REFERENCES

- Bersezio C, Javier M, Eduardo F et al. The effects of at-home whitening on patients' oral health, psychology, and aesthetic perception. *BMC Oral Health*. 2018; 18: 208-218
- Glick M, Williams D.M, Kleinman D.V, et al. A new definition for oral health developed by the FDI world dental federation opens the door to a universal definition of oral health. *J Am Dent Assoc*. 2016; 147: 915–7.
- Azodo C.C, and Ogbomo AC. Self-Evaluated Dental Appearance Satisfaction among Young Adults. *Ann. Med. Health Sci. Res*. 2014; (4):603-607.
- Mehl C, Harder S, Lin J, et al. Perception of dental aesthetics: influence of restoration type, symmetry, and colour in four different countries. *Int. J. Prosthodont*. 2015 28(1):60-64.
- Qualtrough A, Burke F: A look at dental aesthetics. *Quintessence International* 1994, 25(1):7-14.
- Van der Geld P, Oosterveld P, Van Heck G, et al. Smile attractiveness. Self-perception and influence on personality. *The Angle Orthodontist* 2007, 77(5):759-765.
- Kershaw S, Newton J, and Williams D: The influence of tooth colour on the perceptions of personal characteristics among female dental patients: comparisons of unmodified decayed and 'whitened' teeth. *British Dental Journal* 2008, 204:E9
- John M, Slade G, Szentpétery A, et al. Oral health-related quality of life in patients treated with fixed, removable, and complete dentures 1 month and 6 to 12 months after treatment. *The International Journal of Prosthodontics* 2004, 17(5):503-511
- Samorodnitzky-Naveh G, Geiger S, and Levin L: Patients' satisfaction with dental aesthetics. *Journal of the American Dental Association* 2007, 138(6):805-808.
- Matis B.A, Cochran M.A, Franco W M, et al. Eight In-office Tooth Whitening Systems Evaluated in Vivo: A Pilot Study. *Operative Dentistry*. 2007; 32-4, 322-327.
- Dahl JE, and Pallesen U. Tooth bleaching--a critical review of the biological aspects. *Crit. Rev. Oral Biol. Med*. 2003; 14(4):292-304.
- Inc., Grand View Research. *Cosmetic Dentistry Market to Reach \$27.95 Billion by 2024*. 2016. San Francisco: PRNewswire.
- Technavio Research. Increase in demand for cosmetic dentistry to create opportunities for the global oral hygiene market through 2020, reports Technavio. Retrieved from BusinessWire: 2016, August 11. <http://www.businesswire.com>
- Sarah Handzel, B. Demand for cosmetic dentistry is expected to increase in the coming years. Retrieved from Dentist's money digest: (2016, September Friday, 24) <http://www.dmdtoday.com>
- Xiao J, Zhou X, Zhu W, et al. The prevalence of tooth discolouration and the self-satisfaction with tooth colour in a Chinese urban population. *Journal of Oral Rehabilitation* 2007, 34(5):351-360.
- Tin-Oo et al. Factors influencing patient satisfaction with dental appearance and treatments they desire to improve aesthetics. *BMC Oral Health* 2011 11:6
- Wisniewski P, Szatko F, Wierzbicka M, et al. Patients' attitudes to tooth bleaching – a questionnaire study IADR/AADR/CADR Honolulu. 2004; 11(2) 10-22

18. Rwan Aldakheel., et al. "Patients' Desire and Previous Experience of Dental Bleaching". *EC Dental Science* 17.9 (2018): 1633-1644.
19. Nomay N. Public attitude and awareness towards their teeth colour and dental bleaching in Saudi Arabia: A cross-sectional survey. *J. Public Health Epidemiol.* 2016. Vol. 8(4); 45-52.
20. Abdul Qadir Abdul Wahid, Abdulkarim Mansour T Alshamrani (2018). General Public Perceptions and Knowledge on Tooth Bleaching in Riyadh, KSA. *The Egyptian Journal of Hospital Medicine* (April 2018) Vol. 71 (3), Page 2727-2737.
21. Deborah Mojirade Ajayi et al (2021). Perception about tooth colour and appearance among patients seen in a tertiary hospital, SouthWest, Nigeria. *Pan African Medical Journal.* 2021; 38:38. **doi:** 10.11604/pamj.2021.38.38.21422]
22. Höfel L, Lange M, and Jacobsen T (2007). Beauty and the teeth: perception of tooth color and its influence on the overall judgment of facial attractiveness. *The International Journal of Periodontics & Restorative Dentistry*, 27(4):349-357.
23. Theobald AH, Wong BK, and Quick AN (2006). The impact of the popular media on cosmetic dentistry. *N. Z. Dent. J.* 102(3):58-63.
24. Chan LC, Ho DYH, Ko MSK, and et al..(2013). The pursuit of a bright smile: tooth whitening among Hong Kong young adults. The University of Hong Kong (Pokfulam, Hong Kong). Available at: <http://hub.hku.hk/bitstream/10722/192773/1>

