

Knowledge, Attitude And Practice Survey On Nonvital Bleaching Among Dentist

Research Article

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Abstract

A cross-sectional KAP study was conducted using a questionnaire with closed questions among dentists of Chennai region. Information was collected regarding dental qualification, level of specialization. In addition, options regarding bleaching therapies including the first choice of material, technique and clinical practice for nonvital tooth bleaching therapies were included. A total number of 122 responses were received. In office bleaching therapy was broadly preferred (92%) over at home (8%) bleaching. For in office bleaching, the majority of the dentists answered to use Hydrogen peroxide followed by sodium perborate for nonvital therapies. In conclusion, the results of this study demonstrated that inoffice bleaching was broadly preferred over at home bleaching for nonvital teeth. The Hydrogen peroxide agents were preferred for nonvital tooth bleaching followed by sodium perborate.

Keywords: Non Vital Bleaching; Kap Survey; Sodium Hypochlorite; Hydrogen Peroxide.

Introduction

Patients often report to the dentist seeking treatment for their discoloured teeth to improve their appearance. There are two types of tooth discolorations as described in the literature: those caused by extrinsic factors and those caused by intrinsic congenital or systemic influence. The intensity of stains may be worsened if enamel defects coexist. Tooth discoloration presents two major challenges to a dentist. The first challenge is to ascertain the cause of the stain and the second is its management. Discoloration may be limited to a single tooth or several teeth in a single arch or it may be generalized and evident on all of the teeth. Main key for the treatment lies in recognition of actual cause for the discoloration. In some cases, scaling and polishing the teeth will improve the situation; however, more extensive treatment often is needed to achieve a satisfying result. Treatment options include vital and non-vital bleaching, micro abrasion, composite and porcelain veneers, and porcelain crowns. Sometimes combination of all these is preferred [1].

Bleaching treatments have become very popular with the increasing demand for aesthetics in practically all fields of everyday life. Vital tooth bleaching can be performed externally in vital teeth, using at-home or in-office techniques, or both techniques in combination. Nonvital bleaching for a root-filled tooth is carried out intracorally or using a combination of external and internal procedures. Several products and different techniques are available for tooth bleaching, with most variations relating to concentration and type of peroxide releasing agents. Basically, the mechanism of action of bleaching agents is similar. Peroxide-containing agents break down into water and oxygen, which diffuses through the dental structure, causing oxidation and reduction of organic pigments that are located mainly within the dentin structure, ultimately producing the whitening effect [2]. While nonvital tooth bleaching is performed at the dental office using strong peroxide agents, such as high concentration hydrogen peroxide (HP) or hydrogen peroxide-releasing agents (carbamide peroxide - CP and sodium perborate - SP), vital tooth bleaching can be performed with high concentration (in-office) or low concentration (at-home). However, Bleaching treatments have become very popular with the increas-

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ing demand for esthetics. Vital tooth bleaching can be performed externally in vital teeth, using at-home or in-office techniques, or both techniques in combination. Nonvital bleaching for a root-filled tooth is carried out intracoronally or using a combination of external and internal procedures [3]. Several products and different techniques are available for tooth bleaching. But, the mechanism of action of bleaching agents is similar. Peroxide-containing agents break down into water and oxygen, which diffuses through the dental structure, causing oxidation and reduction of organic pigments that are located mainly within the dentin structure, ultimately producing the whitening effect [4].

Nonvital tooth bleaching is performed at the dental office using strong peroxide agents, such as high concentration hydrogen peroxide or peroxide-releasing agents like carbamide peroxide and sodium perborate. Agent concentration and technique have been claimed to influence the bleaching outcome [5]. Some adverse effects have also been reported like in nonvital bleaching, the occurrence of external root resorption, morphological alterations in dental tissues, alteration of dental materials properties and decrease of tooth resistance [6, 7].

Previously our team has a rich experience in working on various research projects across multiple disciplines [8-22] Now the growing trend in this area motivated us to pursue this project.

So, this questionnaire-based survey was aimed to assess the preferred techniques and products to perform nonvital by a population of dentists from Chennai region. It was also investigated whether their options could be influenced by their time in clinical practice and the level of specialization.

Materials And Method

A structured questionnaire consisting of questions based on knowledge, attitude and clinical practice was distributed among the general dental practitioners through means of electronic media and other means of communication such as personal emails etc. The questionnaire held a total of 17 questions in which 10 were knowledge based, 7 questions to check the attitude of the practitioners and the clinical practice followed by them. The questionnaires were distributed randomly to practitioners. The responses were collected. The survey data was then collected together and analysed.

Result And Discussion

A total number of 122 responses were received. In office bleaching therapy was broadly preferred (92%) over at home (8%) bleaching. For in office bleaching, the majority of the dentists answered to use Hydrogen peroxide followed by sodium perborate for nonvital therapies.

Different options are available for the treatment of discoloured root canal treated teeth [23]. The bleaching has many advantages over the conventional options. For a tooth that has discoloured following devitalization, bleaching is preferred over full veneer crown especially when the tooth crown is intact [24].

Few studies suggested that it is the bulk of the remaining tooth structure rather than the dowel that provides strength and resist-

ance to fracture of the endodontically treated tooth [25]. Also, Sorenson et al in their study had reported that there is no significant difference in the success rate achieved between anterior non-vital teeth with and without crowns. Thus, supporting the fact that endodontically treated anterior teeth does not require crown [26, 27].

This study showed that in-office bleaching is preferred over at home bleaching by the majority of the dentist. This can be due to the fact that dentists are more confident in performing bleaching procedures in their professional clinical practice [28]. However, some studies have mentioned that dentists prefer doing at-home therapies. [29-32].

For nonvital tooth bleaching, the first selected agent was Hydrogen peroxide (70%). This can be attributed to the fact that this bleaching agent has been available to treat nonvital discoloured teeth for more than 60 years [3]. Moreover, bleaching with Hydrogen Peroxide agents has provided good clinical results [33] in spite of their side effects like external root resorption because of the penetration of bleaching agents into the dentinal tubules at the cemento-enamel junction, producing an immunological response in the periodontal tissues [6].

External cervical resorption is an inflammation mediated external resorption of the root, which is the most common complication following non-vital bleaching [34]. The underlying mechanism for this effect is unknown, but it is assumed that the bleaching agent reaches the periodontal tissue through the dentinal tubules and initiates an inflammatory reaction. It has also been speculated that the peroxide, by diffusing through the dentinal tubules, denatures the dentin, which then becomes an immunologically different tissue and is attacked as a foreign body [35]. So, in order to prevent this one should place an effective barrier to prevent the passage of peroxide into the periodontal space.

Carbamide peroxide is commonly used for at-home treatment modalities. This possible link between at home therapies and carbamide peroxide might have deteriorated the usage of both. The authors also observed that with the increase in clinical experience, the probability of suggesting in-office therapies was higher. This could probably suggest the important role played by clinical experience in decision-making. Use of at-home office therapies has been shown to produce an increase in the superficial porosity of enamel after treatment with 10% Carbamide peroxide for 12 hours of daily application over four weeks. [36] Another study evaluated the effects of 10% PC used in an at-home whitening technique on dental enamel surface microhardness and found that the bleaching agent produced enamel surface modifications demonstrated by the decrease of microhardness values that started during the first week of CP application. Injury to the enamel surface was intensified after 14 days of treatment. McCracken and Haywood showed that the calcium loss after eight hours of at home bleaching corresponds to the erosion caused by cola-based soda applied for 2.5 minutes. [37]

Our institution is passionate about high quality evidence based research and has excelled in various fields [12, 38-47].

Conclusion

In conclusion, the results of this study demonstrated that in-of-

Table 1. This table shows the responses received from 122 dentists.

Questions	Options	Percentage
1) Educational qualification	BDS	
	MDS-Endodontist	62.3
	MDS-Other speciality	33
2) Extrinsic causes of tooth discoloration include all except	Wine	51.6
	Tea	
	Tetracycline	34
	Mouth rinse	8.7
3) Intrinsic causes of tooth discoloration include all except	Endodontic materials	53.2
	Aging	
	Chromogens	35.5
	Tetracycline	
4) Extrinsic stains are due to	Hydration forces	
	Hydrophobic interactions	28.5
	Dipole-Dipole	
	All of the above	63.4
5) The most effective and commonly used method to remove extrinsic stains is	Abrasives	
	Surface active agents	
	Combination of abrasives and Surface-active agents	
	Bleaching agents	
6) The bleaching agents most commonly used for root filled teeth	Hydrogen peroxide	
	Carbamide peroxide	
	Sodium perborate	
	All of the above	86.4
7) What is the other name of at home non-vital bleaching technique	Walking bleach technique	88.6
	Dentist prescribed bleaching technique	
	Thermocatalytic bleaching	
	None of them	
8) What is the thickness of the cervical barrier before initiating a non vital bleaching process?	Less than 3mm	
	3mm	63.9
	More than 3mm	29.5
9) How do you manage discoloured teeth in your practice?	Abrasion	1
	Bleaching	79
	Crowns	41
	Veneer	8
	Over the counter bleaching agents	1
10) How do you manage non-vital teeth with discoloration	Rct followed by crown	41
	Rctfollowd by Veneer	8
	Rct followed by bleaching	74
11) How do you perform non vital bleaching for treating discolored teeth?	Yes	8.3
	No	9
	Sometimes	85.8
12) Are you aware about the various methods of non vital bleaching?	Yes	70
	No	30
13) If yes, which is your preferred treatment option	In office	92.5
	At home	8
14) Which among the following you use in your practice for non-vital bleaching	Hydrogen peroxide	61
	Sodium perborate	10
	Carbamide peroxide	32
15) Have you come across any complication after performing non vital bleaching?	Yes	58
	No	10
	Sometimes	33
16) Which is the most common complication you have seen in your practice following non vital bleaching?	External root resorption	37.5
	Chemical burn	61.7
	Other	4.2
17) Do you follow up your cases after performing non vital bleaching and how?	Clinical examination and Radiographs	59.8
	Clinical examination	12.3
	No Follow up	27.9

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