

# Epidemiological Study to Evaluate the Prevalence of Dentine Hypersensitivity among Patients

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## ABSTRACT

**Background:** Dentine hypersensitivity (DH) is a common finding with different prevalence rate. The aim of this study was to evaluate the prevalence of DH and associated risk factors.

**Materials & Methods:** This cross-sectional survey was done among patients coming to dental hospital. The diagnosis of DH was made as the result of both clinical examination and patient's response. A self-administered structured questionnaire was used to know demography profile, self-reported DH, the activating factors, preventive measures and frequency. Descriptive statistics were obtained and frequency distribution was calculated using Chi square t test at p value <0.05.

**Results:** The total population compromised of 960 patients including 528 males and 432 females. The prevalence of dentine hypersensitivity in this sample was 42.5% and more common among male population (60.8%) and the peak age was between 30 to 39 years (39.2%). Lower anteriors were commonly involved (35.8%) and cold drinks (25.8%) are the main aggravating factor. 6.5% experience it all the time but still some do not take preventive measures.

**Conclusion:** There is high prevalence rate of DH and mainly among males. Some of the patients had it all the time but still they do not want to control the problem.

**Key Words:** dentine hypersensitivity, epidemiology, prevalence.

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## Introduction

Dentine hypersensitivity is defined as a short, sharp pain arising from exposed dentine response to stimuli typically thermal, evaporative, tactile, osmotic or chemical and which cannot be ascribed to any other form of dental defect or disease.<sup>1</sup>

It could be due to many factors as thermal, either hot

Whereas no other pathology can be found in relation to dentinal hypersensitivity.<sup>2</sup>

The accepted theory about this is "Hydrodynamic theory". It suggests that a quick shift of fluids occur within the dentinal tubules after stimulus application. It leads to the activation of inner dentine and the pulp and therefore pain initiates.<sup>3</sup>

Gingival recession result in exposure of root surfaces of tooth and is also a common risk factor for hypersensitivity. Some previous studies have found that prevalence of dental hypersensitivity is correlated with gingival recession ranging from 29.7% to 93%.<sup>4-5</sup> Patients usually do not report this painful condition to their dental practitioners and when they do, they report experiencing sharp pain after a number of stimuli's. <sup>6</sup> DH has a strong effect on eating, drinking and sometimes breathing. Severe conditions of it may results in emotional changes that alter behaviour.<sup>7</sup>

Dentine hypersensitivity is a common oral problem among adult population. Incidence of DH increases with advancing age.<sup>8</sup> Many studies reported that DH was commonly seen in adult populations, with prevalence ranging from 25% to 40%.<sup>9-11</sup> Studies also showed different results of DH according to tooth numbering, some reported that commonest teeth affected were premolars where as it was found lower incisors in other study.<sup>12</sup> So knowing the variability of the disease and its multifactorial risk factors, this survey is being conducted to know the prevalence of dental hypersensitivity.

## Materials & Methods

This cross-sectional study was planned among patients coming to Dental College during a time period of January 2013 to April 2013. The study population consisted of 960 subjects including 528 males and 432 females. All the patients having permanent teeth were included and those having carious and fractured teeth were excluded from the study. Patients who had taken analgesics on the day of examination were also excluded.

Before commencement of the survey, ethical approval was obtained from the Ethical Committee, and official permission was received.

The diagnosis of DH was made as the result of both clinical examination and patient's response. First, teeth were dried with compressed air and patients were asked if they had any kind of sensitivity. In case, the response was positive the diagnosis of DH was confirmed using a blast of air from a syringe of dental unit. In cases the response was doubtful a piece of cotton impregnated in cold water was used to confirm the definitive diagnosis of DH. In order to estimate the

apico-coronal width of recession, linear measurements of gingival recession were obtained from the cemento-enamel junction up to the gingival margin in teeth presenting with gingival recession.

A self-administered structured questionnaire was used to know demography profile, self-reported DH, the activating factors, preventive measures and frequency.

## Data analysis

Data was analyzed using SPSS version 15.0 (SPSS, Chicago, IL, USA). Descriptive statistics were obtained and frequency distribution was calculated. Chi square t test was used to find the significance of difference of dentine hypersensitivity among gender and different age groups at p value <0.05.

## Results

The total population compromised of 960 patients including 528 males and 432 females further they were classified according to age groups as 288 were between 20 to 29 years, 432 were between 30 to 39 years and 240 were from 40 to 50 years.

**Table 1: Frequency of Dentin hypersensitivity according to gender**

Sex	Dentin hypersensitivity		p-value
	No	%	
Male	248	60.8%	0.001*
Female	160	39.2%	

\*Significant

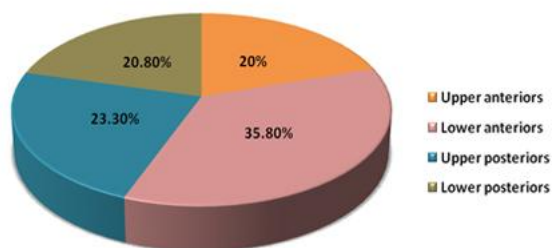
**Table 2: Frequency of Dentin hypersensitivity according to age groups**

Sex	Dentin hypersensitivity		p-value
	No	%	
20-29 years	96	23.5%	0.000*
30-39 years	160	39.2%	
40-50 years	152	37.3%	

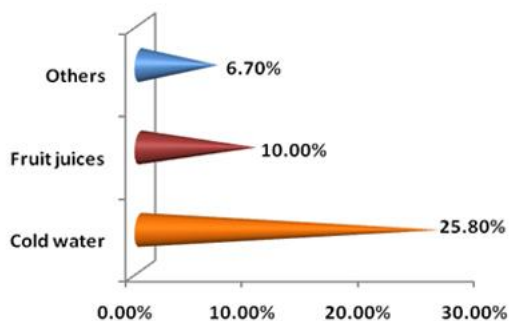
\*Significant

The prevalence of dentine hypersensitivity in this sample was 42.5% and this was more common among male population (60.8%) than females (39.2%) (p = 0.001) as shown in Table 1. According to different age groups, DH was seen in the subjects between 30 – 39

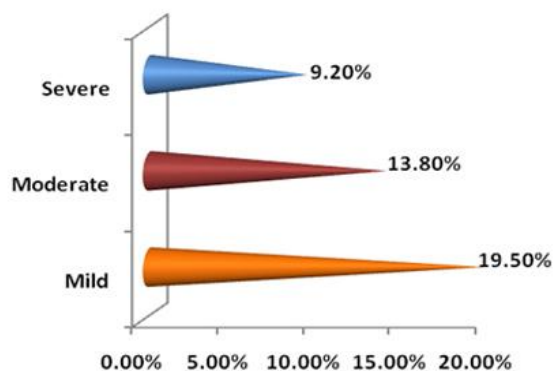
years old (39.2%), followed by 40 – 50 years (37.3%) and 20-29 years (23.5%) at p value 0.000 (Table 2).



Graph 1: Different sites of Dentin hypersensitivity



Graph 2: Factors associated with dentine hypersensitivity



Graph 3: Showing level of dentine hypersensitivity

Graph 1 showed that most of the prevalent teeth were lower anteriors (35.8%) followed by upper posteriors (23.3%). Where as upper anteriors and lower posteriors almost showed same results. The activating factors for this hypersensitivity were cold drinks (25.8%), fruit juices (10.0%) and other things (6.7%) like sweets, air

(Graph 2). The level of severity was mild in most of the cases (19.5) while some were having moderate (13.8%) and severe (9.2%) dentine hypersensitivity as shown in Graph 3.

Regarding frequency of DH, 6.5% subjects reported that they had it all the time, 14.0% had most of the time and 22.0% rarely experience it. In the last it was asked about the preventive measures, 26.7% visited the dentist, 5.8% used antisensitivity tooth pastes like

Time	Frequency	Action	Frequency
All the time	6.5%	Consulting the dentist	26.7%
Most of the time	14.0%	Antisensitivity toothpaste	5.8%
Rarely	22.0%	Nothing	10.0%

	DH	Gingival recession	p-value
Pearson Correlation	1	0.566	0.000*

sensodyne and 10.0% did not bother at all (Table 3). It was also found a linear positive correlation between dentinal hypersensitivity and gingival recession (Table 4).

Discussion

Dentinal hypersensitivity is challenging condition for patients to explain and for dentists to precisely diagnose. It may occur at any time during drinking, eating, talking, brushing.<sup>2</sup> The present study showed prevalence of DH as 42.5% and these results were in agreement with other studies.<sup>1,13-14</sup> However higher results were found in other studies as 67.7% in Hong Kong clinic population,<sup>15</sup> 68.4 % in Nigerian population.<sup>16</sup> Where as some studies showed lower results of dentine hypersensitivity as 25.5% in Chinese population,<sup>17</sup> 25% in Brazil <sup>18</sup> and 32 .58 in Shanghai.<sup>19</sup> The higher results in the present study could be due to habits of using chew sticks among the sample as most of them belongs to the rural community.

The present study showed a huge difference according

to gender in which males were having more prevalence of DH than their counterparts. These findings are similar to other studies done by Bamise et al among patients in Nigerian hospital in 2007.<sup>20</sup> However many studies reported that females had more DH than males.<sup>1,18-19</sup>

DH was most common in the age group of 30-39 years and the results are comparable with other previous studies.<sup>4,21-22</sup>

The main teeth in this study to get involved with DH were lower anteriors followed by upper posteriors. Similar results were obtained by Taani and Awartani in 2002 and Rees et al in 2003.<sup>5,15</sup>

The study also showed that mainly lower anteriors were having gingival recession. Where as the findings are in contrast with Tan et al where most common tooth with DH is right maxillary first premolar.<sup>23</sup>

Most common aggravating factors for DH was cold water followed by fruit juices and the study had similar findings with Colak et al study among students in Turkey.<sup>7</sup> As we know that soft drinks are carbonated that leads to tooth wear by erosion of enamel surface and then dentine causes DH. However study done by Chun-hung in 2010 mentioned that DH is mainly due to fruit juices as they contain fruits.<sup>12</sup> Cold is the most common factor which initiates the pain as experienced by most of the patients.<sup>3</sup>

According to the frequency of DH, most of the patients rarely experience the sensitivity. Similar results were reported by study done by Colak et al in which 87% occasionally experience DH, 11% had it most of the time and just 2% subjects for all the time.<sup>7</sup>

A linear positive correlation was seen between gingival recession and DH. It could be due to exposure of root surface that leads to dentinal hypersensitivity. The study showed severe form of DH, because in older age periodontal tissue gets loosen and leads to pocket formation and ultimately causes dentine hypersensitivity

### Conclusion

The study concluded high prevalence rate of DH i.e. 42.5% which was most commonly seen among males. Lower anteriors were mostly involved and cold is the most common factor to start sensitivity. Some of the patients had it all the time but still they do not want to

take preventive measures. There was also found a correlation between gingival recession and Dentine hypersensitivity.

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