

# Frequency of Dentine Hypersensitivity and their Associated Risk Factors Amongst the Patients Visiting the Dental Outpatient Department

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## ABSTRACT

**Background:** Medical practitioners often encounter dentine hypersensitivity, which is a challenging problem to manage. Dentine hypersensitivity is characterized by acute, transient discomfort from an exposed dentin region in response to stimuli that is unrelated to any other disease.

**Objective:** To assess the frequency of dentine hypersensitivity and their associated risk factors amongst the patients visiting the dental outpatient department

**Methodology:** The current study was cross-sectional, carried out at the dental outpatient department of Qazi Hussain Ahmad Medical Complex, Nowshera for duration of six months from January 2022 to June 2022. The survey questionnaire included queries about patient's age, gender, dentine hypersensitivity presence/absence awareness and factors associated with the dentine hypersensitivity. Data analysis was carried out by using IBM SPSS version 23.

**Results:** The overall frequency of dentine hypersensitivity was observed in 98 (35%) patients. Based on gender, dentine hypersensitivity was observed in 35 (27.77%) males and 63 (40.90%) females. The major risk factors of tooth sensitivity were ice cream in 118 (42.14%) participants followed by iced water in 64 (22.86%) participants.

**Practical implication:** There is little information available in Pakistan on how much the general public is familiar of dentine hypersensitivity. Therefore, this study will help to determine the prevalence of dentine hypersensitivity amongst patients who visited the dental outpatient clinic at the Qazi Hussain Ahmad Medical Complex in Nowshera and to analyze the various risk factors associated with it.

**Conclusion:** Our study concludes that dentine hypersensitivity is highly prevalent in patients visiting the dental outpatients department. Dentine hypersensitivity was frequently observed in females as compared to males. Ice cream and iced water were the major risk factors in our study.

**Keywords:** Dentine hypersensitivity; Frequency; Outpatient department; Risk factors

## INTRODUCTION

Medical practitioners often encounter dentine hypersensitivity, which is a challenging problem to manage<sup>1, 2</sup>. Dentine hypersensitivity is characterized by acute, transient discomfort from an exposed dentin region in response to stimuli that is unrelated to any other disease<sup>3</sup>.

Among adults, dentine hypersensitivity is a common dental issue<sup>4</sup>. It is described as an acute, transient pain that begins in the dentine and manifests in response to external stimuli including heat, cold, contact, or chemical agents<sup>5</sup>. Dentine hypersensitivity is more common in people between the ages of 30 and 40. Furthermore, compared to males, Females are impacted more often<sup>6, 7</sup>. Dentin hypersensitivity is mostly brought on by strenuous tooth cleaning, eating acidic foods, and stress-related teeth grinding<sup>8</sup>. The most frequent triggers are cold and heat, while dietary acid plays a significant role in causing dentine hypersensitivity<sup>9</sup>. According to USA data, the incidence of dentine hypersensitivity is 12.3% worldwide<sup>10</sup>. UAE and Hong Kong both had much higher rates, at 27% and 68%, correspondingly<sup>11, 12</sup>. Additionally, locally performed research in Karachi found a much higher frequency of 36.4%, whereas research in Lahore showed that 22% of patients have dentine hypersensitivity<sup>13, 14</sup>. There is little information available in Pakistan on how much the general public is familiar of dentine hypersensitivity. Therefore, the primary goal of our study was to determine the prevalence of dentine hypersensitivity amongst patients who visited the dental outpatient clinic at the Qazi Hussain Ahmad Medical Complex in Nowshera and to analyze the various risk factors associated with it.

## MATERIALS AND METHODS

The current study was cross-sectional, carried out at the dental outpatient department of Qazi Hussain Ahmad Medical Complex, Nowshera. The duration of study was six months from January 2022 to June 2022. The study approval was given by the hospital

ethical and research committee. A total of 280 patients were included in the study based on the WHO sample size calculator. The inclusion criteria of the current study was all the patients having a minimum of 20 teeth naturally and willing to take part in our study whereas the criteria for exclusion were all the patients having less than 20 natural teeth and not willing as participant in our study. All the patients having periodontal problems and severe systematic problems like diabetes and cancer were not included in the study. Informed consent was signed from all the included patients. In the current study, data was collected by using a modified survey questionnaire similar to a previous study<sup>15</sup>. The survey questionnaire included queries about patient's age, gender, dentine hypersensitivity presence/absence awareness, teeth hurting factors, knowledge of factors associated with the dentine hypersensitivity, how to reduce the teeth pain and teeth affected by sensitivity commonly. Data analysis was carried out by using IBM SPSS version 23. For variables such as gender, frequency of dentine hypersensitivity, frequency and percentages were calculated while for variable like age, mean and standard deviation was calculated. Chi-square test was employed with a p value of  $\leq 0.05$  as significant statistically.

## RESULTS

In this study, totally 280 patients were enrolled. There were 126 (45%) males and 154 (55%) females. The mean age in the current study was 38 years with a standard deviation of 4.0. The overall frequency of dentine hypersensitivity was observed in 98 (35%) patients. Based on gender, dentine hypersensitivity was observed in 35 (27.77%) males and 63 (40.90%) females. (Figure 1) Based on knowledge about dentine hypersensitivity, awareness was observed in 44 (34.92%) males and 76 (49.35%) females. Based on participant's actions, 25 (19.84%) males and 26 (16.88%) females preferred to eat from one side of mouth. For the avoidance of discomfort feeling, 16 (12.70%) males and 18 (11.69%) females avoided to eat certain foods. Based on habits of participants,

Vigorous brushing was the major factors observed in 22 (17.46%) males while brushing for 2-3 minutes was observed as major factor in 25 (16.23%) females. Based on the usage of toothpaste for the prevention of Dentine hypersensitivity, desensitizing toothpaste was observed as most preferred choice in 29 (23.02%) males and 46 (29.87%) females. (Table 1) Based on the teeth affected by hypersensitivity, maxillary posterior teeth were most sensitive (26.07%, n=73) teeth in both females and males followed by maxillary anterior teeth (21.07%, n=59). (Figure 2) The major risk factors of tooth sensitivity were ice cream in 118 (42.14%) participants followed by iced water in 64 (22.86%) participants. (Figure 3)

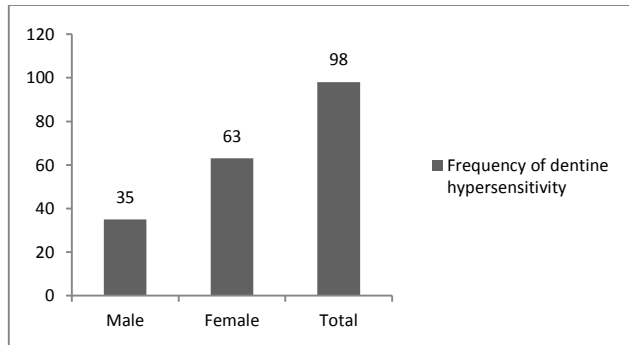


Figure 1: Gender wise distribution of dentine hypersensitivity

Table 1: Responses of participants

Responses	Category	Male N (%)	Female N (%)	P value
Action	Straw drinking	3 (2.38%)	7 (4.55%)	0.012
	One side chewing	25 (19.84%)	26 (16.88%)	
	Avoidance of some foods	16 (12.70%)	18 (11.69%)	
	Cool down foods	6 (4.76%)	9 (5.84%)	
	Circumvent brushing painful area	6(4.76%)	5 (3.25%)	
	Mouth covering on cold days	00 (00%)	9(5.84%)	
	No action	6(4.76%)	9(5.84%)	
Habit	Vigorous brushing	22 (17.46%)	15 (9.74%)	0.001
	Hard bristle brushing	4 (3.17%)	3 (1.95%)	
	Brush after eating	4(3.17%)	7 (4.55%)	
	Brushing for 2 to 3 minutes	12 (9.52%)	25 (16.23%)	
	Grind teeth	4(3.17%)	3(1.95%)	
	Usage of toothpaste	Desensitizing toothpaste	29 (23.02%)	
Fluorinated toothpaste	20 (15.87%)	21 (13.63%)		
Smokers toothpaste	6(4.76%)	00 (00%)		
Herbal toothpaste	6(4.76%)	15 (9.74%)		

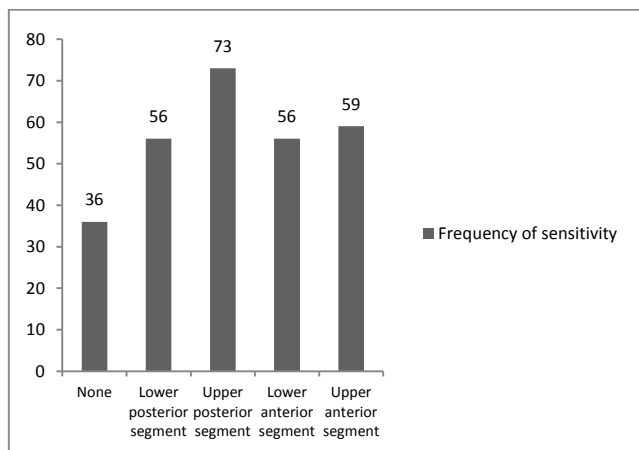


Figure 2: Frequency of teeth sensitivity based on type of teeth

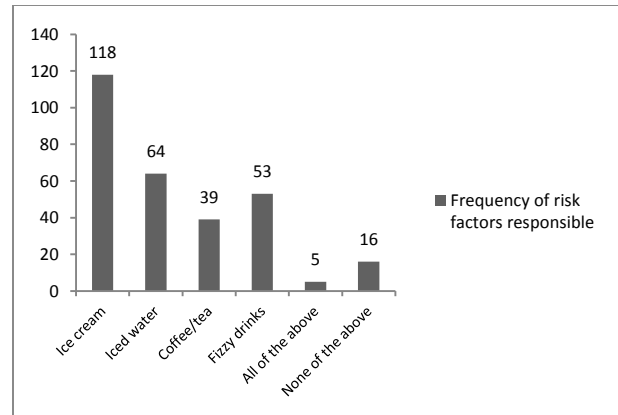


Figure 3: Frequency of factors associated with the dentine hypersensitivity

## DISCUSSION

The dentine hypersensitivity is a worldwide prevalent problem with prevalence ranging from 1.34%-74% globally <sup>16, 17</sup>. The overall frequency of dentine hypersensitivity was observed in 98 (35%) patients in our study. This frequency of dentine hypersensitivity is almost similar to a previous study carried out in China <sup>14</sup>. A previous study carried out in India reported 52.5% frequency of dentine hypersensitivity which is higher than our findings <sup>18</sup>. Another study done in Nigeria also reported higher frequency of dentine hypersensitivity (55%) as compared to our findings <sup>19</sup>. This discrepancy may be ascribed to the utilization of various approaches, including the utilization of a questionnaire either alone or in conjunction with a clinical assessment, as well as to patient ignorance and the association of pain from other sources with dentine hypersensitivity. Based on gender, dentine hypersensitivity was observed in 35 (27.77%) males and 63 (40.90%) females in our study. Other previous study also reported high frequency of dentine hypersensitivity in females than males <sup>20, 21</sup>. It may be because females, generally, are more concerned about their dental health and make more regular visits to the dentist <sup>22</sup>. Cold meals and fizzy beverages are two well-known risk factors for developing tooth sensitivity. Similar to previous studies by Olak et al, Bamise et al, and Gillam et al, our research also found that the majority of participants were sensitive to consuming cold meals <sup>23-25</sup>. Based on participant's actions, 25 (19.84%) males and 26 (16.88%) females preferred to eat from one side of mouth. For the avoidance of discomfort feeling, 16 (12.70%) males and 18 (11.69%) females avoided to eat certain foods in our study. These findings are comparable with the findings of the previous study <sup>26</sup>. Based on habits of participants, Vigorous brushing was the major factors observed in 22 (17.46%) males while brushing for 2-3 minutes was observed as major factor in 25 (16.23%) females in our study. A previous study carried out by Levitch et al. reported that individuals who vigorously brushed their teeth or brushed their teeth for longer time are more exposed to dentine hypersensitivity <sup>27</sup>. Based on the teeth affected by hypersensitivity, maxillary posterior teeth were most sensitive (26.07%, n=73) teeth in both females and males followed by maxillary anterior teeth (21.07%, n=59) in our study. A previous study done by Deogade et al. reported similar results <sup>28</sup>. Most responders favored using desensitizing toothpaste to treat dentine hypersensitivity. According to a study done by Rao et al., desensitizing chemicals play a critical function in giving protection against sensitivity because they perfuse the dentinal tubules with the aid of mineralization process <sup>29</sup>. Since it was a single site research, one of the limitations that may be noted is the small sample size. Second, the research relied exclusively on patient views about the diagnosis of this disease and was questionnaire-based, with no clinical examinations being performed. As a result, it is fairly simple for patients to link their dentine hypersensitivity discomfort to pain from other sources.

## CONCLUSION

Our study concludes that dentine hypersensitivity is highly prevalent in patients visiting the dental outpatients department. Dentine hypersensitivity was frequently observed in females as compared to males. Ice cream and iced water were the major risk factors in our study. Our findings show the need of performing multi-center investigation on dentine hypersensitivity throughout Pakistan to better inform the public and provide more factual evidence.

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