

Evaluation of the attitude and practice of prevention of dentine hypersensitivity by Nigerian dentists

Bamise CT¹ Oderinu OH²

Dosumu EB³ Adegbulugbe IC²

Olojede ACO³ Oginni AO¹

Sede MA⁴ Olusile AO¹

¹Department of Restorative Dentistry,
Obafemi Awolowo University, Ile Ife

²Department of Restorative Dentistry,
University of Lagos, Lagos

³Department of Restorative Dentistry,
University of Ibadan, Ibadan

⁴Department of Restorative Dentistry,
University of Benin, Benin City

Correspondence to:

Bamise C.T.

Department of Restorative Dentistry,
Obafemi Awolowo University,
Ile Ife

Email: bamisect@yahoo.com

GSM: +2348037115388

Key words: Dentin hypersensitivity,
Nigerian dentists, counseling, prevention

Accepted: 10 September, 2016

Abstract

Aim: It is the aim of this study to assess the attitude and practice of prevention of dentine hypersensitivity (DH) by Nigerian dentists. *Materials and methods:* This work was part of a Survey conducted by the Dentin Hypersensitivity Roundtable Group with the aim of evaluating the knowledge, attitude and practice of treatment and management of DH by Nigerian Dentists. The survey was conducted among dentists practicing in Nigeria. The country was divided into 6 geo-political zones and Lagos. Information was collected by self-administered questionnaires through focal dentist in each of the zones. They were equipped with the demographic information about all the private and public dental hospitals and dentists of the states under their zones. Bio-data of volunteers were requested in the first part of the questionnaire and that of preventive practice in the second part. *Results:* One thousand and fifty two respondents were analyzed comprising of six hundred and forty two males (61%) and four hundred and ten females (39%). There ages ranged from 21 to 60 years. 31 to 50 years of age were the most prevalent (59.3%). Prevalently participated were those who had been practicing between one to fifteen years (83.8%); General dental practitioners (40.4%) and dentists from the public sector (83.7%). 19.1% of the volunteers claimed to routinely screen their patients for dentine hypersensitivity. 92.2% of the volunteers gave advices on prevention of dentin hypersensitivity while 28.9% of them indicated that their advice is always effective. Those with effective advice were 93.3% of males; 92.7% of those who had been practicing between 1 to 15 years; 93.9% of the General Dental practitioners; 92.8% of dentists working in public sector and all the Oral medicine specialists. *Conclusion:* Considerably low percentage of dentists screens their patients for dentine hypersensitivity. With slight over 90% of the dentists offering preventive advice for sufferers of dentine hypersensitivity, surprisingly low fraction of the advice was claimed to be effective.

DH is characterized by short sharp pain arising from exposed dentin in response to stimuli—typically thermal, evaporative, tactile, osmotic or chemical—that cannot be ascribed to any other dental defect or disease¹.

The etiology of dentin hypersensitivity is multifactorial. Two processes need to occur for dentine hypersensitivity to arise: dentine has to become exposed (lesion localisation), and the dentine tubule system has to be opened and be patent to the pulp (lesion initiation)².

There are various conditions that predispose to dental hypersensitivity. These include³

Pathological tooth wear caused by attrition, abrasion, erosion and abfraction

Gingival recession caused by faulty toothbrushing technique, excessive flossing, periodontal disease and its treatment, oral jewellery, etc.

Pathological condition of teeth like amelogenesis imperfecta, hypoplastic teeth etc.

Iatrogenic factors such as crown preparation, restoration, etc.

In the management of dentine hypersensitivity, the most

important aspect is to prevent dental hypersensitivity from occurring or recurring. This is done most effectively by identifying and controlling etiological factors. As Dentine hypersensitivity results from dentine exposed from either coronal or radicular regions of the tooth. Preventive measures must therefore be primarily aimed at reducing the risk of exposing dentine either as a result of the removal of enamel or the removal of cementum⁴.

Dentine hypersensitivity resulting from exposure of dental tubules is commonly caused by gingival recession^{5,6} and it is well known that majority of the adult population worldwide is affected by gingival recession but little has been mentioned regarding the best prevention for this condition⁷. Gingival recession is said to have a multifactorial aetiology^{8,9} but poor oral hygiene habits, dietary habits and tooth abrasion/erosion are among those causes commonly associated with it¹⁰. It has been suggested that these habits are particularly influential when improper aggressive brushing is performed immediately after eating or drinking acidic food or drinks.

Education and motivation of patient regarding proper toothbrushing; this would include demonstration of proper toothbrushing method, use of soft toothbrush and avoiding the use of abrasive containing dentifrices⁴.

The brushing technique of hypersensitive patients should be evaluated and corrected to avoid excessive trauma to the gingivae while still maintaining plaque control. It is also argued that it is better for patients to brush before, rather than after meals, particularly meals containing dietary acids (such as fruit juice at breakfast). By brushing before a meal, any potentially detrimental effects of acid and brushing are avoided¹¹. As periodontal disease and its therapy can cause gingival recession and dentinal hypersensitivity. Prevention, early recognition and treatment of periodontal disease is important to prevent and arrest dentinal hypersensitivity⁴.

Erosion of the exposed root surface and exposure of dentinal tubules leading to hypersensitivity is thought to be accelerated by the mechanical action of a toothbrush and dentifrice on the exposed dentinal surfaces that have been 'softened' by exposure to low pH food and beverages such as citrus fruit and juices, carbonated drinks, and popular sport drinks¹². Dietary counseling and oral hygiene instructions may be of utmost importance when advising patients on their self-care practices. It is well known however, that changing behaviours, particularly those like toothbrushing and diet, is difficult at best, and requires detailed instruction and information that must be repeated and reinforced at regular intervals such as the 3 to 6 month recall appointments. The most easily accomplished change for patients to achieve is to avoid brushing their teeth immediately after eating or drinking acidic foods and beverages. Patients should be instructed to rinse their mouth with water immediately after eating and drinking acidic foods and beverages. They should brush their teeth using a gentle toothbrush with end-rounded bristles and a non-abrasive dentifrice with fluoride no sooner than 30 minutes following ingestion of acidic foods and drinks⁷.

Addy and Urquhart¹¹ pointed out that if intake of dietary acids can be reduced, the equilibrium at the surface of dentine should shift in favour of smear layer formation and thus, in theory, an effective smear layer will be more readily formed and maintained. If intrinsic erosion is suspected then the cause should be identified and treated by referring the patient to physician. Rinsing the mouth with liquid antacid, especially after vomiting or regurgitation, is advised. In severe or chronic cases, fabrication of an occlusal splint to be inserted at high risk times can reduce the insult to the teeth¹³.

As dentine hypersensitivity may result from dental treatments, every patient must be informed of the potential treatment risks. Informing the patient in advance regarding the possibility of potentially painful events following periodontal therapy and recently placed restorations can greatly strengthen the dentist-patient relationship and reduce pain and anxiety. In addition, explaining to the patient the possible causes of dentine hypersensitivity may help to modify or control these causative factors that in turn may improve the outcome of treatment¹³.

The treatment and prevention of DH could simply rely on the elimination of its predisposing factors. For example, proper oral prophylaxis techniques could help prevent abrasion that could aggravate DH. Excessive force, hard toothbrushes and highly abrasive toothpastes should be avoided. Tooth brushing should be avoided after consuming acidic foods and drinks since tooth brushing, in combination with acid decalcification of superficial dentin, is capable of accelerating the loss of tooth structure and opening dentinal tubules. Dietary counseling is an important factor for the management of the condition. A written diet history should be obtained from patients with DH in order to identify etiological agents and form a basis from which to provide advice¹⁴. It is the aim of this study to assess the attitude and practice of Nigerian dentists to the prevention of Dentine Hypersensitivity.

Materials and methods

This work was part of a Survey conducted by the Dentin Hypersensitivity Roundtable Group with the aim of evaluating the knowledge, attitude and practice of treatment and prevention of DH by Nigerian Dentists. The survey was conducted among dentists practicing in Nigeria. The country was divided into 6 geo-political zones and Lagos. Information was collected by self-administered questionnaires through focal dentist in each of the zones. They were equipped with the demographic information about all the private and public dental hospitals and dentists of the states under their zones. In each zone, the dental practices were located and questionnaires administered to on duty dental personnel and retrieved immediately.

They were asked to provide information on their bio-data in the first part of the questionnaire; Gender, age, nature and years of practice; sector of practice; Current job designation, type of dental specialty (for Consultants only). In part II of the questionnaire; they were asked to indicate whether they routinely screen all patients DH; whether they advice patients on prevention of DH; and to describe the advice they give. Finally they were asked to indicate the effectiveness of the preventive advice they give and necessity of test for DH in routine dental examination.

Results

One thousand and fifty two respondents were analyzed comprising six hundred and forty two males (61%) and four hundred and ten females (39%). Their ages ranged from 21 to 60 years. 31 to 50 years of age were the most prevalent (59.3%) while those who were fifty years and above were the least (7.4%). Volunteers who had been practicing between one to fifteen years were the most preponderant (83.8%) while that of 30 years and above were the least (1.4%).

General dental practitioners prevalently participated in the study (40.4%) followed by the resident doctors (23.7%) while those without job designation the least (10.7%). Volunteers from the public sector were 83.7% while 16.3% were from the private sector. About 333 consultants participated in the survey. Oral and Maxillofacial Surgeons were the highest (21.9%) followed by the specialist General Dental Practitioners (21.6%) while those in Community Dentistry were the least (3%).

19.1% of the volunteers claimed that they routinely screen

their patients for dentine hypersensitivity while 79.5% indicated otherwise. About 92.2% of the volunteers revealed they had been providing advices on prevention of dentin hypersensitivity. There were about 115 different advices indicated by the volunteers. 28.9% of the dentists who gave advice to sufferers indicated that their advice is always effective while 70.9% claimed it is sometimes effective while 0.2% noted it was never effective. 81% of the volunteers noted that routine dental examination should include tests for dentine hypersensitivity.

Dentists who claimed effective preventive advice for dentine hypersensitivity possess prevalent frequencies among males (93.3%); those who had been practicing between 1 to 15 years (92.7%); the General Dental practitioners (93.9%) and those working in public sector (92.8%) Among the dental consultants, all (100%) the Oral medicine specialists claimed their advice was always effective followed by Community health specialists (95.5%) while the least were OMFS and Paedodontist (87.5%).

Discussion

The study was carried out among Nigerian dentists to evaluate their attitude and practice of preventive strategies of dentin hypersensitivity. A slightly high response rate as shown in table I compared to the target population of practicing dentists in Nigeria was recorded which could be attributed to personal interaction and contact of the focal persons in the administration of the questionnaire.

At the population level, disease prevention serves to compress morbidity. The ultimate goal in the managing

Table II: Characteristics of those that had effective preventive advice on dentine hypersensitivity

Volunteers	%
1 Males	93
2 1-15 years of practice	92.7
3 GDP	93.9
4 Public sector dentists	92.8
5 Oral medicine specialist	100
6 Community Health specialist	95.5

dentin hypersensitivity is of two stages; the immediate alleviation of pain which is usually achieved by the application of in-office, patient or home applied desensitizing agents to sealing the open dentinal tubules. Secondly is to aim at permanent relief of pain of dentine hypersensitivity. This is achieved by offering appropriate preventive counseling and recommendations to sufferers about strategies to minimize the etiological and predisposing factors of dentinal tubules opening and maintenance of relief obtained from sealed ones. Dentists were the focus of this study because they were the primary caregiver and usually have the first contact with patients.

19.1% of the volunteers we evaluated in this study claimed to routinely screen their patients for dentine hypersensitivity. This finding supports the opinion of Halabo¹⁵ in 2015 in the USA. Despite the fact that recent research reveals that 88% of dental professionals believe dentin hypersensitivity can affect patients' quality of life, and 79% believe the condition is on the rise many dental professionals do not routinely screen patients for the condition, causing it to regularly go undiagnosed. Schmidlin and Sahrman¹⁶ suggested that it is important to acknowledge that not all patients report hypersensitivity experiences, and dentists and prophylaxis personnel should therefore screen for DHS on a routine basis. It is also noted that 81% of the volunteers noted that routine dental examination should include tests for dentine hypersensitivity.

About 92.2% of the volunteers revealed they had been providing advice on prevention of dentin hypersensitivity. It was observed that when they were asked to mention the kind of advice they had been providing, 115 varying advices were indicated and 28.9 % of the respondents claimed their advice is always effective. This shows that majority of the dentists provided counseling on the prevention of dentin hypersensitivity to their patients and only about one third were effective in delivering relief of symptoms to the sufferers. Various factors may be attributed to the scenario found in this study; we feel compelled to suggest non-compliance to instructions by patients after discharge from the surgery despite receiving education from the dentists. In the work of Burley¹⁷ in 2007 that assessed patients for barriers to compliance soon after admission, ten issues were

Table I: Demographic characteristic of volunteers

Demographic characteristics	No of volunteers	%
Gender	1052	
1 Male	642	61
2 Female	410	39
Volunteers ages	1050	
1 20-30	349	33.2
2 31-50	623	59.3
3 >50	78	7.4
Years in practice	998	
1 1-15	836	83.8
2 16-30	148	14.8
3 >30	14	1.4
Job designation	1048	
1 House officer	157	15.0
2 GDP	423	40.4
3 Resident doctors	248	23.7
4 Consultants	108	10.3
5 Others	112	10.7
Sector of Practice	1008	
1 Private	164	16.3
2 Public	844	83.7

observed which can be generalized to potential patients.

1. Inadequate health literacy. Health literacy is the degree to which patients can understand basic health information needed to make appropriate health decisions¹⁸. It was explained that according to a U.S. Department of Education survey, 36% of Americans have Basic or Below Basic health literacy. This means they can't read and understand health information written above a basic level¹⁸, and have trouble finding the hospital or physician's office, keeping appointments, completing hospital registration and insurance forms, and understanding discharge instructions and prescriptions¹⁹. Information about dentine hypersensitivity are usually available in most dental surgeries with abundance of dental vocabularies and pictures which we perceive are above the basic health literacy of Nigerians. Their decreased comprehension of this information may result in reduced compliance to discharge instructions.

2. Financial constraints. This may result in missing appointments, purchase of medication and homecare products and change in lifestyle and diet necessary for the relief of dentin hypersensitivity pain

3. Cultural differences. Many patients whose native language isn't English are seen while instructions in our clinics are passed in English. This creates language barriers.

4. Religious beliefs. Some patients aren't able to follow their prescribed diets due to religious practices.

5. Family dynamics. In some cases, patients have had a family member whose quality of life didn't improve after a dentin desensitization, so they thought they, too, wouldn't be successful.

6. Emotional concerns. The daily crush of dentine hypersensitivity can leave patients feeling hopeless, which hinders their ability to retain instructions about caring for themselves.

7. Lack of motivation.

8. Inadequate teaching time. In some cases, dentist may be found to have contributed to patients' noncompliance by not spending enough time educating them.

9. Poor communication. Sometimes patients are lectured during educational sessions instead of engaging them in a discussion.

10. Logistics. A lack of transportation, family members' work schedules, and even the cost of transportation can prevent people from keeping appointments after discharge.

Other significant barrier mentioned in the literature are²⁰

Lack of training in counseling techniques,
Lack of reimbursement for counseling services,
A fragmented approach to care
Skepticism that health behavior change

interventions can make a difference in specific health outcomes.

The Male dentists claimed a more effective preventive counseling than females. Studies among physicians substantiate a link between the gender of Primary Care Physicians and the prevention measures they offer^{21,22}. But in

a review by Jefferson et al.²³, female physicians spent on average more than two minutes more per patient consultation than male physicians. Additionally, they were more engaged in positive talk and the consultation was more patient-centered²⁴. Preventive effectiveness was also high among dentists who had been practicing for 1-15 years, this finding may just be throwing up a picture of upsurge in the research about dentin hypersensitivity in Nigeria in the last 10-15 years. It is not surprising to find them in the public sector and among the General dental Practitioners; this might not be unconnected with the background training they possess as a generalist; the fact that patients first make contact with them and the tendency to spend more time with the patients. Among the consultants, all Oral medicine specialists followed by a considerable number of Community Health dentists claimed very high percentages of effective preventive advice; this also cannot be isolated from their training and practice. Counseling is major subject in community dentistry in which Oral medicine is a key subunit.

Conclusions

Considerably low percentage of dentists in Nigeria screens their patients for dentine hypersensitivity. With slight over 90% of the dentists offering preventive advice for sufferers of dentine hypersensitivity, surprisingly low fraction of the advice was claimed to be effective. Varying and incoherent advices were observed to have been given. Further studies may be needed to assess the compliance of patents to discharge instructions.

We will like to suggest health counseling as a major part of dental undergraduate course and specialized training in counseling for graduates and dental specialist. Availability of fliers on dentine hypersensitivity in local languages will ameliorate language barrier.

References

- Holland GR, Narhi MN, Addy M. Guidelines for the design and conduct of clinical trials on dentin hypersensitivity. *J Clin Periodontol* 1997; 24 : 808-13
- Addy M. Dentine hypersensitivity: new perspectives on an old problem. *Int Dent J* 2002; 52 : 367-75.
- Dilip GP, et al. Dentinal hypersensitivity - An Indian perspective part I. Etiopathogenesis. *J Indian Dent Assoc* 2009; 3(10): 333-36.
- Dilip GP, Mukesh C, Tanay G, Samruddhi D.P, Jyoti J. Dentine Hypersensitivity: Preventive and Therapeutic Approaches to Treatment *J Indian Dent Assoc* 2011;5(8):1 944-946.
- Curro FA. Tooth hypersensitivity in the spectrum of pain. *Dent Clin North Am* 1990; 34: 429-437.
- Taani SD, Awartani F. Clinical evaluation of cervical dentine hypersensitivity (CDS) in patients attending general dental clinics (PDC) and periodontal specialty clinics (PSC). *J Clin Periodontol* 2002; 29: 118-122.
- Drisko CH. Dentine hypersensitivity – dental hygiene and periodontal considerations. *Int Dent J* 2000;52:385-393.
- Wastson PJC. Gingival recession. *J Dent* 1984;12:29-35.

9. Serino G, Wennstrom JL, Lindhe J, Eneroth L. The prevalence and distribution of gingival recession in subjects with a high standard of oral hygiene. *J Clin Periodontol* 1994;21:53-57.
10. Addy M, Mostafa P, Newcombe RG. Dentine hypersensitivity: the distribution of recession, sensitivity and plaque. *J Dent* 1987;15:242-248.
11. Addy M, Urquhart E. Dentine hypersensitivity: Its prevalence, Aetiology and Clinical Management. *Dental update* 1992;19:407-412.
12. Davis WB, Winter PJ. The effect of abrasion on enamel and dentine after exposure to dietary acids. *Br Dent J* 1980;148:253-256.
13. Dababneh RH, Khouri AT, Addy M. Dentine hypersensitivity an enigma? A review of terminology, epidemiology, mechanisms, aetiology and management. *Br Dent J* 1999;187:606-611.
14. Mordan NJ, Barber PM, Gillam DG. The dentine disc. A review of its applicability as a model for the in vitro testing of dentine hypersensitivity. *J Oral Rehabil* 1997;24(2):148-156.
15. Halabo S. Giomer Varnish for Prolonged Hypersensitivity Relief. *Oral Health*. 2015. Retrieved on 9/09/2016 from [http:// www. oral health group.com/features/1003918293/](http://www.oralhealthgroup.com/features/1003918293/)
16. Schmidlin P.R, Sahrman P. Current management of dentin hypersensitivity. *Clin Oral Investig* 2013;17 (Suppl 1):55–59.
17. Burley P. 10 barriers to compliance—and how to overcome them. *Modern Medicine Network* 2007. Retrieved on 9/09/2016 from www.modernmedicine.com
18. National Center for Education Statistics. "The health literacy of America's adults. Results from the 2003 national assessment of adult literacy." 2006. Retrieved 8/12/2006. http://nces.ed.gov/pubns2006/2006483_1.pdf.
19. Andrus MR, Roth MT. Health literacy: A review. *Pharmacotherapy* 2002;22(3):282.
20. Whitlock EP, Orleans CT, Pender NJ, Allan J. Evaluating primary care behavioral counseling interventions: an evidence-based approach. *Am J Prev Med* 2002;22(4):267-284.
21. Holund U, Thomassen A, Boysen G. Importance of diet and sex in prevention of coronary artery disease, cancer, osteoporosis, and overweight or underweight: a study of attitudes and practices of Danish primary care physicians. *Am J Clin Nutr* 1997;65:2004S-6S.
22. Risha E. Women in the medical profession: international trends. In: E Kuhlmann, E Annandale, eds. *The Palgrave handbook of gender and healthcare*. Basingstoke: Palgrave Macmillan; 2010. pp 423-428.
23. Jefferson L, Bloor K, Birks Y. Effect of physicians' gender on communication and consultation length: a systematic review and meta-analysis. *J Health Serv Res Policy* 2013;18:242-8.