ORIGINAL ARTICLE

Dentinal sensitivity among a selected group of young adults in Nigeria

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ABSTRACT

Background: There is paucity of data on the prevalence of dentinal sensitivity outside the hospital setting and impact of dentinal sensitivity among young adults in Africa. This study aimed to determine the prevalence and impact of dentinal sensitivity among young adults in Nigeria. **Materials and Methods:** A cross-sectional survey was conducted among the undergraduates of University of Benin in August, 2010. Self-administered questionnaire elicited information on demography, self-reported dentinal sensitivity, the trigger factor, action taken, functional, and psychological impact. **Results:** The prevalence of dentinal sensitivity was 211 (52.8%) among the participants and it was significantly higher in females than males (P=0.027). Participants experienced shocking sensation more on the left-side of the mouth. The most common trigger factor for the dentinal sensitivity was due to cold drink [169 (80.1%)]. Among the participants with dentinal sensitivity, majority [139 (65.9%)] have not taken any action and only 24 (11.4%) have visited the dentist because of the problem. Dentinal sensitivity exhibited psychological impact among the participants as 64 (30.3) reported unhappiness due to the shocking sensation. Eating and talking were disturbed, respectively, in 59 (28.0%) and 12 (5.7%) of the participants. **Conclusion:** The prevalence of dentinal sensitivity was high which was significantly higher in females than males. Despite the negative functional and psychological impact among the participants, only a few sought dental professional care. Screening for dentinal sensitivity at community level is required to proffer early treatment and ameliorate its impact on the populace.

Key words: Diet, dentinal sensitivity, young adults

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INTRODUCTION

Dentinal sensitivity is a significant dental health problem, characterized by short, sharp, pain arising from exposed dentine in response to stimuli typically thermal, evaporative, tactile, osmotic, or chemical which cannot be ascribed to any other form of dental defect or pathology.[1-3] It is commonly encountered, with prevalence as high as 74%,[4] standing it out, as one of the most painful dental conditions affecting oral comfort and function. Although, dentinal sensitivity negatively impacts on individual's quality of life as it limits dietary choices, impedes effective oral hygiene, and adversely affects verbal expression, enjoyment of food, and aesthetics, many afflicted individuals do not specifically seek treatment for this problem[5] but may mention it at a routine dental visit[6]. This signifies that the predominant dental clinic epidemiological data on the prevalence of dentinal sensitivity is deficient as many afflicted will depend on self-care. The utilization of dangerous substances in self-care for dental problem in developing countries[7] and its overwhelming consequences justifies the increasing need to assess prevalence of dental problem like dentinal sensitivity in the community. Dentinal sensitivity being an episodic pain condition, is likely to become a more frequent dental complaint in the future due to the increase in longevity of the dentition and the rise in tooth wear.[8] The noted increasing prevalence of dentinal sensitivity in the modern society with most dominance in young adults.[9] Usually due to overzealous brushing and other factors that begin to take their toll at this age group[10,11] justified the selection of young adults for this study. The objective of the study was to determine the prevalence of dentinal sensitivity among young adults.

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MATERIALS AND METHODS

A cross-sectional survey was conducted among undergraduates of University of Benin, Edo State, Nigeria,

in August, 2010. The students were recruited at three entry and exit points of the Ugbowo campus of University of Benin. Those in hurry, almost late to lecture and refused to be interviewed were excluded from this survey. Those who had dental caries reported as hole in tooth or teeth and fractured teeth reported as broken teeth were also excluded. At the end of 4 week period, the estimated sample size of 400 was obtained. The objective of the study was explained to the participants, and informed consent was obtained before the interview. Participants interviewed were in the age range of 17-35 years, with those aged <21 years; 82 (20.3%), 21-25 years; 151 (37.8%), 26-30 years; 125 (31.3%) and >30 years; 42 (10.5%). Out of the consenting interviewed participants, males were 201 (50.3%) in number and the remaining 199 (49.8%) were females. The tool of data collection was an interviewer-administered questionnaire that elicited information on demography, self-reported dentinal sensitivity, the trigger factor, action taken, functional, and psychological impact. The data were analyzed using statistical package for social sciences (SPSS) Version 17.0. The entered data were subjected to descriptive statistics in the form of frequency, percentages, cross tabulation. Test of significance was done with Chi square statistics. $P<0.05$ was considered as significant.

RESULTS

The prevalence of dentinal sensitivity was 211 (52.8%) among the participants. Out of 211 participants who reported dentinal sensitivity, 199 (94.3%), were right handed and 12 (5.7%) were left handed. The shocking sensation were experienced by the participant on the left side 95 (45.0%), right side 59 (28.0%), and both sides 57 (27.0%). The prevalence of dentinal sensitivity was significantly higher in females than males ($P=0.027$) [Table 1]. The trigger factors for the dentinal sensitivity include cold drink [169 (80.1%)], sweet food [27 (12.8%)], and air entering the mouth [15 (7.1%)] [Table 2]. Among the participants with dentinal sensitivity, majority 139 (65.9%) have not taken any action and only 24 (11.4%) have visited the dentist because of the problem [Table 3]. In this study, 44 (20.9%) and 22 (10.4%) of participants that reported dentinal sensitivity ingest soft drink and citrus fruit regularly. A total of 167 (79.1%) and 44 (20.9%) participants ingest soft drinks with and without straw, respectively [Table 4]. Dentinal sensitivity exhibited psychological impact among the participants as 64 (30.3%) asserted unhappiness due to the shocking sensation. In 59 (28.0%) and 12 (5.7%) of the participants, eating and talking were disturbed, respectively [Table 5].

Table 1: Prevalence of dentinal sensitivity among the participants

Dentinal sensitivity	Gender		Total *n* (%)
	Male *n* (%)	Female *n* (%)	
Present	95 (47.3)	116 (58.3)	211 (52.8)
Absent	106 (52.7)	83 (41.7)	189 (47.3)
Total	201 (50.3)	199 (59.8)	400 (100.1)

$\chi^2 = 4.879$; df = 1; $P=0.027$

Table 2: Precipitant of dentinal sensitivity among the participants

Trigger factors	Frequency (no.)	Percentage (%)
Cold water	169	80.1
Sweet food like fried plantain	27	12.8
Air entering my mouth	15	7.1
Total	211	100.0

Table 3: Action taken by the participants experiencing dentinal sensitivity

Action taken	Frequency (no.)	Percentage (%)
I have not done anything	139	65.9
I used warm water and salt	26	12.3
I visited the dentist for help	24	11.4
I used sensodyne toothpaste	12	5.7
I changed to herbal toothpaste	5	2.4
I put snuff on my teeth	3	1.4
I changed to using only chewing sticks	2	0.9
Total	211	100.0

Table 4: Soft drink and citrus fruit ingestion among the participants

Frequency	Soft drink *n* (%)	Citrus fruit *n* (%)
Regularly	44 (20.9)	22 (10.4)
Often	42 (19.9)	42 (19.9)
Sometimes	64 (30.3)	78 (46.4)
Occasionally	52 (24.6)	52 (24.6)
Rarely	9 (4.3)	17 (8.1)
Total	211 (100.0)	211 (100.0)

Table 5: The impact of dentinal sensitivity among the participants

Questions	Yes *n* (%)	No *n* (%)
Does the shocking sensation make you unhappy?	64 (30.3)	147 (69.7)
Does the shocking sensation disturb your eating?	59 (28.0)	152 (72.0)
Does the shocking sensation disturb you from talking?	12 (5.7)	199 (94.3)

DISCUSSION

Dentine sensitivity is a relatively common problem which may disturb the patient during eating, drinking, brushing, and sometimes even breathing.[12] The oral discomfort generated by pain in dentinal sensitivity, leads to nutritional deficiency due to dietary restrictions in some individuals. In this study, the prevalence of dentinal sensitivity was 52.8%. This was comparable to 52.0%[6] and 57.2%[9] dentinal sensitivity reported in general dental practice

population but lower than 68.4% obtained in previous survey among similar population in another geographic location in Nigeria.[13] 67.7% reported in a Periodontology clinic population in Hong Kong[14] and 62.0% obtained in a telephone community survey conducted in Hong Kong.[15] However it was higher than 32.58% reported among adults in Shanghai municipality,[16] 25.5% reported among Chinese urban adults residing in communities in Chengdu and Xian City.[17] Other lower prevalence include 25.5% and 17.27% reported among of urban adult population[18] and young people[19] in Chengdu city, China respectively, 25% reporting dentinal sensitivity among dental patients in Rio de Janeiro, Brazil[20] and 16.3% reported among patients attending a specialist restorative dental clinic in a teaching hospital in Nigeria.[21] The cultural and ethnic influence on lifestyle, disease perception, view, and reporting may be the reason for the variation in prevalence of dentinal sensitivity in community based surveys. The varied differences could also be due to the difference in the methodology of compared studies in the literature in terms of diagnosis of dentinal sensitivity, if it was self-reported only as in this study or confirmed with the oral test; the age of participants was restricted to young adults in this study and hospital based or community-based study which was the case in this study. Dentinal sensitivity was significantly much common among right-handed individuals than the left-handed ones. Bamise *et al*.[22] reported the preponderance of dentinal sensitivity aetiologies on left-side of the mouth among right-handed patients in Nigeria. The reason may be due to the fact that the most right-handed individuals applied greater force during brushing on the left-side leading to abrasion and recession with consequent dentinal sensitivity.

In this study, the prevalence of dentinal sensitivity was significantly higher in females than males. This is similar to the findings of Tan *et al*.[19] in a study among young people in the Chengdu city, China and Ye *et al*.[16] among adults in Shanghai municipality. Specialist restorative dental-clinic-based study also reported a higher incidence of dentinal sensitivity in women than in men.[21] Fischer *et al*. [20] reported non-statistically significant higher prevalence of dentinal sensitivity among female dental patients than males in Rio de Janeiro, Brazil. A contrasting study that reported a higher prevalence of dentine hypersensitivity among males than females was conducted among dental patients in a Nigerian teaching Hospital.[23] The explanation is that dentinal sensitivity is more common in individuals who are meticulous and have good oral hygiene,[21] and women of any age, generally speaking, are more attentive to basic hygiene than an age-matched group of males reflecting their overall healthcare and better oral hygiene awareness.[24.]

In this study, shocking sensation due to dentine sensitivity were experienced by about half [95 (45.0%)] of the participants only on the left-side. It could be explained by the fact that right-handed people who are majority among the participants, tend to brush their left-side teeth more zealously and vice versa, which results in hypersensitivity in those teeth. In a study, all the patients with dentinal hypersensitivity studied in a tertiary hospital in Nigeria were right-handed.[22] However, the finding of this research contrasted with Tan *et al*.[19] who reported the right maxillary first premolar as most common affected tooth.

In this study, the main trigger factor for the dentinal sensitivity was cold drink [169 (80.1%)], which is similar to findings of previous research.[9,14, 19,23, 26,27] The significantly induced dentinal fluid movement cold drinks as explained by hydrodynamic theory results in a change in osmotic pressure, which is transmitted as a stimulus to the odontoblastic process, generating action potential on the afferent nerve ending located at the pulp-dentine border.[25] Among the participants with dentinal sensitivity, majority [139 (65.9%)] have not taken any action and only 24 (11.4%) have visited the dentist because of the problem. It collaborated the finding of a study in Rio de Janeiro, Brazil where only a few patients who claimed to have dentine hypersensitivity had tried treatment with desensitizing toothpastes or sought professional help.[20] In comparison, professional treatment had been sought by 32% of adult patients attending general dental practice[9] and 16.6% of urban adult population in Chengdu City who reported dentinal sensitivity had received desensitising treatment.[18] The explanation for not seeking dental care is due to the fact that dentinal sensitivity is not spontaneous but rather stimulated, so affected individuals develop adaptive behavior of restricting self-from precipitants and avoid affected using side of the mouth as about three-quarters of the participants had dentinal sensitivity on only one side of the mouth.[28] Scientists have postulated that many patients assume that their condition is a natural occurrence developing with age, or that it is untreatable.[28] The dependence of Nigeria on self-care for oral health problem and seeking dental care only when situations are unbearable may also be contributory. Self-care inform of warm saline mouth bath, use of densensitization toothpaste 12 (5.7%), change from regular toothpaste to herbal toothpaste, and chewing stick and use of snuff are reported in this study. In a study, in a developed country, densentizing toothpastes were used by 67.9% individuals reporting sensitivity.[11]

In this study, 44 (20.9%) and 22 (10.4%) participants who reported dentinal sensitivity ingest soft drink and citrus fruit regularly. Although, the habitual ingestion of soft drinks, which are mostly carbonated causes tooth wear by erosion of enamel and dentine leading subsequently to dentinal sensitivity, ingestion of soft drinks with straw is a precautionary measure that limits its contact with surfaces of teeth by directing the drink towards the oropharynx and this was practiced by 167 (79.1%) participants. This implies that erosion may have limited contribution to prevalence of dentinal sensitivity among the studied participants.

Oral conditions are known to exert adverse impact on oral functions such as eating, talking, swallowing, etc and also mental wellbeing. Individuals with dentinal sensitivity avoid certain foods and beverages that trigger painful response, thus reducing the type of foods and drink one can enjoy. Individuals with dentinal sensitivity have considerably more impaired oral health-related quality of life (OHRQoL) than the general population.[29] Among the participants with dentinal sensitivity, 59 (28.0%) and 12 (5.7%) of the participants, eating and talking were respectively disturbed. The discomfort and pain caused by dentinal sensitivity makes consumption of hot, cold, and sweet food difficult to relish. The less number of participants who reported adverse effect on verbal communication may be linked with the fact that about 15 (7.1%) had air entering the mouth as the precipitant of their dentinal sensitivity.

In this study, dentinal sensitivity exhibited psychological impact among the participants as 64 (30.3%) asserted unhappiness due to the shocking sensation. This collaborated with evidence in the literature that showed negative impact of dentinal sensitivity on almost of all the seven domains of quality of life. The very unpleasant nature of dentinal sensitivity, the limitation of the daily habits of affected individual especially in restricting choice diets and drinks may be the reasons for the unhappiness. The interpretation of dentinal sensitivity as very unpleasant by individuals may be contributory.[30] It is therefore important for that affected individual to seek and receive appropriate treatment in order to improve their quality of life of individuals.

CONCLUSION

The prevalence of dentinal sensitivity was high and also exhibited negative functional and psychological impact. Despite the negative functional and psychological impact among the participants, only a few sought dental professional care. Screening for dentinal sensitivity at community level is required to proffer early treatment and ameliorate its impact on the populace.

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