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Research Article

KNOWLEDGE AND MANAGEMENT ATTITUDE REGARDING DENTIN HYPERSENSITIVITY AMONG DENTAL STUDENTS – A CROSS SECTIONAL STUDY

Bhavya B*, Ashwini S and Minnu Joe Ida

Department of Periodontics, Faculty of Dental Sciences, Ramaiah University of Applied Sciences
Bangalore – 560054 Karnataka, India

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ABSTRACT

Introduction: Dentin hypersensitivity (DH) is described as a short sharp pain arising from exposed dentin, to various stimuli and that cannot be ascribed to any other dental disease. In dental education institutions, less efforts are given in providing awareness on conditions like Dentin hypersensitivity. **Aim:** The aim of the present study was to assess knowledge and management attitude of dental students regarding Dentin hypersensitivity. **Materials and methods:** The study involved students from various dental colleges in Bangalore. The following data was requested using questionnaire; socio-demographics and knowledge on triggering factor, type of pain, diagnosis, preventive and curative procedures. **Results:** 150 dental students participated in the study. 80.7% of the participants understood the characteristics of pain related to DH. 85.3% recognized cold as triggering factor. 90% of the participants had an idea of mechanism for pain transmission across dentin. 74% use air flow to elicit DH pain. The use of desensitizing tooth paste is the mostly chosen treatment option (84.7%) followed by professional topical application of fluoride. **Conclusion:** Incorporation of basic science knowledge on different types of dental pain and competencies to manage painful conditions like dentin hypersensitivity is recommended. Also, dental institutions should conduct CDE programs to meet the knowledge gap among students.

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INTRODUCTION

Dentin hypersensitivity (DH) is described as a short sharp pain arising from an exposed dentin, to evaporative, thermal, tactile, osmotic or chemical stimuli and that cannot be ascribed to any other dental defect or disease. Prevalence rate of this frequent condition ranges from 4 to 74% which depends on the diagnostic criteria and the population surveyed^[1]. This transient but recurrent pain elicited during oral activities like eating, drinking, brushing of teeth and even breathing can affect the daily life of subjects^[2]. Efforts are focused in providing knowledge and management skills on most common dental diseases (caries, periodontal disease, etc.) to dental students in dental education institutions of developing countries^[3].

Thus, from an academic perspective, a difference exists between the relative frequency of DH and the controversial effectiveness of available treatment on one hand, and the inadequate attention it receives within the undergraduate dental timetable on the other hand.

Numerous studies have assessed dentist's knowledge on DH in developed countries. Gillam *et al* conducted a survey on 181 UK dentists' perception of DH and knowledge of its treatment and concluded most dentists appeared to understand the etiology of DH and provided proper treatment to their patients^[4]. In contrast, the Canadian Advisory Board identified 14 key knowledge gaps related to the causes, diagnosis and management of DH in a survey on 331 dentists and 211 hygienists^[5]. To date, the only Indian study on practitioner's awareness on DH has been conducted in Mumbai, India^[6]. Overall awareness regarding the current mechanisms underlying DH was present among practitioners with the majority reporting inadequate brushing of the teeth as an initiating cause. Therefore, the present study was conducted to assess knowledge and management attitude of dental students regarding Dentin hypersensitivity.

*Corresponding author: **Bhavya B**

Department of Periodontics, Faculty of Dental Sciences, Ramaiah University of Applied Sciences Bangalore – 560054 Karnataka, India

MATERIALS AND METHODS

The study involved 150 dental students from various dental colleges in Bangalore, India. The sample size was determined by fixing 80 percent as the power of the study.

The following data was requested using validated questionnaire with 9 items. These included mainly socio-demographic data (name, age, gender, education etc.) and knowledge on type of pain, triggering factor, etiologic factor, theories relating to Dentin hypersensitivity, diagnosis, preventive and curative procedures (Appendix 1).

The questionnaire was mailed to all the dental students with an accompanying letter emphasizing the confidentiality and asking them to fill it out as objectively as possible. The data collected were entered in a spreadsheet and then transferred to SPSS® V 22.0 for analysis.

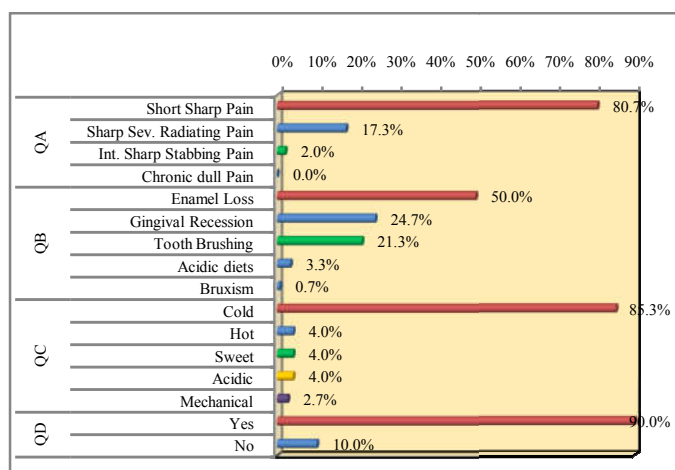
RESULTS

Out of the 150 dental students who received the questionnaire, 79 were interns and 71 were post graduates. The mean age of the sample was 23.6 ± 1.50 years and 26.4 ± 1.9 for interns and post graduates respectively (Table 1).

Table 1 Demographic Characteristics among the study participants

Demographic Characteristics among the study participants						
Variable	Categories	Intern [n=79]		PG [n=71]		P-Value
		Mean	SD	Mean	SD	
Age	Mean & SD	23.6	1.5	26.4	1.9	<0.001*
	Range	20 - 31		25 - 36		
Gender	Males	25	31.6%	25	35.2%	0.64
	Females	54	68.4%	46	64.8%	

80.7% of the participants found the definition tally with that of DH or in other words, had an accurate understanding of the characteristics of pain related to DH (Graph 1). When education level is taken into account, it appears that significantly more post graduates display correct answers.

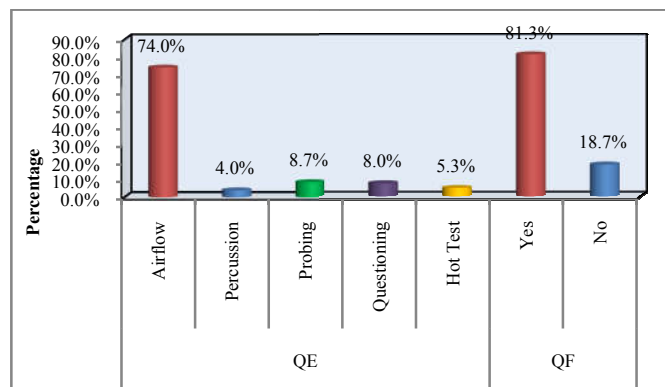


Graph 1 Distribution of Responses regarding type of pain and etiology

Enamel loss was considered most common etiological factor for dentin hypersensitivity by 50% of the participants. A majority of dentists (85.3%) reported that DH was triggered by cold which is thermal stimuli (Graph 1). Mechanical stimulus was only evoked by 2.7% of dental students. Although, 90% of the participants opted that they had an idea of mechanism for

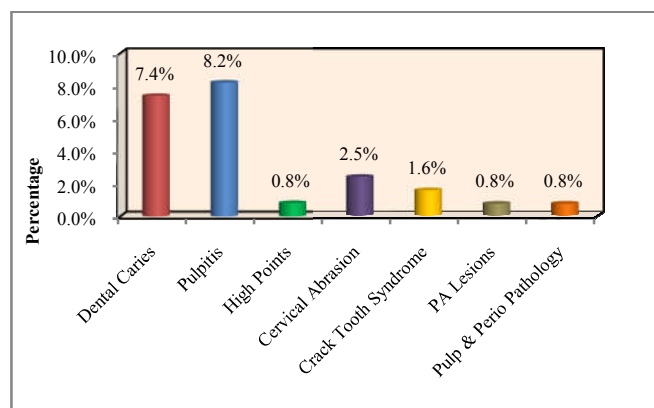
pain transmission across dentin, only 28.1% mentioned the theories associated with dentinal hypersensitivity in the form (Graph 1).

Regarding diagnosis technique, the response received show that 86.7% of the participants use mechanical stimuli (air flow, probing and percussion) to elicit DH pain (Graph 2).



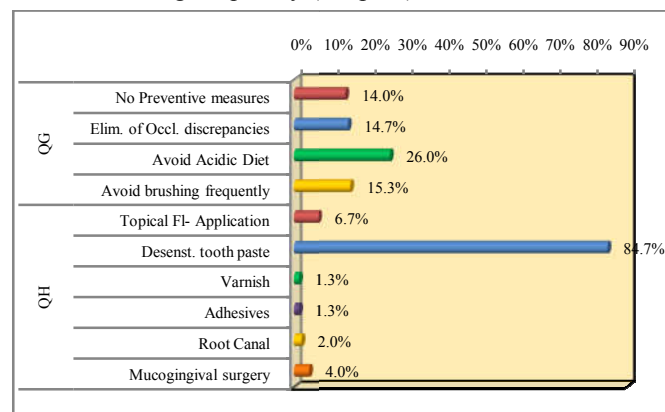
Graph 2 Distribution of Responses regarding diagnostic method

In terms of differential diagnosis, 81.3% of the practitioners acknowledge the idea of differential diagnosis when faced with another tooth pain. In particular, dental caries, both irreversible and reversible pulpitis are pathological conditions reported by the surveyed participants to simulate DH (Graph 3).



Graph 3 Distribution of responses to differential diagnosis of other painful conditions

86% of participants advise preventive measures for DH. These included elimination of occlusal discrepancies, avoiding acidic diet and brushing frequently (Graph 4).



Graph 4 Distribution of Responses regarding Preventive measures and Treatment

With respect to management procedures, the use of desensitizing tooth paste is the mostly chosen option (84.7%) followed by professional topical fluoride application (6.7%). 4% opted mucogingival surgery whereas 2% resorting to root canal to manage DH. Laser was not mentioned as a method of treating DH (Graph 4).

DISCUSSION

According to reports given by Dowell and Addy, 1 adult out of 7 suffers from DH^[7]. This conditional so represents 1/5th of dental disease related emergencies^[8]. Therefore, to have a thorough understanding of its features, initiating factors and management options is important for any dentist. The study reported herein was concerned with the assessment of knowledge on DH among the interns and dental post graduates. The questionnaire gave options that depicted the pain arising from irreversible pulpitis, trigeminal neuralgia and dentin hypersensitivity to investigate the understanding of the features of DH. The description best referred to DH was then indicated by the surveyed participants. Majority of them (80.7%) had an accurate understanding of the features of the pain associated with DH.

The surveyed dentists were asked if they perform differential diagnosis when faced to other painful conditions. The result of majority them accepting the idea of differential diagnosis was striking because DH is a true “pain syndrome” with specific features allowing differentiation with other dental pain and also its diagnosis is, by essence, one of exclusion. The opportunity given in the questionnaire to openly specify painful conditions showed that both reversible and irreversible pulpitis and dental caries may evoke DH.

The results of the present study indicate that 85.3% of the surveyed participants identified cold as main triggering factor for DH. Mechanical stimuli were not referred to by the majority of them although pain occurring during daily life activities such as tooth brushing can provoke pain from sensitive dentin. Similar findings were reported in a survey conducted in morocco involving 100 dentists^[9]. In a study conducted in Canada, almost 2/3rd of the surveyed dentists identified bruxism and malocclusion as triggering factor^[5]. In contrast with their poor knowledge of triggering factors, 68% of them used mechanical stimuli (probing) during clinical examination to diagnose DH.

The majority of the participants favor a treatment modality with desensitizing agents, professionally applied fluoride and restoration of tooth substance loss. These results are in contrast with studies reported by Schuurs *et al* in which 77% Dutch dentists advised the use of home-care methods like therapeutic toothpastes^[10] and by Gillam *et al* which reported use of tooth paste as a predominant choice by UK dentists^[4].

CONCLUSION

The following conclusions are reached as a result of this study:

- The majority of the dental students from Bangalore, India seems to be well informed regarding the features of pain associated with DH but lack knowledge on its triggering factors and theory explaining the tooth sensitivity.
- Lack of practice of prevention and efficient management of DH which recommends incorporation of basic science

knowledge on different types of dental pain and competencies to manage painful conditions like dentin hypersensitivity. Also, dental institutions should conduct Continuing Dental Education programs to meet the knowledge gap among students.

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Appendix 1: Questionnaire Form

Socio Demographic Data

Name:

Age: ____ years

Gender: Male / Female

Education: Intern / Post Graduate

A. In your opinion, which of the following sentences best depict dentin hypersensitivity?

1. Short sharp pain arising from an exposed dentin, to evaporative, thermal, tactile, osmotic or chemical stimuli and that cannot be ascribed to any other dental defect or disease.
2. Sharp, severe, radiating pain of long duration and varying intensity occurring spontaneously or following a

hot or cold stimulus. In the latter case, the pain may linger even after the stimulus is removed.

3. Intermittent, sharp, stabbing, shooting pain in the cheek, lips, gums, or chin on one side being able to build in strength, decrease and begin again, and then abruptly end. It can be triggered by stimuli as light as a breeze or a touch on the face.

4. Chronic dull pain from a tooth

B. In your opinion, which of the following is considered as most common etiological factor for dentin hypersensitivity?

1. Enamel loss
2. Gingival recession
3. Toothbrushing
4. Acidic diets
5. Bruxism
6. Others

If others, please specify

C. In your opinion, which of the following stimulus triggers dentin hypersensitivity?

1. Cold
2. Hot
3. Sweet
4. Acidic
5. Mechanical
6. Others

If others, please specify

D. Do you know any theory explaining the perception of pain across the dentin?

1. Yes

If yes, please specify

2. No

E. What technique do you use to detect and diagnose dentin hypersensitivity?

1. Air flow
2. Percussion
3. Probing
4. Questioning
5. Hot test
6. Others

If others, please specify

F. Do you consider differential diagnosis of other painful conditions before establishing the final diagnosis of dentin hypersensitivity?

1. Yes

If yes, please specify

2. No

G. Which of the following preventive measure do you advise to your patient to avoid dentin hypersensitivity ?

1. No preventive measure
2. Elimination of occlusal discrepancies
3. Avoid acidic diet
4. Avoid brushing frequently
5. Others

If others, please specify

H. Which of the following options are you using to manage dentin hypersensitivity?

1. Topical application of fluoride
2. Desensitizing toothpaste
3. Varnish
4. Adhesives
5. Root canal
6. Mucogingival surgery
7. Others

If others, please specify

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