



DENTINE HYPERSENSITIVITY; FREQUENCY OF DENTINE HYPERSENSITIVITY AND FACTORS ASSOCIATED WITH IT AMONG PATIENTS VISITING ALLIED HOSPITAL FAISALABAD.

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ABSTRACT... Introduction: Dentine Hypersensitivity (DH) is a common oral health issue of interlinking causes. It can affect one or more teeth and followers of any age group. It is a painful consequence of exposed dentinal tubules of a vital tooth. There is an increased cognizance that DH has become an important condition that requires investigation from the diagnostic and problem management paradigm. The objectives of this study are to estimate the frequency of dentine hypersensitivity, to investigate various factors associated with this health problem and to determine which teeth are commonly affected amongst patients visiting Allied Hospital Faisalabad (AHF). **Study Design:** Descriptive Cross-sectional study. **Setting:** Diagnostic Department of Allied hospital Faisalabad. **Period:** 1st December 2016 to 31th December 2016. **Material and Methods:** After taking permission from Head of Department and Medical Superintendent of Allied Hospital Faisalabad, two hundred patients were examined after taking verbal consent. Clinical examination form/ questionnaire was used to investigate and diagnose dentine hypersensitivity. Data was analyzed using SPSS version 20 and variables were determined using Chi-square tests ($p < 0.05$ considered significant). **Results:** Out of two hundred patients, forty-seven were found be having dentine hypersensitivity, resulting frequency of dentine hypersensitivity in this sample was 23.5% and there was significant association between dentine hypersensitivity and factors i.e. erosion, attrition and gingival recession but near significant association for gastric reflux and no association for abrasion. It was more common in females and in age group of 18-30 years. Lower incisors were commonly affected teeth and predominantly affected site was buccal surface. Cold was the most common stimulus. Gingival recession was the most common factor. **Conclusion:** There was association between dentine hypersensitivity and its associated risk factors like gingival recession, attrition and erosion. Patients with hypersensitivity are more likely to be younger, to be female, to have a high prevalence of gingival recession and using horizontal tooth brushing technique.

Key words: Dentine Hypersensitivity, Prevalence, Adults, Gingival Recession.

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INTRODUCTION

Dentine hypersensitivity (DH) is defined as short, sharp pain resulting from stimuli typically thermal, tactile, evaporative, electric, chemical and osmotic and it cannot be attributed to any other dental defect or pathology.¹ Pain response of every person is different from others.² Dentine hypersensitivity is a diagnosis of exclusion which can be made by repealing other causes of pain like caries, fractured restorations, cracked tooth syndrome, reversible/irreversible pulpitis, post restorative sensitivity, marginal leakage, gingival inflammation etc.³ There are many theories proposed by scientists to explain how pain

is transmitted to dentine of which three chief theories are direct innervation theory, odontoblast receptor theory and hydrodynamic theory.²

Most popular is the hydrodynamic theory which was first put forward by Brannstorm,⁴ according to this theory certain stimuli such as hot, cold, tactile or mechanical pressure when applied to exposed dentine result in movement of dentinal fluid either inward or outward which in turn stimulate mechanoreceptors (A- δ fibers) present at the nerve endings to elicit a pain response.⁵

Dentine which forms the bulk of tooth has in its

dentinal tubules extensions of odontoblastic processes of pulp forming a dentine-pulp complex resulting in pain transmission from dentine to pulp and vice versa. Pain will not be transmitted to dentine unless and until it is covered by enamel and cementum.

Once these protective coverings are removed due to factors like erosion, attrition, abrasion, gingival recession dentine will be exposed resulting in pain transmission through dentinal tubules up to pulp causing dentine hypersensitivity.⁶ Tooth malposition, periodontal surgery, GERD and patient's habits might also lead to dentine hypersensitivity.³

The prevalence of DH reported differently in different studies resulting in vast range from 1.34% to 96%.^{1,7-15} These differences exist because of many reasons such as differences in study designs, selection criteria, sample size, time frames in which a study is performed, as well as oral hygiene, brushing habits and dietary intake of patients.¹⁵ Studies done in rural areas have different prevalence of DH as compared to urban areas which can be ascribed to different social status and life styles of their residents.¹⁸ Data related to DH is scant and contradictory thus, highlighting the need for further researches.¹⁵

The results of this study could be used to guide clinicians on the prevalence and causative factors of dentine hypersensitivity and to help the Allied Hospital Faisalabad to plan for the materials and expertise required to treat dentine hypersensitivity. The frequency figure of present study should be further evaluated and advanced studies should be done to evaluate associated risk factors of dentine hypersensitivity.

MATERIALS AND METHODS

This is a questionnaire based descriptive cross-sectional study which was undertaken at the diagnostic department of Allied Hospital Faisalabad from 1st December 2017 to 31st December 2017. Patients aged 18 years and above irrespective of gender and who came willingly to participate were included in the study and only the vital sound teeth examined for

hypersensitivity. Exclusion criteria consisted of all those patients who had any sort of malignancies, any carious, cracked or restored teeth. Clinical examination form/questionnaire was used to investigate DH which consists of questions like patient's biodata, presence of sensitive teeth, duration of experiencing sensitivity, teeth affected by sensitivity, any previous visit to dentist, application of any home remedy, patient's oral hygiene status, history of taking carbonated drinks, smoking, bad habits, tooth brushing method and presence of factors like gingival recession, erosion, attrition, abrasion and gastric reflux. Data was analyzed using SPSS version 20 and association was observed between DH and different variables using Chi-square test. At least 95% level of significance ($p < 0.05$) was considered significant.

RESULTS

A total of 200 patients were clinically examined which included 112 females and 88 males (male to female ratio is 1.8:2.3). Their ages ranges from 18 up to 60 years (mean age is 33.18 & SD is 11.15).

Figure-1 showing the frequency of DH amongst patients visiting Allied Hospital Faisalabad. It was found 47 patients (23.5%) out of 200 had dentine hypersensitivity.

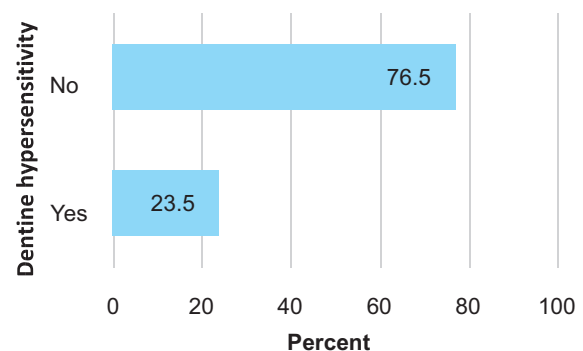


Figure-1

Table-I showing the age group of most commonly affected by DH which was between 18 to 30 years old.

Table-II showing stimuli of DH in which cold was found to be the most common stimulus of dentine

hypersensitivity.

Age Groups (Years)	Patients Having Sensitive Teeth (N)	Percentage
18-30	23	48.9
31-40	15	31.9
41-50	9	19.1
Total	47	100

Table-I. Age groups

Stimulus	Frequency	Percentage
Cold	26	55.3
Hot	15	31.9
Sweets	6	12.8
Total	47	100

Table-II. Stimulus of dentine hypersensitivity

Table-III showing presence of DH amongst males and females. It was observed that DH was common in females than males (female to male ratio 2.1:1)

Gender of Patient	Presence of Sensitive Teeth	Percentage
Male	15	31.9
Female	32	68.1
Total	47	100

Table-III. Gender of patients

Table-IV showing the duration of experiencing dentine hypersensitivity. The highest frequency of duration of experiencing DH was more than 12 weeks.

	Number of Patients (N)	Percentage
8-12	2	4.3
>12	45	95.7
Total	47	100

Table-IV. Duration of experiencing sensitive teeth

Table-V showing that out of 47 patients 35 patients had DH in all the teeth and 12 patients experienced DH in specific teeth of which mandibular incisors were the most common. While Figure-2 showing types of teeth affected by DH.

Table-VI showing that gingival recession was found to be the commonest factor causing dentine hypersensitivity.

Table-VII showing that frequency of those patients who do not take carbonated drinks was more than those who take carbonated drinks (often; 4-5 glasses per day, rare: 4-5 glasses per week)

	Responses	
	N	Percentage
All the teeth	35	74.6
Maxillary teeth	5	10.6
Mandibular teeth	7	14.8
Total	47	100

Table-V. Teeth affected by dentine hypersensitivity

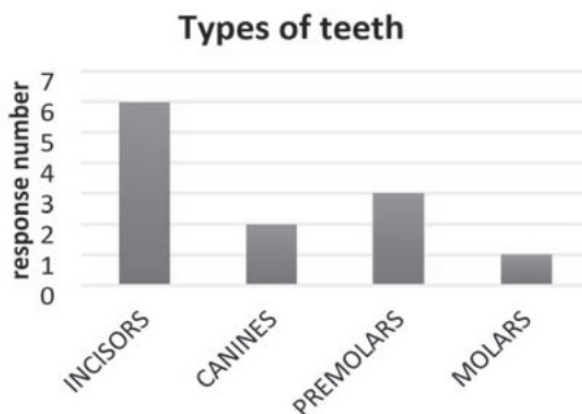


Figure-2

Factors			Sensitivity Yes	Total No	P value
Gingival Recession	Yes	16	3	19	0.000*
	No	31	150	181	
Total		47	153	200	
Erosion	Yes	11	2	13	0.000*
	No	36	151	187	
Total		47	153	200	
Attrition	Yes	15	4	19	0.000*
	No	32	149	181	
Total		47	153	200	
Abrasion	Yes	1	7	8	0.454
	No	46	146	192	
Total		47	153	200	
Gastric Reflux	Yes	3	2	5	0.051
	No	44	151	195	
Total		47	153	200	

Table-VI. Factors associated with dentine hypersensitivity

*significant

Frequency of Taking Carbonated Drinks	Number	Percentage
Often	6	12.8
Rare	8	17.0
Never	41	70.2
Total	47	100

Table-VII. Frequency of taking carbonated drinks

No association between DH and smoking could be found as only 10.6% smokers experience DH while 89.4% were nonsmokers who experience DH.

Out of all the patients who experience DH 40.4% patients had poor oral hygiene (having plaque and calculus deposits), 29.8% patients had any previous visit to dentist for experiencing symptoms of DH and only 2.1% patients applied any home remedy for curing DH.

Table-VIII showing that the most common brushing technique amongst the patients examined was the horizontal brushing technique which accounted for 89.4%.

Toothbrush Method	Frequency	Percentage
Vertical	5	10.6
Horizontal	42	89.4
Total	47	100

Table-VIII. Brushing technique

Table-IX showing that most common habit amongst the patients experiencing DH was traumatic tooth picking.

Habits	Frequency	Percentage
Traumatic tooth picking	10	21.3
Eating hard food	3	6.4
Nail biting	2	4.3
None of the above	32	68.1
Total	47	100

Table-IX. Habits

DISCUSSION

The present study found the frequency of 23.5% amongst the patients attending the diagnostic department of Allied Hospital Faisalabad. The results are closer to those found in studies which were conducted in China¹⁶ (25.5%), India¹⁰ (25%), UAE¹² (27%), Greece¹⁷ (21.3% - 38.6%) and

Pakistan^{18,19} (8%-35%, 36.4%). This similarity to the findings in the present study may be attributed to similar methodology and study designs.

Whereas some studies showed higher frequency of DH such as in Nigeria^{1,13} (52.8% and 63.3%), India^{10,21} (55% and 42.5%) and Hong Kong¹⁵ (68.4%). These higher values may be due to neglected oral health, increased alcohol consumption and different study designs and diagnostic approaches. In contrast some studies show lower frequency of DH such as in Australia²² (9.1%), Turkey²³ (5.3%) and UK general dental practices²⁴ (2.8%). These lower values may be attributed to increased awareness about oral health in these well-developed countries. This should be kept in mind that patients in developing countries do not have awareness about DH and they usually resort to avoiding the stimulus rather than seeking treatment.²⁰

There was significant association between DH and factors e.g. gingival recession, erosion and attrition but near significant association was found for gastric reflux and no association for abrasion.

Cold was the most common stimuli of DH (55.3%) followed by hot (31.9%) and sweets (12.8%).

Habits such as traumatic tooth picking, eating hard food (ice, nuts, corn on the cob, apples & carrots unless cut into small pieces, chips etc.), excessive flossing and nail biting were not so common in patients experiencing DH.

Dentine Hypersensitivity is a challenging condition for patients to explain and for dentists to accurately diagnose. It was previously reported in a study that patients usually apply local remedies for their medical and dental treatment instead of going to professionals for proper treatment.²⁴ So necessary counselling of patients is also the integral part of medical and dental care.

CONCLUSION

Out of 200 patients examined 23.5% had dentine hypersensitivity. The highest frequency of DH was in 2nd to 3rd decade and more in females than males. Mandibular incisors were the commonest teeth affected by DH. Horizontal tooth brushing

technique was the most common brushing technique.

Gingival recession was the commonest factor causing dentine hypersensitivity.

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

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YOU CAN CLOSE YOUR EYES TO REALITY
BUT NOT TO MEMORIES.

”

“Stanislaw Jerzy Lee”

AUTHORSHIP AND CONTRIBUTION DECLARATION

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