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Sex Differences in Dentin Hypersensitivity

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ABSTRACT

Introduction: Teeth that are more sensitive to pain stimuli are called hypersensitive. Dentin hypersensitivity is estimated to be suffered by one in six people and may involve one or more teeth. Various studies suggested that sex affects the experience of pain, but just a few of them focus on dental pain. Objective: this study aimed to determine sex based differences in dentin hypersensitivity. Methodology: this study is a descriptive study with consecutive sampling. The population of this study were all patients who came for treatment to Faculty of Dentistry, Padjadjaran University. A total amount 132 samples who had dentin hypersensitivity were collected. Result: the case of dentin hypersensitivity is more common in women and most frequently in patients aged 20-30 years. The mandibular teeth in women were more prone to dentin hypersensitivity (59.3%). The maxillary and mandibular premolar were the type of the tooth that most experienced dentin hypersensitivity in both women and men. Patients with positive test results on tactile stimuli were 81 people (94.19%) for women and 42 people (91.30%) for men. Patients with positive test result on hot stimuli were 74 people (86.05%) for women and 37 people (80.43%) for men. Patients with positive tests on cold stimuli were 85 (98.84%) for women and 44 ((95.65%) for men. The scale result of sensitivity response to electric pulp tester in women (1.62) was lower than men (2.09). Conclusion of this study is women experience more dentin hypersensitivity to tactile, thermal and electric stimuli than men.

Keyword: Sex; Dentin hypersensitivity; Stimuli; Pain

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INTRODUCTION

Pain is a sign that body have been disrupted physically or mentally. Pain is a protective mechanism that occurs when body tissue is damaged or threatened, and causes the individual to react to eliminate the pain, thus pain is a sign as a warning against the dangers that interfere or damage the body tissues. The differences in dental pain can be caused by differences in the sensitivity threshold that causes toothache[1,2]. Teeth that are more sensitive to pain stimuli are called hypersensitive. Dentin hypersensitivity or tooth hypersensitivity is estimated to be suffered by one in eight people and may involve one or more teeth[1, 3].

Various studies suggested that sex affects the experience of pain. Women are believed to exhibit greater sensitivity to laboratory pain procedures than men. In general, women have lower pain thresholds and less tolerance to noxious stimuli[4, 5]. Women at a younger mean age are more frequently affected by dentin hypersensitivity[5].

A study by Robinson et al. (2001) also highlighted the fact that women are more sensitive to pain and men are more unlikely to report pain according to both genders. The majority of clinical studies demonstrated the fact that women blame more pain for a longer period of time than man do, on the other hand, experimental studies were less consistent regarding differences between genders depending on partially used pain[6].

Evidence shows that hormonal factors is associated with gender role. The influence of sex hormones represents a significant source of pain-related variability that likely impacts men and women differently. Sex hormones and their receptors in areas of the peripheral and central nervous systems associated with nociceptive Social models and learned experiences from family and culture are another contributing factor that can give a certain form to the personality and behavior regarding the gender of the child[7].

Many studies discussed the difference in pain based on sex but just a few of them that focused on dental pain. It's very important for a dentist to know more about patient experience of dental pain because it's the most common reason for patient to visit dentist[8]. Dentin hypersensitivity as one of dental pain may inhibit the patient to carry out plaque control, thus causing disruption of periodontal tissue health and spur the onset of teeth and gums diseases[9]. Understanding differences in dental hypersensitivity by different sex also can help doctors lay out a different treatment plan[6]. This study aimed to determine sex based differences in dentin hypersensitivity.

MATERIALS AND METHODS

This study is a descriptive study with consecutive sampling. The population of this study were all patients who came for treatment to Faculty of Dentistry, Padjadjaran University. A total of 132 samples who had dentin hypersensitivity were collected.

Dentin sensitivity was tested by giving tactile, thermal (hot and cold) and electric stimuli to see the pain response. Each test was performed on different days to avoid bias results of pain responses.

Test methods were as follows:

- Tactile stimuli. The tactile method is the measurement of dental pain sensitivity by palpation. Sensitivity testing was done by moving the sharp sonde on the area of sensitive teeth. If the patient has spontaneous pain then it was considered as positive response result.
- Thermal stimuli
    - Stimulate cold. Teeth were first dried and isolated using a cotton roll. Ethyl chlorine was sprayed to a cotton and placed on cervical 1/3. Teeth with spontaneous pain was considered as positive response to cold stimuli.

- Hot stimuli. The dentin sensitivity test measures of heat stimuli were similar to those of cold stimuli, but ethyl chloride is replaced by heated gutta percha.

- Electric stimuli. Dentin sensitivity test on electrical stimulation was done using electric pulp tester. The teeth were dried and isolated. The tip of the electric pulp tester metal was placed on the tooth surface, then the regulator is rotated slowly. The regulator has a scale of 1-10. When the patient experiences spontaneous pain, the number showed by the regulator is a dentin-sensitivity scale to electric stimuli. The smaller the number showed by the regulator means the more sensitive the teeth to the electric stimuli.

Table 1. The Prevalence of Dentine Hypersensitivity Based on Teeth Location

Sex	Experiencing Dentin Hypersensitivity	
	Maxillary Teeth	Mandibular Teeth
Women	40.7%	59.3%
Men	50%	50%

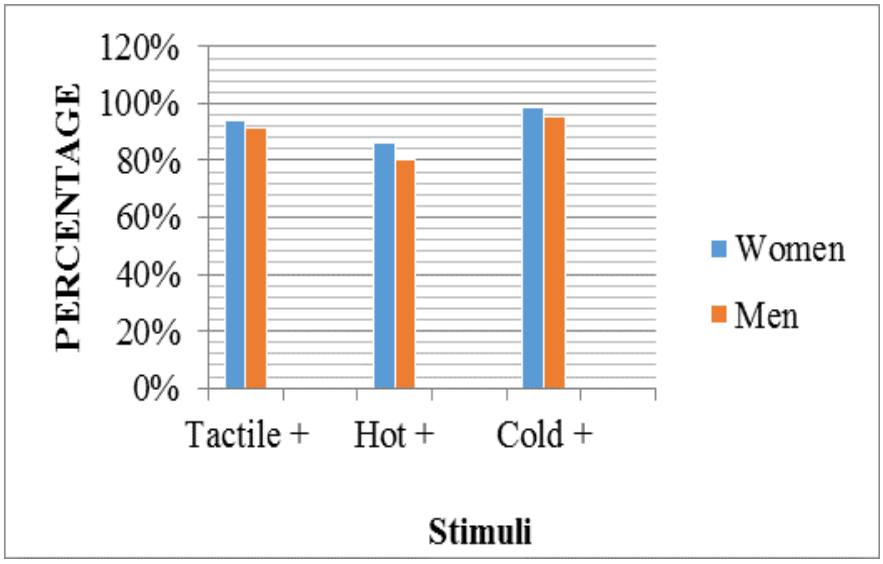

Fig 1. The Prevalence of Dentine Hypersensitivity Based on Stimuli

RESULT

The age distribution of respondents was under 20 years (1.5%), between 20-30 years old (68.2%), between 30-40 years old (10.6%) and over 40 years (19.7%). The average age of female patients was 30.57 years and male patients was 24.87 years.

The case of dentin hypersensitivity was more common in women (65.15%) and most frequently in patients aged 20-30 years. The mandibular teeth in women were more prone to dentin hypersensitivity (59.3%). In women, dentin hypersensitivity was most common in mandibular premolar teeth (45.35%), followed by maxillary premolars (26.74%), mandibular incisors (9.30%) and maxillary canines (6.98%). Men also experienced the same response, the teeth most commonly affected by dentin hypersensitivity were mandibular premolar teeth (45.65%), but followed by maxillary premolars (39.96%), maxilla and mandibular canines (10.87% and 4.35%).

The prevalence of women respondent with positive test results on tactile stimuli (94.19%) were higher than men (91.30%). Positive test result on hot stimuli showed by 75 respondents (87.21%) for women and 37 respondents (80.43%) for men. Positive tests on cold stimuli experienced by 85 respondents (98.84%) for women and 44 respondents (95.65%) for men. The average scale result of sensitivity response to electric pulp tester in women (1.62) was lower than men (2.09). The scale showed that dentin in women was more sensitive to electric stimuli.

DISCUSSION

The result of this study is similar with previous studies about pain, where women were more sensitive and experiencing more dentin hypersensitivity than men in response to all of the stimuli tests. Sex hormones are believed to play an important role in those differences. Women experience pain exacerbation during menstrual cycle due to decreased pain threshold although the pain threshold remains the same in men and women during low progesterone and high estradiol levels. Various psychosocial mechanisms may also play a fundamental role in sex-related differences in pain. For instance, pain coping strategies have been found to differ between men and women. While men tend to use behavioral distraction and problem-focused tactics to manage pain, women tend to use a range of coping techniques including social support, positive self-statements, emotion-focused techniques, cognitive reinterpretation, and attentional focus Two constructs proven to be integral to pain response are catastrophizing and self-efficacy. Catastrophizing is a method of pain coping referring to the magnification and rumination of pain-related information, while self-efficacy refers to the belief that one can successfully perform a behavior to achieve a desirable goal. Study has shown that catastrophizing is associated with pain and pain-related disability and women engage in catastrophizing more often than men[6].

Women's vulnerability to pain makes women more likely to get medical help compared to men[10]. The health seeking behavior when experiencing dentin hypersensitivity will have an impact to overall oral health. The higher tendency to seek immediate medical help when having dental pain will get higher chance to be treated earlier. An early dental visit will prevent the disease to progress to more severe state. Several studies also found that children who had earlier preventive dental visit have lower dentally related cost[11, 12].

Hawthorn & Redmond (1998) in Kneale (2011) mentioned that men are better able to withstand pain but do not mean men experience less pain than women[13]. Sociocultural beliefs about femininity and masculinity also appear to be an important determinant of pain responses among the sexes as pain expression is generally more socially acceptable among women, an effect which may lead to biased reporting of pain[6].

The physical pain of oral conditions will also have psychological impact. The study of Suresh et al reported that women who experienced dental pain exhibited greater levels of functional limitation and psychosocial difficulties compared to men[8]. This could be the reason why women have a higher level of anxiety when experiencing pain, including dentin hypersensitivity.

CONCLUSION

Women experience more dentin hypersensitivity to tactile, thermal and electric stimuli than men.

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