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## The Impact of Dental Hypersensitivity on the Patients Quality of Life. A Questionnaire-Based study

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### Abstract

**Introduction:** Dentinal hypersensitivity is a pathological condition with an increased incidence among patients of various ages, affecting their well-being and with a common response for a wide range of treatment strategies.

The study aimed to assess the impact of teeth hypersensitivity on the quality of life, daily activities, and on the emotional status of the patients affected by it.

**Method:** We conducted an anonymous survey on a group of 200 patients with ages 20 and 65 years old, using a questionnaire that included 23

questions. The results were collected and statistically analyzed using the chi-square test.

**Results:** Out of all the patients who answered our questionnaires, 51 percent have ages between 20-25 years, 26 percent between 26-35 years, 12 percent between 36-45 years, respectively 11 percent represent patients older than 46 years. 81 percent of patients are female, and 19 percent are male. In 65 percent, the onset of dental hypersensitivity sensations is caused by the consumption of ice cream, affecting the patients' lifestyle negatively. According to the study, 36 percent of patients give up on certain foods/drinks that led to the appearance of dentinal hypersensitivity sensations. Forty-one correspondents felt compelled to give up consuming cold food, and carbonated and sour drinks.

**Conclusions:** Dentin hypersensitivity is represented by the appearance of an uncomfortable sensation due to dentin being exposed to the exterior environment, a sensation that can range from mild irritation to severe pain and can reduce the quality of mastication and oral hygiene.

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**Keywords:** Hypersensitivity, hyperesthesia, dental pain.

## Introduction

Dentin hypersensitivity is considered a pathological and painful condition that occurs due to the exposal of the tubular dentin to the exterior. It can affect a specific tooth or a group of teeth (Stoica, 2016), being a prompt response to a wide range of external stimuli, namely chemical, thermal, volatile, or tactile (Lacruz, 2017).

Pluri-etio-pathogenesis of dentinal hypersensitivity offers a wide range of possible factors that trigger this condition, which in some cases is difficult to diagnose, and therefore special care must be taken to establish a correct diagnosis to exclude any other possible dental disease with similar manifestations that could mislead the clinician (Roberson, 2018).

The incidence of dentin hypersensitivity has a considerably higher frequency among patients with periodontal pathology and females compared to males. According to clinical studies, the canines and the first premolars are the most affected teeth, followed by the incisors, the second premolars, and the molars (Dabiri, 2018).

Two very important criteria are incriminated for inducing tooth hypersensitivity: the location of the exposed dentin and the erosive lesions that create a communication between the dentinal tubular system and the dental pulp chamber (Rex Holland, 2016). To understand exactly the mechanism by which this condition acts, we need to consider the role of intradental nerve fibres and how pain acts on these structures. Dental pain from dentinal hypersensitivity occurs due to the action of exogenous stimuli exerted on open

dentinal tubes which produce changes in the dentinal fluid, activating the pulpal nerve fibres, through the hydrodynamic mechanism described by Martin Brännström. The role of intradentalimuli nerve fibres is to transmit nerve impulses received from brain structures (Grippio, 2014).

Dentin exposure results from the loss of hard dental tissue (Lussi, 2000) and soft tissue loss in pathological situations like a gingival retraction or periodonthopaty (West, 2013). The factors that contribute to the loss of enamel include attrition, abrasion, fraction, and acid erosion from both the external and internal body in the case of gastroesophageal reflux, respectively industrial erosion (Tugnai, 2019). Periodontal diseases, and an aggressiveand incorrect brushing technique, can lead to the removal of a thin layer of root cement and the exposure of the dentin layer (Lee, Kihwan & Lee, 2019). Another factor that can induce hypersensitivity at the dental level is the oxygen peroxide used in dental bleaching techniques.

In order to observe the intensity of the patient's hipersensitivity , we considered applying various stimuli on the dental surface, thathave a triggering role. The stimuli were as follows: mechanical, tactile, chemical, thermal, evaporative, and electrical. In addition to the patient's dental history and the clinical and complementary examination, the findings of these stimuli will help us set a correct diagnosis and treatment.

The differential diagnosis includes a wide variety of dental pathologies, similar to those of dental sensitivity, as follows (Kathariya, 2016): tooth decay, cracked tooth syndrome, dental trauma, reversible pulpal inflammation, lateral periodontal abscess, apical periodontitis, teeth whitening, vicious habits as in the case of bruxism and last but not least, the postoperative hypersensitivity that occurs after the preparation of cavities.

The universal literature currently proposes a wide range of treatment strategies to combat dental hypersensitivity. The three main categories include strategies that use desensitizing agents acting on both the nerve causing a desensitization of it and the teeth with their consequent blockage, and the last category includes anti-inflammatory medication: corticosteroids (Markowitz, 2008).

The most common therapy used in the treatment of dentinal hypersensitivity is the one used at home, being accessible to every patient and it does not require excessive acquisition costs: toothpaste or tooth mousse, mouthwash, respectively chewing gum containing sodium fluoride and potassium nitrate, which will significantly reduce the incidence of dental sensitivity.

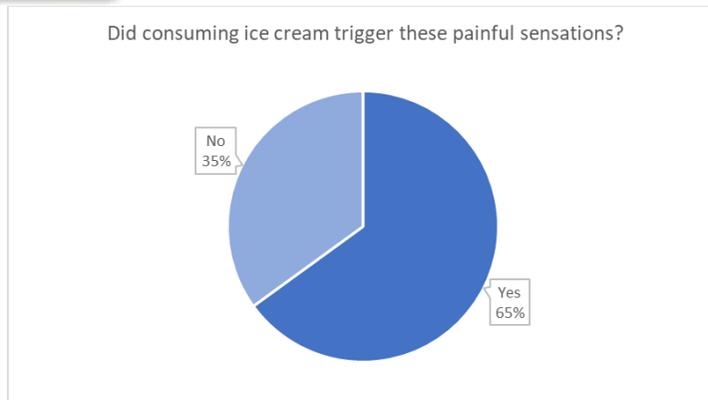
## **Methods**

The study was conducted based on an anonymous survey that included 200 people who agreed and gave written consent to participate and complete

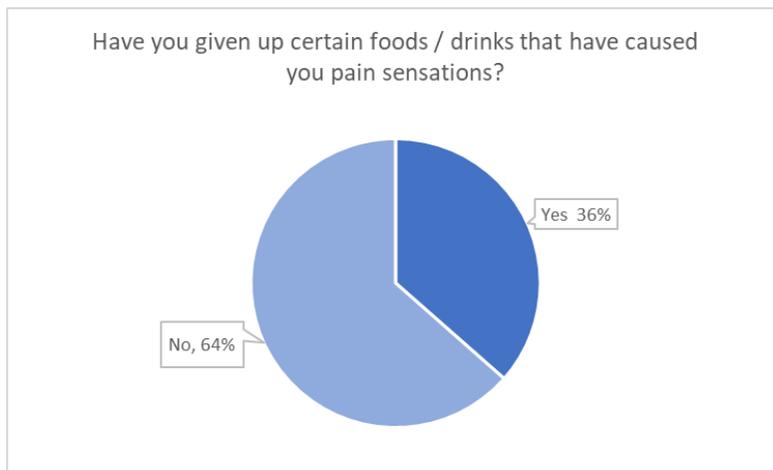
our questionnaire regarding dental hypersensitivity. All participants are patients at the Faculty of Dental Medicine Clinique of Targu Mures and answered our questionnaire onsite. The questionnaire is composed of 23 questions, and its structure includes both closed questions with a single answer and a multiple-choice answer, respectively, as an open editorial question. The group of patients involved in this study have ages 20-65 years, both female and male; the obtained data is confidential and will be used strictly to carryout our scientific study. The results were collected and statistically analysed using chi-square test.

## Results

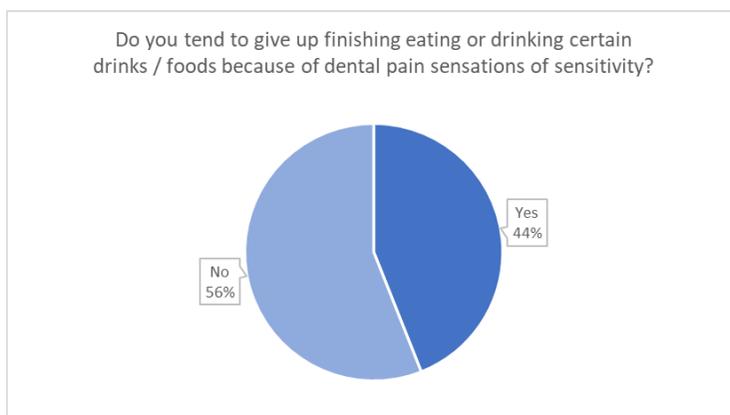
Out of all the patients who answered our questionnaires 51 percent have ages between 20-25 years, 26 percent between 26-35 years, 12 percent between 36-45 years, respectively 11 percent represent patients older than 46 years. 81 percent of patients are female and 19 percent are male. The urban environment predominates among the subjects, representing 86 percent, compared to the rural environment. 65 percent of patients consider that the onset of dental hypersensitivity sensations is caused by the consumption of ice cream, with a negative influence over their lifestyle (Figure. 1) A high percentage of 61 percent informed us that due to the painful sensations induced by this condition, the quality of social life is negatively affected. According to the study, 36 percent of patients gave up certain foods / drinks that led to dentinal hypersensitivity sensations. (Figure. 2). 44 percent of the patients do not finish eating or drinking their food and drinks, dental sensitivity having a bad impact on their eating habits (Figure. 3) and 53 percent consider that it is necessary to change the way they consume certain foods or drinks by adopting various mechanisms that relieve the painful syndrome. According to the results, 59 percent of patients state that they must be careful not to touch certain dental surfaces during meals to not trigger the painful syndrome (Figure. 4). Also a percentage of 48 percent of patients avoid consuming cold drinks and hot foods (Figure. 5). Painful experiences associated with dentinal hypersensitivity was mentioned by 34 percent of study participants, saying that the condition affects the general state of health (Figure. 6). 77.5 percent of all patients use toothpastes to decrease nerve fibre stimulation, 66 percent of the subjects also state that they started to use ultra-soft and soft toothbrushes, 46.5 percent start avoiding the consumption of sour foods / beverages, respectively, 22.5 percent began treatments in the dentist's office with the beneficial effects of relieving pain dental sensitivity and 8.5 percent of the subjects choose the administration of analgesic medication.



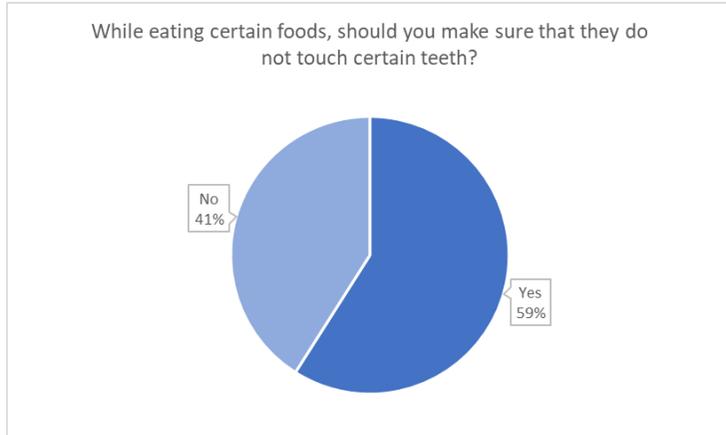
**Figure 1. Answer to question number 6 from questionnaire.**



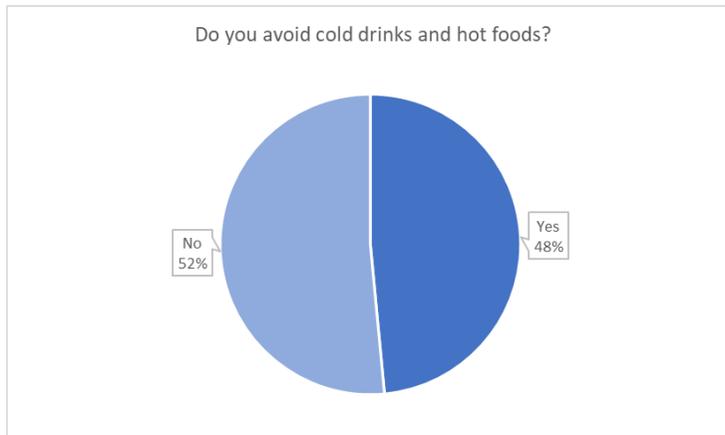
**Figure 2. Answer to question number 8 from questionnaire.**



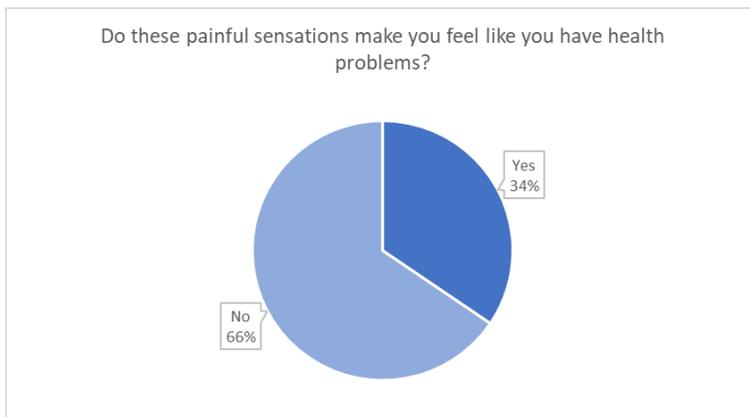
**Figure 3. Answer to question number 11 from questionnaire.**



**Figure 4. Answer to question number 13 from questionnaire.**



**Figure 5. Answer to question number 14 from questionnaire.**



**Figure 6. Answer to question number 22 from questionnaire.**

## Discussion

Discussing and analysing the results after collecting the questionnaires, we noticed that young people with ages between 20-25 years old, are the ones who address to dental services mainly, young adults representing 12 percent, and the elderly representing 11 percent. The female gender dominates the group of patients, the women presenting more rigor in terms of oral health and prevention of dental diseases.

The largest number of patients interested in dental services are from urban areas, which is related to the ease of addressing a dentist in urban areas compared to rural areas. In rural areas, patients go to the dentist for emergencies and acute pain, dental prevention or aesthetics are not a strong point. This is related to the fact that the standard of living, culture, financial level in rural areas is very different compared to developed urban areas. According to Strassler (2008) the incidence with a considerably higher frequency of dentinal hypersensitivity is among female patients compared to male patients.

Nowdays, the requirements of dental scaling and professional brushing have more and more demand, but being carried out over a long period of time can cause the inevitable occurrence of dental hypersensitivity. This happens especially in patients with poor oral hygiene who maintain the painful syndrome in the first days after the scaling procedure, therefore maintaining dental check-ups once every six months is essential to diagnosing and treating any dental pathologies (Gillam, 2013).

At the same time, the side effects of teeth whitening were analysed, it was concluded that one of the main side effects was the occurrence of dentinal hypersensitivity (Zeola, 2020).

In orthodontic treatments, the potential factor for dentinal sensitivity was gingival recession which has been described in multiple studies and strongly correlated with previous orthodontic treatments (Izhar, 2019). Other studies conducted about dental hypersensitivity show that participants noticed that the onset of this painful syndrome can be a side effect of aggressive toothbrushing, so the patients were urged to change both the brushing technique and the type of toothbrush they used, choosing soft or ultra-soft toothbrushes (Exarchou, 2019).

According to Kopycka-Kedzierawski (2017), the patients complain about a nervousness sensation as a response to the dentinal sensitivity developing eating habits caused by the specific adaptations in everyday life, affecting both social interactions and a strong emotional impact (Sood, 2016). The socio-emotional impact on patients attributed to daily activities accusing different states of discomfort, social isolation, various situations imposed by

this pathology, causes the person to address to various therapeutic means (Blaizot, 2020).

### **Conclusions**

Dental hypersensitivity is a common dental condition, a sensation that can range from mild irritation to severe pain which makes the patient address to the dental services. The pain induced by dental hypersensitivity modifies patients' eating habits by reducing the consumption of acidic foods, beverages, and foods with strong or very spicy aromas.

Hypersensitivity affects the hygiene of patients, who will avoid brushing certain tooth surfaces or certain teeth in order to reduce pain, thus, contributing to the accumulation of plaque, tartar, maintaining an acidic pH without beneficial effects or even increasing the degree of hypersensitivity.

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### **Conflicts of Interests:**

The authors declare that they have no conflict of interest regarding this article, and we did not receive any financial support from any organizations or a research grant.

### **QUESTIONNAIRE**

We all know that tooth hypersensitivity is a common dental condition nowadays. People who suffer from short and sharp pain associated with this condition, make an effort to avoid the triggers.

1. Your age:

- a. <20-25
- b. 26-35
- c. 36-45
- d. 46-65

2. Your gender:

- a. Feminine
- b. Male

3. Environment:

- a. Rural
- b. Urban

4. Have you noticed the appearance of dental sensitivity following these procedures?

- a. Professional dental cleaning and brushing;
- b. Teeth whitening treatment;
- c. Tooth brushing;
- d. Removal of an orthodontic appliance;

5. Does not, the sensations in your teeth, allow you to enjoy any food or drink?

- a. Yes
- b. No

6. Did consuming ice cream trigger these painful sensations?

- a. Yes

- b. No
- 7. Do you think that because of the painful sensations in your teeth, it takes longer to eat certain foods or drinks than other people?
  - a. Yes
  - b. No
- 8. Have you given up certain foods / drinks that have caused you pain sensations?
  - a. Yes
  - b. No
- 9. If the answer to the previous question was in the affirmative, please list the foods / drinks that you have given up because of these tooth pain or sensitivities:  
.....  
.....  
.....
- 10. Does breathing in cold winter weather induce teeth sensitivity?
  - a. Yes
  - b. No
- 11. Do you tend to give up finishing eating or drinking certain drinks / foods because of dental pain sensations of sensitivity?
  - a. Yes
  - b. No
- 12. Do you think that you need to change the way you eat certain foods or drinks?
  - a. Yes
  - b. No
- 13. While eating certain foods, should you make sure that they do not touch certain teeth?
  - a. Yes
  - b. No
- 14. Do you avoid cold drinks and hot foods?
  - a. Yes
  - b. No
- 15. Did the sensations made you to change your toothbrush and / or brushing technique?
  - a. Yes
  - b. No
- 16. Do you feel that you need to pay attention to what you eat when you are with other people because of these painful sensations that can occur in your teeth?
  - a. Yes
  - b. No

17. Do you avoid socializing with those around you because of the possible onset of painful sensations?
- Yes
  - No
18. Do you find it difficult to go to the dentist because you know that you may experience dental sensation through dental interventions / manoeuvres?
- Yes
  - No
19. Do you tend to worry that something you eat might trigger your sensations of toothache?
- Yes
  - No
20. Do the sensations of pain give you anxiety, nervousness?
- Yes
  - No
21. Do you feel that these unpleasant sensations make you feel different, withdrawn, ashamed?
- Yes
  - No
22. Do these painful sensations make you feel like you have health problems?
- Yes
  - No
23. What kind of therapeutic means are used to treat this dental pain or sensitivity?
- Sensodyne toothpaste, Elmex;
  - Using a soft toothbrush;
  - Analgesic medication;
  - Treatment with desensitizing agents performed in the dentist's office;
  - Supervision of eating and avoiding the consumption of sour foods / drinks;

The data filled in is confidential and will be used strictly for the purpose of carrying out our scientific study. Thank you!

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