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Prevalence of Dentinal Hypersensitivity in Southwest Coastal Population of India

Bessy Babu*, Mithra N. Hegde, Aditya Shetty, Mahalaxmi Yelapure

Department of Conservative Dentistry and Endodontics, A B Shetty Memorial Institute of Dental Sciences, Karnataka, India

Research Article

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*For Correspondence

Bessy Babu, Department of Conservative Dentistry and Endodontics, A B Shetty Memorial Institute of Dental Sciences, Karnataka, India, Tel: 9164275586

E-mail: bessybabu26@gmail.com

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ABSTRACT

Aim and Objective: The aim of the present study was to assess the prevalence, common causative and aggravating factors and patients awareness to dentin hypersensitivity in the urban and rural patients of southwest coastal population of India.

Materials and Methods: The data was obtained from 2000 patients after obtaining the written consent. Of which 1200 patients were from the Department of Conservative Dentistry and Endodontics and 800 were examined in rural satellite centers of A B Shetty Dental College, Mangaluru.

Results: Out of 2000 patients 667 patients elicited a positive response to dentin hypersensitivity (33.3%). The prevalence of dentin hypersensitivity was more in 35-45 age group ($P < 0.001$). Males were affected more than females ($P < 0.001$). There was a greater prevalence of dentinal hypersensitivity in rural patients (61.9%) than in urban (38.1%) ($P < 0.001$). The prevalence of Non vegetarians and vegetarians were (81.5%) & (18.5%) respectively.

Conclusion: The prevalence of dentin hypersensitivity in southwest coastal population is (33.3%). Males were more commonly affected than females. The individuals of 35-45 age groups were the commonly affected ones and cold intake was the most common aggravating factor with tooth brush abrasion being the commonest cause.

INTRODUCTION

Dentin hypersensitivity is best defined as a "short, sharp pain arising from exposed dentin in response to stimuli typically thermal, evaporative, tactile, osmotic, or chemical, and which cannot be ascribed to any other form of dental defect or pathology"^[1]. The most accepted theory about this is "Hydrodynamic theory". It suggests that a quick shift of fluids occurs within the dentinal tubules after stimulus application leading to the activates the nerve endings at the end of dentinal tubules or at the pulp dentinal complex and the pulp and therefore initiating pain^[2].

Dentine hypersensitivity is a relatively common dental clinical phenomenon among general population. It is caused by dentin exposure to the oral environment as a consequence of loss of enamel or cementum. Dentinal hypersensitivity being an episodic pain condition is likely to become a more frequent dental complaint^[3] in the future due to the increase in longevity of the dentition and tooth wear. Gingival recession may well be caused by overly enthusiastic oral hygiene, and acid wear may be becoming more prevalent in all ages due to the modern acid containing diet. Both of these conditions cause dentine exposure, leading to the initiation of dentin hypersensitivity—their sole and common symptom. The final common path for dentin hypersensitivity is the activation of pulpal nerves. In dentistry pain and discomfort are the major reasons for emergency dental visits^[4].

Thus the aim of this cross-sectional study was to determine the prevalence, common causative factors, aggravating factors of dentin hypersensitivity in southwest coastal population.

MATERIALS AND METHODS

The study was conducted from June to November 2015 in Southwest Coastal population in India and in the satellite centres (Mundukur, Bailoor and Nitte) after obtaining an ethical clearance from the Institutional ethics committee. The patients were questioned based on the standard questionnaire from Oral Health Survey WHO format 2013. A total of 2000 patients were evaluated, out of which 1200 were evaluated in the dental college and 800 were evaluated in the rural centres. The evaluation was done with a questionnaire along with clinical oral examination. Patients consuming analgesic drugs, tranquilizers or mood altering medications were excluded from the study.

RESULTS

Prevalence of Dentinal Hypersensitivity

Out of 2000 patients 667 patients showed a positive response to dentin hypersensitivity (33.3% prevalence) (Table 1 and Figure 1).

Table 1. Dentinal Hypersensitivity related to different age groups.

Age Years	Hypersensitivity		Total	P-Value
	Male	female		
15-25	92	172	264	<0.001*
	13.8%	12.9%	13.2%	
26-35	100	324	424	
	15.0%	24.3%	21.2%	
36-45	156	353	509	
	23.4%	26.5%	25.5%	
46-55	130	187	317	
	19.5%	14.0%	15.9%	
56-65	84	224	308	
	12.6%	16.8%	15.4%	
>66	105	73	178	
	15.7%	5.5%	8.9%	

P<0.05 is statistically significant
P>0.05 is non-significant

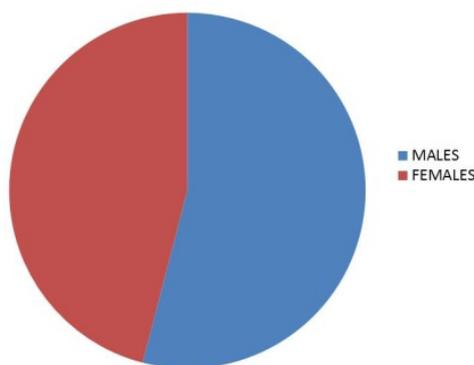


Figure 1. Dentinal Hypersensitivity related to gender.

Dentinal Hypersensitivity Related To Aggravating Factor

The commonest aggravating factor for dentinal hypersensitivity was cold (41.6%) followed by sweet (37.4%), hot (21%) (Table 2 and Figure 2).

Table 2. Dentinal Hypersensitivity related to causes.

Causes	Ratio (%)
1= Tooth Brush Abrasion	226(35.3%)
2=Gingival Recession	221(34.5%)
3=Attrition	161(25.1%)
4=Caries	16(2.5%)
5=Erosion	14(2.2%)
6=Fractured Restoration	3(0.5%)

P<0.05 is statistically significant
P>0.05 is non-significant

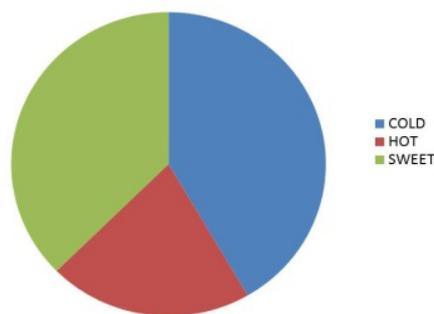


Figure 2. Dentinal Hypersensitivity related to different Aggravating factors.

DISCUSSION

Dentinal hypersensitivity is one of the common problems which may disturb the patients during eating, drinking, brushing and sometimes even breathing. This kind of oral discomfort will lead the individual to have not only nutritional deficiency but also constant annoyance [5]. This kind of discomfort can compromise a person's quality of life and day to day activities.

In this study 667 subjects reporting dentinal hypersensitivity were included and all the subjects completed an interview and all the subjects reporting hypersensitivity were further examined using air syringe to put a blast of air to conform the diagnosis of dentinal hypersensitivity.

Based on the results of the questionnaire and clinical examination the present study showed that the prevalence of dentin hypersensitivity was overall (33.3%), which is somewhat similar to a study conducted by, Hegde et al. [5] (22.5%) in the same geographic location in 2014, whereas Hsin-Cheng Liu et al. [6] showed a result of (32%) in Taipei, Taiwan. Some of the studies have shown a high prevalence of dentinal hypersensitivity, Chabanski et al. [7] (84%) in United Kingdom, Rees et al. [8] in Hong Kong (67.7%). While the studies done by Chrysanthakopoulos et al. [9] in Greece (18.2%), Rees et al. [10] in United Kingdom in 2002 have shown very low prevalence of (4.1%). This may be because of higher socio-economic classes and the variation in the geographical locations with different dietary habits and oral hygiene practices. In the present study people living in rural areas were seen to be more commonly affected than people in urban areas. This may be because higher awareness of oral health, regular dental check-ups and higher percentage of literate population.

The present cross sectional study shows that cold intake was the most common aggravating factor (28.7%) for dentin hypersensitivity which is similar to many studies done previously [11,12]. The studies conducted by Chabanski et al. [7], Rees et al. [10], Rees et al. [8] also found that cold drink was the most common aggravating factor. This may be due to the higher consumption of cold carbonated drinks which are acidic and lead to erosion of enamel; thereby causing dentinal hypersensitivity.

In the present study dentin hypersensitivity was more prevalent in age group of 35-45 years. This is similar to the study conducted by Hegde, et al. [5] in South Canara population during the year 2014 which reported that the 20-40 years age group had the highest prevalence of dentinal hypersensitivity. This particular age group may be most commonly affected because the reparative and regenerative capacity of dental tissues starts to regress. As aging occurs dentine becomes more sclerotic and impermeable and this could be attributed to the reduced hypersensitivity in elderly patients.

Many of the studies have shown that females are mainly affected by dentinal hypersensitivity [4,13]. This may be because dentinal hypersensitivity is more common in individuals who have a meticulous and good oral hygiene. Women are more concerned and overzealous to basic oral hygiene than an age - matched group of males. However, in the present study males showed statistically significant difference in dentinal hypersensitivity compare to females; which can be attributed to similar overzealous oral hygiene measures by both the groups.

Dentine is normally covered by enamel in the crown region and by the periodontal tissues in the root area. Under these circumstances, dentine is protected from wear. However dentine may be exposed because of the loss of enamel and periodontal tissues [14]. In the present study most common cause of dentin hypersensitivity was because of faulty tooth brushing that leads to abrasion. This is similar to the studies done by Hsin-Cheng et al. [6], who reported that tooth brushing was the main cause of dentinal hypersensitivity. According to Jepson [15] vigorous horizontal brushing and use of extremely abrasive dentrifices may lead to cervical abrasion of teeth and recession et al. Bhalla et al. [16] in Southern India, it was reported that gingival recession was the main cause for dentinal hypersensitivity.

In contrast to the study conducted by Clement Azodo and Amayo in Nigeria [3]; were it was found that the left quadrant was more frequently affected; The present study inferred that the right quadrant was more commonly involve while majority of population in both the studies were right handed (**Figure 3**).

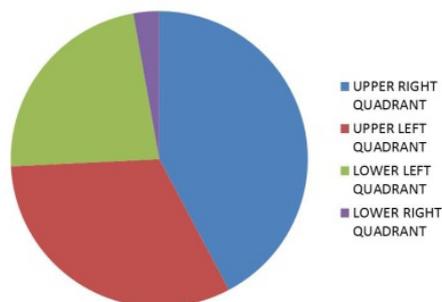


Figure 3. Dentinal Hypersensitivity related to different quadrant affected.

CONCLUSION

The prevalence of dentin hypersensitivity in southwest coastal population is (33.3%). Males showed slightly greater prevalence than females. The individuals of 35-45 age groups being the commonly affected group, cold being the most common aggravating factor and the most common cause seen was tooth brush abrasion followed by gingival recession. Awareness programmes regarding correct tooth brushing methods, devices and diet counseling should be explained using hand-outs, audio visuals, and live demonstration so as to prevent dentinal hypersensitivity.

AUTHORS CONTRIBUTION

'Bessy Babu' conducted the study. 'Mithra N. Hegde' gave ideas and did the final evaluation of the study. 'Aditya Shetty' designed the study and 'Mahalaxmi' did the final draft and analysis. All authors read and approved the final manual script.

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