

Measurements of Various Traditional Methods of Teeth Whitening among People of Hail, Kingdom of Saudi Arabia

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ABSTRACT

Aim: The purpose of this study was to measure traditional methods used by the people of Hail, Kingdom of Saudi Arabia to whiten teeth. This will help us to find out some of the possible reasons from them for using the techniques and would enable us to raise awareness.

Materials and methods: It was an observational study having a cross-sectional design. It included 350 respondents living in Hail, and the study used a nonprobability convenient sampling technique. Data about demographics and the methods used for teeth whitening were collected using a self-administered validated questionnaire translated into Arabic.

Results: The results depict that majority of the study participants (59.1%) with low income level were not satisfied with their tooth color and were willing to undergo tooth-whitening procedures. Coal was used by 21% of respondent for teeth whitening, followed by olive oil 15%, and lemon 10%.

Conclusion: Based on the information, it is clear that a group of people living in Hail is still comfortable to use the conventional methods to make their teeth look whiter.

Clinical significance: Despite the advances in esthetic dentistry, traditional methods of teeth cleansing and whitening are still being practiced. The practice is without evidence and without any scientific rationale. It can cost individuals their oral as well as overall health.

Keywords: Kingdom of Saudi Arabia, People of Hail, Teeth-whitening methods (charcoal, lemon, olive oil, and baking soda).

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INTRODUCTION

Whitening lightens teeth and helps to remove stain and discoloration. Whitening is among the most popular cosmetic dental procedures because it can greatly improve the look as well as smile. However, it is typically fairly lengthy and an uncomfortable procedure in some cases.^{1,2} Whitening is not a one-time procedure. It will need to be repeated from time to time to maintain the brighter color. Tooth whitening is most effective in surface (extrinsic stains). The most common causes of teeth being discolored or stained are extrinsic (poor oral health, use of tobacco, drinks like coffee or tea, and aging) or intrinsic (e.g., fluorosis and tetracycline staining).^{3,4}

New products and techniques are appearing day to day that are less harmful and relatively pleasing to dental tissues, which are being used to fulfill rising patient demands for esthetics.⁵

Studies have been conducted globally to evaluate patients' level of satisfaction in terms of dental esthetics.⁶ However, the questions remain whether all these innovations in esthetic dentistry can really fulfill the demands of people in general, because people are different, not only in their characteristics or opinions but also they have a variety of choices concerning esthetics. The perception of people on tooth whitening may vary greatly depending on their beliefs, religion, culture, and area of living. Having a great look of the teeth is very important in today's culture, but it remains to be judged why a growing number of people are still following the customary standard to make their teeth whiter. This includes using home available products like charcoal, olive oil, baking soda, lemon, or orange juices. What are the factors that make a barrier for them to seek better treatment—is it lack of awareness or following the trends of cultural beliefs or the high dental cost?

Besides these home remedies for tooth whitening, there are different ideal approaches to tooth bleaching: Whitening can be done in the dental office or at home.⁷ In bleaching done in the dental office, a high concentration of agents (25–40% hydrogen peroxide) is applied. The procedure is carried out until the bleaching has reached the shade that the patient desires, and the need to repeat without adverse unwanted effects. The use of peroxide is now generally accepted as a safe and effective treatment for discolored teeth.⁸ At home bleaching, trays are used

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with a low concentration of bleaching agent (10–20% carbamide peroxide), while the results and concentration are monitored by a dental professional.^{9,10} Results are sometimes less than ideal, but in other cases, overuse of the at-home bleaching method commonly causes dentin hypersensitivity.¹¹

Because tooth whitening is a major esthetic concern everywhere in the Kingdom of Saudi Arabia, it is important to determine public knowledge concerning the methods used. Regardless of the possible local hazards of overuse of the natural whitening products, long-term repeated use could lead to serious dental problems. Hence, the decision to manage and control the whitening effects in the form of bleaching should be dealt with the dental professional. However, even though some of the studies have been carried out on bleaching in other parts of Kingdom of Saudi Arabia,^{12,13} there has been very little research reporting the various tooth-whitening methods used by the people of the northern part of the Kingdom of Saudi Arabia. The aim of the present study is therefore to ascertain the different techniques used by the people of Hail in making their teeth look brighter and to address the reasons behind approaching this technique. This will help us raise the awareness and educate the general population about the benefits of available treatment options and long-term effects.

MATERIALS AND METHODS

The present study aimed at investigating various sources of traditional methods used in teeth cleansing by respondents living in Hail city. It was an observational, exploratory study, having a cross-sectional design. Structured face- and content-validated questionnaire was used as the study tool for the present study. The reliability of the questionnaire was determined by Cronbach’s alpha test, and the value observed after the test was 0.7, making it reliable to use in an acceptable category. Participants of the study include adult residents aged 18 years or above at various locations of Hail city, Kingdom of Saudi Arabia. The present study was conducted from May 2017 until October 2017. The questionnaire was distributed to 500 respondents, using a nonprobability, convenient sampling technique, out of which, 350 responded to the questionnaire giving a response rate of 70%. Information was gathered from the study participants after taking informed verbal and written consent. Respondents who did not provide written consent were excluded from the study. The ethical approval of the present study was applied for and taken through the University of Hail scientific research and ethic committee. The approval number given by the committee is H-2016-049. Data taken from the questionnaire were recorded and analyzed

using Statistical Package of the Social Sciences, version 20. Data are presented as descriptive statistics in terms of number and percentages. Results are also displayed using pie and bar charts.

RESULTS

Table 1 shows a total of 350 respondents who participated in the study. Out of them, 97(27.7%) were males and 253(72.3%) were females.

Table 2 shows the income level and its relation with patient’s satisfaction. It presents that majority of the people (59.1%) having low income (<5,000 SR) were not satisfied with their dental appearance and color, whereas 1.7% did not complain much about their teeth color. People with more than 5,000 SR income have comparatively less complaint with their dental appearance. About 28% of people did not have satisfaction with their teeth color and look, and 11.5% of people, on the contrary, were not concerned about their dental features.

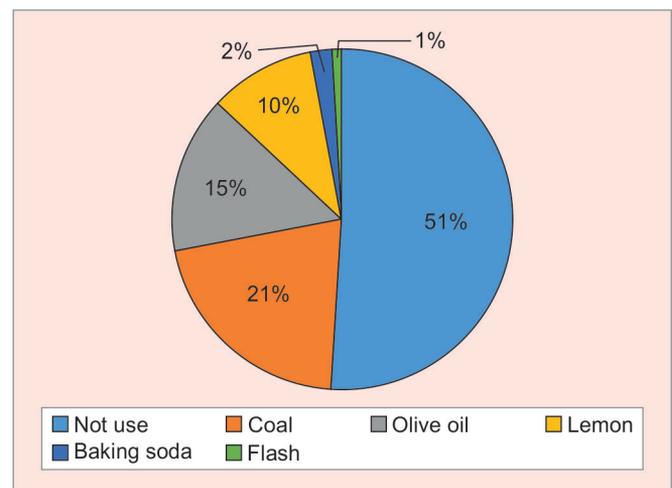
Graph 1 shows the various conventional methods adopted by the 350 participants to whiten their teeth and their response distribution. A little more than 51% of people were not using any traditional methods except

Table 1: Number of respondents who participated in the study

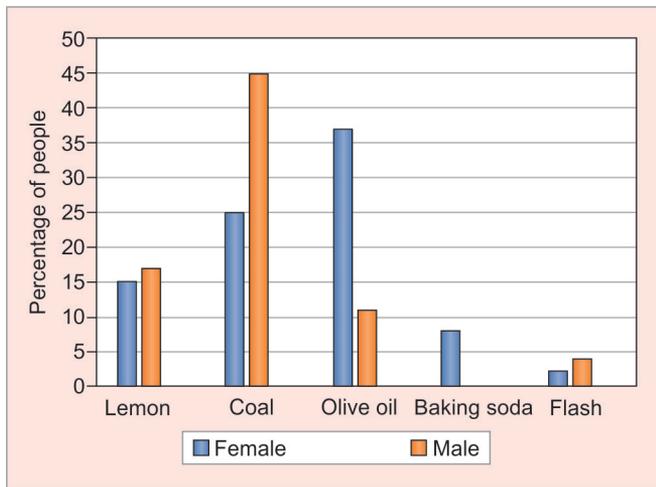
Sex	Number	Percentage
Male	97	27.7
Female	253	72.3
Total	350	100

Table 2: Relationship between level of income and participants’ satisfaction

Level of income	Not satisfied	Does not bother
Less than 5,000 SR	207 (59.1%)	6 (1.7%)
More than 5,000 SR	98 (28%)	39 (11.2%)



Graph 1: Percentage of people and different teeth-whitening methods



Graph 2: Difference in gender using varied natural whitening products

brushing their teeth regularly. Among the other half, almost one-fourth (21%) of the population was using coal powder, which has been a well-known natural whitening home remedy for years. Nearly 15% were using olive oil, 10% people were using lemon, and 2% were using baking soda as a measure to make their teeth look whiter. The rest 1% were ignorantly using Flash (especially designed for cleaning toilets) without thinking of its detrimental effects on oral tissues.

Graph 2 displays the difference in the percentage of gender in using various whitening products. About 17% of males and 15% of females were using lemon as a whitening product for their teeth. The majority of males (45%) compared with females (25%) were invariably using charcoal powder to make their teeth whiter. On the contrary, almost 40% of females and 11% of males believed the whitening effects of olive oil on their teeth. Almost 8% of females chose baking soda as one of the other available home remedies. No male respondents were found to use this product. There were other groups of both genders: 4% males and 1% females used "Flash" (a toilet cleansing liquid containing hydrogen chloride; if swallowed, it may be fatal).

DISCUSSION

Due to technological advances, a variety of whitening options are currently available for patients seeking to enhance the appearance of their smiles. The advances in esthetic dentistry have provided the patients with more options to obtain the best results. In spite of many choices, we must keep in mind that people have different needs, unlike attitudes toward treatment.

The present study was carried on different groups of people residing in Hail city, the northern part of the Kingdom of Saudi Arabia. The study showed that a portion of the people are more reliably using home remedies to

whiten their teeth influenced by their religious and cultural beliefs.

The study was conducted on 350 participants. Out of these respondents, the females contributed to the majority. Many female participants (72.3%) responded in comparison with their counterparts. This could be explained based on the fact that females are more interested about having a shiny bright smile and seem to be more concerned about dental appearance than males. Similar results were found where females were more judgmental toward dental esthetics.^{14,15}

With respect to low level of income, the majority of people seem not to be satisfied by their teeth color. Most of the people thought that the yellow coloration of their teeth causes an unesthetic appearance and believed that their appearance affects their level of satisfaction and social lives.

With regard to dynamics of satisfaction, socioeconomic background, and people's behaviors, this kind of statement is clearly proved by similar studies.¹⁶

Additionally, the pie chart in the study reported that a little more than 50% of the population did not take any measures to whiten their teeth to improve their appearance. But the remaining half showed differences in choosing different materials and techniques to remove the self-assessed yellow stain from their teeth. Activated charcoal powder or coal was a preferred and an easy option used by 21% of people, followed by 15% of people using olive oil, 10% consuming lemon, and 2% use baking soda to brighten the color of their teeth. Moreover, surprisingly, 1% among the participants were found to use disinfectants for lavatory (brand name Flash) for their teeth, which is a known corrosive product.

It is quite apparent that these groups of people were comfortable to use easily available home remedies to care about their teeth and were reluctant to go to a dentist to seek for a better treatment.

In an attempt to justify, this could be that they were not willing to devote more time for treatment, they believe to have quick or instant results, or they need a cheaper alternative.

Our study showed that there were differences in the percentage between males and females in choosing the tooth-whitening methods. Around 45% of males and 25% of females were using charcoal randomly to make their teeth look whiter. Initial use of charcoal may leave the teeth clean and whiter but with regular use, it wears down the enamel, causing the teeth to be sensitive.

Olive oil has been known as an ancient folk remedy that has been researched, and not all the claims were found to be true besides some of its uses. In our study, almost 40% of females and 11% of males were using this as a tooth-whitening product. Even though people

believed to use it as a whitening agent, scientific studies have not provided clinical evidence to demonstrate the whitening effect. Rather, it works just as an antimicrobial mouth rinse.¹⁷

About 17% of males and 15% of females were found to use lemon as one of the other natural whitening remedies for teeth. Citric acid is the acid found in grapefruit, lemons, and oranges. Other similar studies show that daily challenges from acidic soft tissues could be more detrimental than periodic use of hydrogen peroxide-based tooth-whitening products.¹⁸ Continual use of lemon would cause structural loss of enamel; the surface becomes rough which promotes bacterial adhesion and plaque formation.^{19,20}

Baking soda has been found to be used only by a portion of female respondents. However, the American Dental Association has not approved brushing teeth with baking soda. It is slightly abrasive and if used repeatedly over time, it can weaken the tooth enamel, making teeth more sensitive and vulnerable to caries.

It has been found that almost 5% of males and 1% of females were using chlorhexidine 6% to whiten their teeth. This should be highly discouraged and they should be alerted of its corrosive effects. It is important to make them aware of the cosmetic dentistry and the fact that dentists can intervene to make some long-lasting effects.

People tend to believe that the natural whitening methods can be used continuously without restriction.

However, the advantage of natural ingredients is that they will not burn gums and other soft tissues in the mouth as peroxides can. But if they are overused, even gentle abrasives can harm the enamel or soft tissues. It is therefore not recommended to use them more than the regular whitening methods.

Further research needs to be carried out to address the issue of safety of the products and procedures, as their applications to the teeth are questionable.

CONCLUSION

It can be concluded through this study that many people like the idea of simply using naturally derived products, even if it means using it more or waiting longer to see the results. Besides these, they may think that these products are handy and do not cost extra. Almost half of the respondents were using one or more types of traditional tooth-whitening methods despite advances in cosmetic dentistry. Therefore, it is recommended to have further research to explore their perceptions of why they are still choosing these approaches and how we can help them change these habits.

REFERENCES

1. Joiner A. The bleaching of teeth: a review of the literature. *J Dent* 2006 Aug;34(7):412-419.
2. Yarborough DK, inventor. BriteSmile Inc, assignee. Method for whitening teeth. United States patent US 5,713,738. 1998 Feb 3.
3. Fisher G. The bleaching of discolored teeth with H₂O₂. *Dent Cosmos* 1911;53:246-247.
4. Hannig M, Joiner A. The structure, function and properties of the acquired pellicle. *Monogr Oral Sci* 2006;19:29-64.
5. Perdigão J, Baratieri LN, Arcari GM. Contemporary trends and techniques in tooth whitening: a review. *Pract Proced Aesthet Dent* 2004 Apr;16(3):185-210.
6. Azodo CC, Ogbomo AC. Self-evaluated dental appearance satisfaction among young adults. *Ann Med Health Sci Res* 2014 Jul-Aug;4(4):604-607.
7. Haywood VB. Nightguard vital bleaching. *Quintessence Int* 1989 Mar;20(3):173-176.
8. Powell LV, Bales DJ. Tooth bleaching: its effect on oral tissues. *J Am Dent Assoc* 1991 Nov;122(11):50-54.
9. Sulieman M. An overview of bleaching techniques: 2. Night guard vital bleaching and non-vital bleaching. *SADJ: J South African Dent Assoc = tydskrif van die Suid-Afrikaanse Tandheelkundige Vereniging* 2006 Sep;61(8):352-354.
10. Burrell KH. ADA supports vital tooth bleaching—but look for the seal. *J Am Dent Assoc* 1997 Apr;128:3S-5S.
11. Haywood VB. History, safety, and effectiveness of current bleaching techniques and applications of the nightguard vital bleaching technique. *Quintessence Int* 1992 Jul;23(7):471-488.
12. Al-Nomay NS, Ahmed AE, Al-Hargan A, Ashi A, Alshalhoub A. Public knowledge of tooth bleaching in Riyadh, Saudi Arabia. *J Int Oral Health* 2015 Dec;7(12):27-32.
13. Nomay N. Public attitude and awareness towards their teeth color and dental bleaching in Saudi Arabia: a cross-sectional survey. *J Public Health Epidemiol* 2016 Apr;8(4):45-52.
14. Vallittu PK, Vallittu AS, Lassila VP. Dental aesthetics—a survey of attitudes in different groups of patients. *J Dent* 1996 Sep;24(5):335-338.
15. Hassel AJ, Wegener I, Rolko C, Nitschke I. Self rating of satisfaction with dental appearance in an elderly German population. *Int Dent J* 2008 Apr;58(2):98-102.
16. Odioso LL, Gibb RD, Gerlach RW. Impact of demographic, behavioral, and dental care utilization parameters on tooth color and personal satisfaction. *Compendium of continuing education in dentistry (Jamesburg, NJ: 1995). Compend Contin Educ Dent Suppl* 2000;(29):S35-S41.
17. Sood P, Devi A, Narang R. Comparative efficacy of oil pulling and chlorhexidine on oral malodor: a randomized controlled trial. *J Clin Diagn Res* 2014 Nov;8(11):ZC18.
18. Ren YF, Amin A, Malmstrom H. Effects of tooth whitening and orange juice on surface properties of dental enamel. *J Dent* 2009 Jun;37(6):424-431.
19. Teughels W, Van Assche N, Sliepen I, Quirynen M. Effect of material characteristics and/or surface topography on biofilm development. *Clin Oral Impl Res* 2006 Oct;17(S2):68-81.
20. Quirynen M. The clinical meaning of the surface roughness and the surface free energy of intra-oral hard substrata on the microbiology of the supra- and subgingival plaque: results of in vitro and in vivo experiments. *J Dent* 1994 Jan;22:S13-S16.