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RESEARCH ARTICLE

RISK FACTORS OF SENSITIVE TEETH

Dr. Mervat Said Ahmed Bamani¹, Dr. Raeed Muhammad ALalwi², Dr. Razan radwan alhindi², Dr. Fawaz Mohammed Alotaibi², Dr. Bader Hamad Alkhudhayri², Dr. Ahmed Abdulkhaleq Banafea², Dr. Dareen Mahmoud Alrahemy², Dr. Esma Abdullah alrebh², Dr. Alyaa Hussain Aleissa², Dr. Khalid Ali Aladi², Dr. Thamer Abdulaziz Alghamdi², Dr. Mohammed Hassan Alzahrani², Dr. Kuthar Hassan Alzahr², Dr. Abdullah Abdulgader Al Harbi² and Dr. Mohammed Fuad Alqadi³

1. Consultant in periodontology, MSc in periodontology, Saudi board in periodontology, MOH, Jeddah, KSA.
2. General Dentist, MOH, KSA
3. Dentist Intern, Taibah University, KSA.

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Abstract

Objective: The current study aimed to outline the main factors contributing to dental sensitivity.

Methods: The research used the cross-sectional-study design since it involves analysing information from a population at a particular time. The report's primary focus is on evaluating the risk factors of dental sensitivity in a population. The cross-sectional study design helped the researcher to get valuable information that can be analysed to theories and conduct detailed research using the data acquired. The study population is UK residents, who are the primary focus of the study. The researcher incorporated inclusion and exclusion criteria during this stage to determine the variables that are relevant in examining the subject under discussion. The study sample selected for this research is individuals from 18 to 40 years of age who currently suffer from tooth sensitivity.

Results: Among 350 participants, there were 277 female (79.1%) and 73 male (20.9%). The most frequent age group was 46 years or more (n= 138, 39.4%). The duration of tooth sensitivity among study participants was less than one year among 150 participants (42.8%) while it was more than 5 years among 109 participants (31.1%). Most of participants brushed their teeth twice daily (n= 222, 63.4%). The most frequent one was normal toothpaste among 209 participants (59.7%) while 116 participants used toothpaste made for sensitive teeth. Participants underwent various dental procedures with most common procedure was fillings (n= 220, 62.9%). The most frequent tooth disease among study participants was periodontal disease (n= 111, 31.7%).

Conclusion: In conclusion, this research presents multivariate analysis prevalence data on sensitive teeth and related characteristics in the general UK population. Despite the availability of a plethora of treatments, the incidence of sensitive teeth seems to be rather high among the UK community at large. New generations of professionals should be made aware of dentin hypersensitivity by the data gathered in this research and more broadly about dentin hypersensitivity, as it is a clinical manifestation that is growing more common and that they will have to consider to assist alleviate the suffering it causes.

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Corresponding Author:- Mervat Said Ahmed Bamani

Address:- Consultant in Periodontology, MSc in Periodontology, Saudi Board in Periodontology, MOH, Jeddah, KSA.

Introduction:-

Exposed tooth pulp causes extreme tooth sensitivity. Dentin hypersensitivity describes the condition. It describes tooth pain from hot or cold conditions. Sensitive teeth cause root discomfort when exposed to hot or cold conditions [1]. Mild to severe symptoms may come and go without explanation. Some individuals have sensitive teeth owing to weak enamel, while most have worn enamel.

Tooth sensitivity is analyzed. Due to improper diet and inadequate dental care, this condition is frequent. Educating individuals on effective and less hazardous oral health practices may lessen this problem. The paper examines sensitive tooth risk factors.

Tooth sensitivity is a common ailment [2]. Any age may be affected. 18 to 50-year-olds are most likely to report sensitive teeth, with the largest number among 30 to 40-year-olds. Understanding this condition is vital to analyze how to lessen tooth sensitivity. Using stiff toothbrushes causes this, according to research. Tooth decay and gum disease also cause teeth sensitivity, according to Heng [3]. Consuming juices, sports drinks, and citrus fruits might also cause sensitivity. Scaramucci and colleagues found no link between acidic diet and dental sensitivity. Chewing ice may shatter or grind tooth enamel, causing irritation [4].

According to a research led by Carey [5], teeth whitening is the leading cause of dental sensitivity. This study found that improper teeth whitening methods increase tooth sensitivity. Cartagena and colleagues link tooth whitening to sensitivity by noting that pulp blood flow (PBF) decreased after bleaching [6]. This explanation is congruent with [7], in which authors assert that neutral in-office whitening gel reduces tooth sensitivity compared to acidic bleaching cream.

The research is important since it identifies the major causes of tooth sensitivity. The findings will help create therapies to lessen tooth sensitivity. The research will also encourage patients with dental discomfort who are uninformed to seek medical help. Different countries will learn about the problem's breadth and suitable solutions through the research. The study is important for scholars in this field since it provides extra data to influence their arguments. The current study aimed to outline the main factors contributing to dental sensitivity.

Methods:-**Study Design**

The research used the cross-sectional-study design since it involves analysing information from a population at a particular time. The report's primary focus is on evaluating the risk factors of dental sensitivity in a population. The cross-sectional study design helped the researcher to get valuable information that can be analysed to theories and conduct detailed research using the data acquired.

Study Approach

The study took the quantitative research approach. The technique included statistical analysis, which is essential in recording people suffering from tooth sensitivity. The quantitative research technique also had stable and controlled settings, enabling the researcher to formulate facts relating to the issue of tooth sensitivity and collect samples from a large number of subjects.

Study Population

The study population is UK residents, who are the primary focus of the study. The researcher incorporated inclusion and exclusion criteria during this stage to determine the variables that are relevant in examining the subject under discussion.

Study Sample

The study sample selected for this research is individuals from 18 to 40 years of age who currently suffer from tooth sensitivity.

Study Tool

The researcher used a questionnaire as a study tool. The questionnaire contained 14 multiple choice questions that the subjects was required to answer. The questionnaire enabled the researcher to collect information from various respondents quickly, and it is easy to deliver both the questions and the responses[8].

Data Collection

The technique appropriate for collecting data in this research is sending questionnaires to individuals through the internet and their phones. After that, the researcher analysed and record each response.

Data Analysis

The approach that was the most suitable for analysing the information collected in this study is regression analysis. This method enabled the researcher to estimate the link between a dependent variable and a single or multiple independent variables.

Ethical Consideration

For this study, the researcher had to handle various ethical concerns to avoid any complications during the research. One moral concern that the researcher had to consider is informed consent. The researcher ensured this by highlighting the primary goal of the questionnaire at the top to ensure that participants know about the sketchy details of the research. Another factor that the researcher had to consider is confidentiality. The notion requires researchers to avoid sharing the information gathered through primary study with anyone else[9]. The researcher also had to consider the issue of benevolence to ensure that the questions included in the questionnaire do not harm any participants.

Results:-

Study included 350 participants. Among them, there were 277 female (79.1%) and 73 male (20.9%). The most frequent age group was 46 years or more (n= 138, 39.4%). Figure 1 shows age groups distribution among study participants.

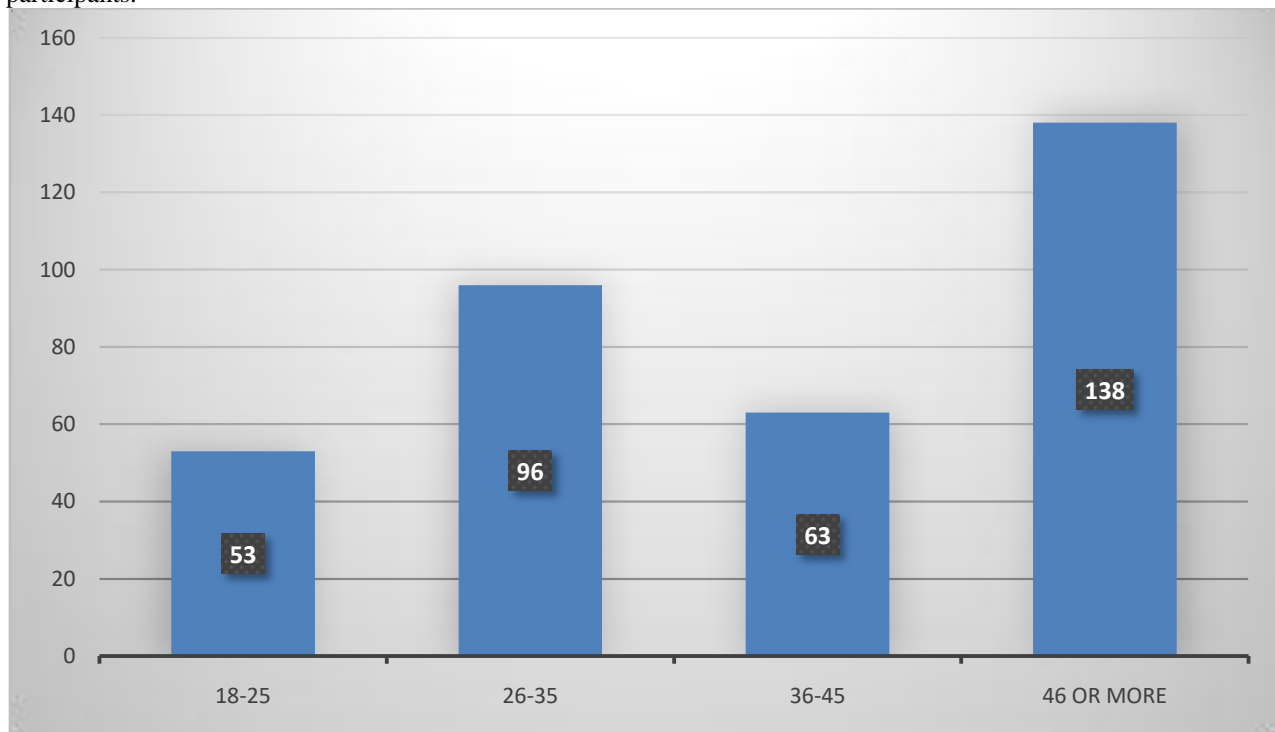


Figure 1:- Age groups distribution among study participants.

The duration of tooth sensitivity among study participants was less than one year among 150 participants (42.8%) while it was more than 5 years among 109 participants (31.1%). Figure 2 shows the duration of tooth sensitivity among study participants.

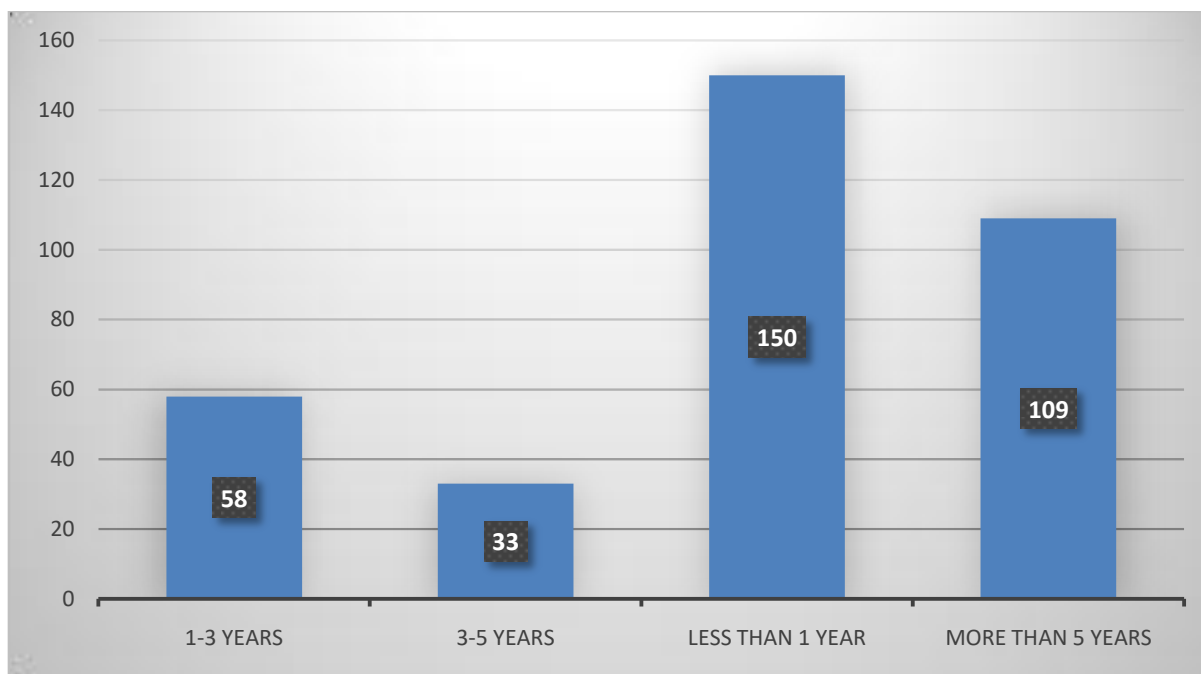


Figure 2:- Age groups distribution among study participants.

Participants regularly brushed their tooth at different frequencies. Most of participants brushed their teeth twice daily (n= 222, 63.4%) (Figure 3).

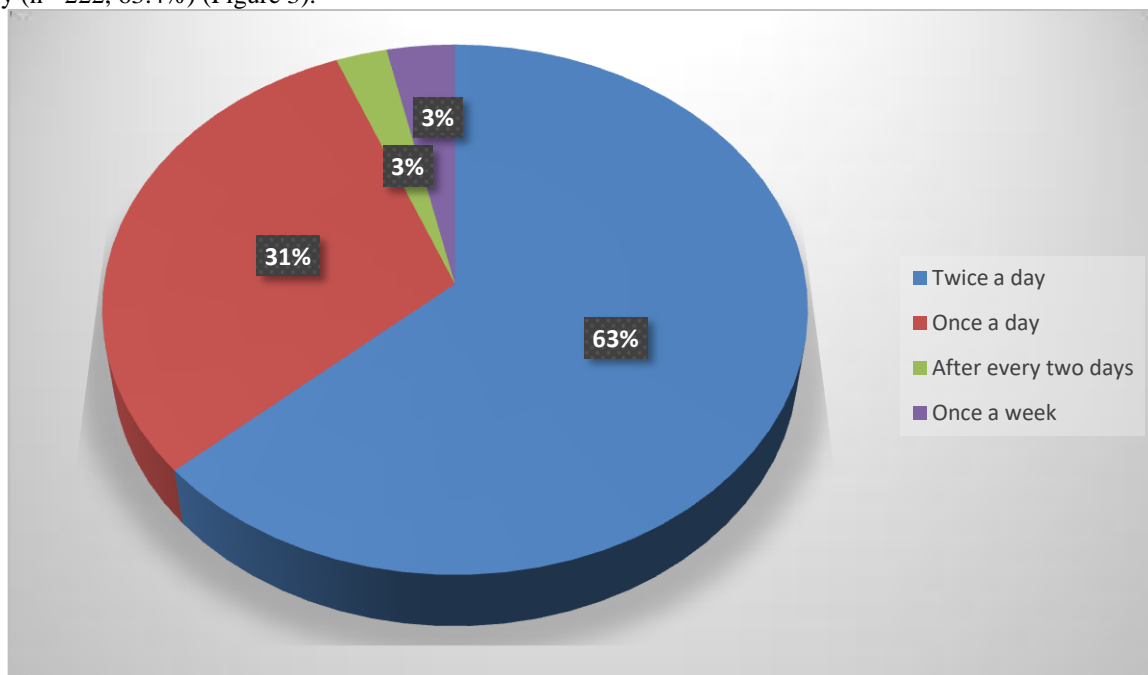


Figure 3:- Frequency of tooth brushing among study participants.

Participants used different toothpaste. The most frequent one was normal toothpaste among 209 participants (59.7%) while 116 participants used toothpaste made for sensitive teeth. On the other hand, 25 participants had no idea (7.1%). Half of participants described toothbrush's bristles as neither hard nor soft (n= 183, 52.3%) while 126 participants described it as soft (36%). On the other hand, 31 participants described it as hard (8.9%) and the rest cannot remember.

Participants food and beverages mostly contain hot foods (n= 198, 56.6%). Acidic foods was used among 63 participants (18%) and cold foods among 44 participants (12.6%). Participants tooth problem varied and are presented in figure 4.

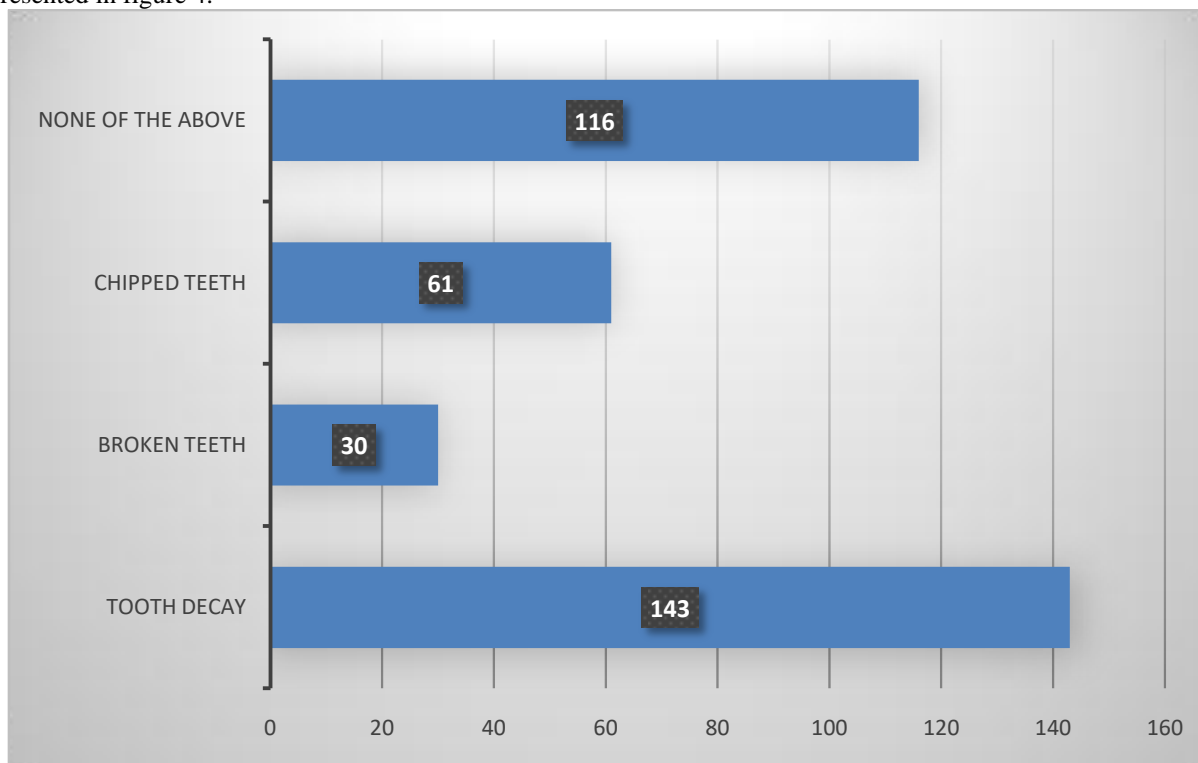


Figure 4:- Tooth problems among study participants.

Participants underwent various dental procedures with most common procedure was fillings (n= 220, 62.9%). Other procedures are illustrated in figure 5.

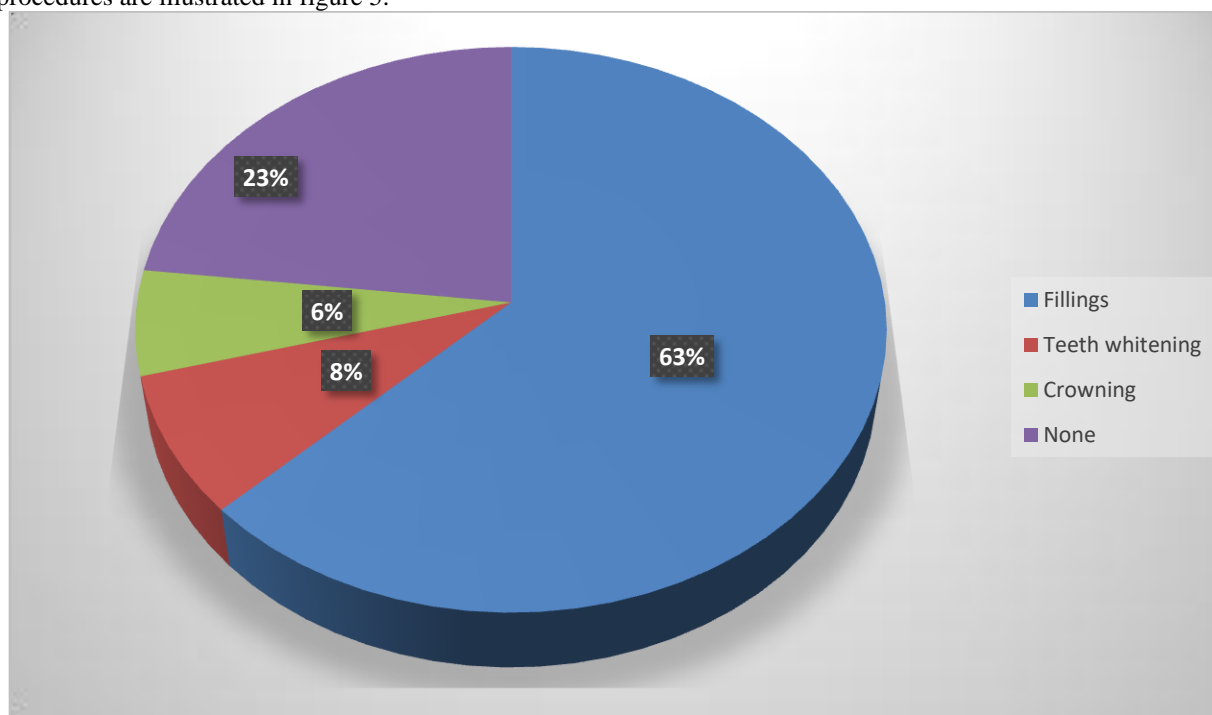


Figure 5:- Frequency of dental procedures among study participants.

The frequency of visiting the dentist among study participants ranged from monthly to upon need. Most of participants visited the dentist when there is a problem ($n= 250$, 71.4%) while 51 participants visited the dentist every six months (14.6%) and the rest of participants once a year ($n= 48$, 13.7%). Only one participants visits the dentist monthly.

The most frequent tooth disease among study participants was periodontal disease ($n= 111$, 31.7%). Other conditions are presented in figure 6.

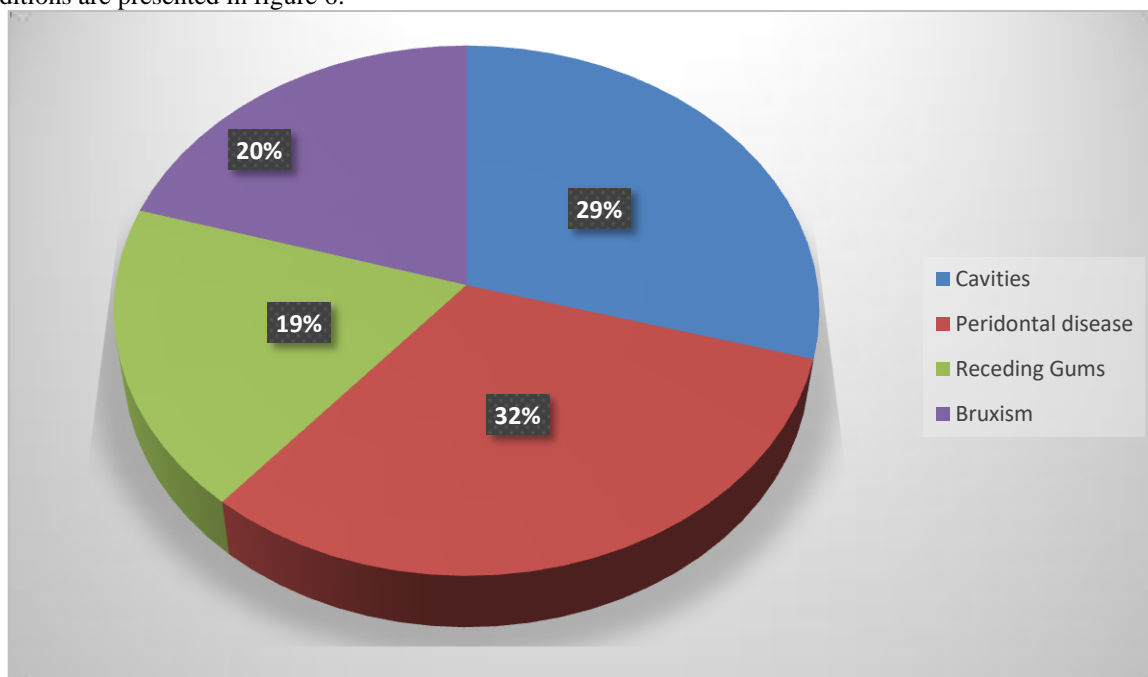


Figure 5:- Frequency of dental procedures among study participants.

Participants were asked about the frequency of using a mouthwash. Most of them rarely used mouthwash ($n= 222$, 63.4%) while 51 participants used mouthwash daily (14.6%). Furthermore, 33 participants did mouthwash frequently (9.4%) and 44 participants once a week (12.6%). Third of participants used normal mouthwashes ($n= 116$, 33.1%) and fourth of them used any type they found ($n= 75$, 21.4%). 64 participants (18.3%) used neutral fluoride mouthwashes and the rest of participants didn't know the type of mouthwash they use.

Participants experienced various symptoms with most frequent one was gum swelling ($n= 118$, 33.7%) and bad breath ($n= 114$, 32.6%). Other symptoms were discharge ($n= 49$, 14%) and changes in taste ($n= 69$, 19.7%).

The most common eating habit among study participants was snacking between meals ($n= 173$, 49.4%). Ingesting foods high in starch was found among 96 participants (27.4%) and eating healthy foods at mealtimes among (68, 19.4%). On the other hand, 13 participants reported consuming sticky foods (3.7%).

Discussion:-

Clinically, dentin hypersensitivity (DH) is a common finding and difficult disease to treat [10-13]. Pain in an area of exposed dentin that is not caused by another defect or illness is diagnostic of DH. Heat, chemicals, touch, osmosis, or a blast of air are common sources of stimulation [12, 14].

There are several competing hypotheses on how pain is transmitted via dentin. Most researchers agree that this unpleasant occurrence may be explained by the hydrodynamic hypothesis [14, 15], which was introduced by Brännström in 1962. When the contents of dentinal tubules are displaced due to a mechanical, thermal, or osmotic stimulation [15,16,17], it is assumed that this triggers the activation of intra-pulp nerve fibers. For this to happen, the dentin must be uncovered and the dentin tubular system must be accessible [17, 18]. Only then can the fluid movement trigger a neuronal response in the pulp. Erosion, abrasion, saliva, and biofilm/pellicle/plaque are only some of the multifactorial interactions that may expose the dentin tubule and hence increase the likelihood of

demineralization [17]. Due to erosion and abrasion, cervical enamel may be lost, and root surface dentin might become exposed due to recession of periodontal tissue [17]. Abrasive methods, such as tooth brushing or periodontal therapy, may potentially cause loss of periodontal tissue [17].

Diagnosis of DH is based on looking for risk factors, noticing wear lesions, and ruling out other dental illnesses such as caries and periodontal disease [11, 18], all of which may cause similar symptoms. The standard of living might decrease because of DH. It has the potential to alter the subject's diet and drinking habits, make it difficult to wash their teeth, and possibly have profound psychological effects that alter their way of life [13, 19].

The prevalence of DH, according to various data synthesis efforts, varies from 4% to 74%, depending on the sample size used [20]. It's possible that there are a few other causes for these differences. Some research has employed self-administered questionnaires to inquire about sensitive teeth (ST), whereas other research has relied on clinical examinations by trained professionals to identify DH [20]. The increased prevalence [20] may be due to the fact that those who report having ST may also have other oral disorders such as caries or periodontal issues. The estimate has a wide range of values (4-74% for self-questionnaires and 13-57% for clinical data) [20]. Other explanations, such as variations in sample characteristics (ethnicity, study location, periodontal health, dental care routine, oral hygiene practices, socioeconomic position), have also been proposed [20]. There are two possible bases for the clinical criteria used to determine the presence or absence of DH: a passive method based on the subject's report of their pain experience, and an active approach based on the application of various mechanical and thermal stimulations [21, 22]. The condition's episodic pattern, which may either exacerbate or alleviate pain, is also a role [3].

Conclusion:-

In conclusion, this research presents multivariate analysis prevalence data on sensitive teeth and related characteristics in the general UK population. Despite the availability of a plethora of treatments, the incidence of sensitive teeth seems to be rather high among the UK community at large. New generations of professionals should be made aware of dentin hypersensitivity by the data gathered in this research and more broadly about dentin hypersensitivity, as it is a clinical manifestation that is growing more common and that they will have to consider to assist alleviate the suffering it causes.

References:-

1. Porter J, Ntouva A, Read A, Murdoch M, Ola D, Tsakos G. The impact of oral health on the quality of life of nursing home residents. *Health and quality of life outcomes*. 2015 Dec;13(1):1-8.
2. Clark D, Levin L. Non-surgical management of tooth hypersensitivity. *International dental journal*. 2016 Oct 1;66(5):249-56.
3. Heng CC. Tooth decay is the most prevalent disease. *Federal Practitioner*. 2016 Oct;33(10):31.
4. Scaramucci T, de Almeida Anfe TE, da Silva Ferreira S, Frias AC, Sobral MA. Investigation of the prevalence, clinical features, and risk factors of dentin hypersensitivity in a selected Brazilian population. *Clinical oral investigations*. 2014 Mar;18(2):651-7.
5. Carey CM. Tooth whitening: what we now know. *Journal of Evidence Based Dental Practice*. 2014 Jun 1;14:70-6.
6. Cartagena AF, Parreiras SO, Loguerio AD, Reis A, Campanha NH. In-office bleaching effects on the pulp flow and tooth sensitivity—case series. *Brazilian oral research*. 2015 Jan 23;29:1-6.
8. Vougiouklis T, Vougiouklis P. Questionnaires with the 'bar' in social sciences. *Science & Philosophy*. 2015 Dec 21;3(2):47-58.
9. Petrova E, Dewing J, Camilleri M. Confidentiality in participatory research: Challenges from one study. *Nursing ethics*. 2016 Jun;23(4):442-54.
10. Blaizot A, Offner D, Trohel G, Bertaud V, Bou C, Catteau C, Inquimbert C, Lupi-Pegurier L, Musset AM, Tramini P, Vergnes JN. Prevalence of sensitive teeth and associated factors: a multicentre, cross-sectional questionnaire survey in France. *BMC oral health*. 2020 Dec;20(1):1-0.
11. West NX, Sanz M, Lussi A, Bartlett D, Bouchard P, Bourgeois D. Prevalence of dentine hypersensitivity and study of associated factors: a European population-based cross-sectional study. *J Dent*. 2013;41(10):841–51.
12. FavaroZeola L, Soares PV, Cunha-Cruz J. Prevalence of dentin hypersensitivity: systematic review and meta-analysis. *J Dent*. 2019;81:1–6.
13. Machuca C, Baker SR, Sufi F, Mason S, Barlow A, Robinson PG. Derivation of a short form of the dentine hypersensitivity experience questionnaire. *J Clin Periodontol*. 2014;41(1):46–51.
14. Splieth CH, Tachou A. Epidemiology of dentin hypersensitivity. *Clin Oral Investig*. 2013;17(Suppl 1):S3–8.

15. Olley RC, Sehmi H. The rise of dentine hypersensitivity and tooth wear in an ageing population. *Br Dent J.* 2017;223(4):293–7.
16. O'Toole S, Bernabé E, Moazzez R, Bartlett D. Timing of dietary acid intake and erosive tooth wear: a case-control study. *J Dent.* 2017;56:99–104.
17. Brönnimann BVE, Hou MY, Zembic A, Parkinson CX, Meier ML, Ettlin DA. Dentin hypersensitivity monitored by cold air quantitative sensory testing. *J Oral Rehabil.* 2019;46(6):549–55.
18. Porritt JM, Sufi F, Barlow A, Baker SR. The role of illness beliefs and coping in the adjustment to dentine hypersensitivity. *J Clin Periodontol.* 2014;41(1):60–9.
19. Boiko OV, Baker SR, Gibson BJ, Locker D, Sufi F, Barlow AP, et al. Construction and validation of the quality of life measure for dentine hypersensitivity (DHEQ). *J Clin Periodontol.* 2010;37(11):973–80.
20. Bamise CT, Kolawole KA, Oloyede EO, Esan TA. Tooth sensitivity experience among residential university students. *Int J Dent Hyg.* 2010;8(2):95–100.
21. Mafla AC, Lopez-Moncayo LF. Dentine sensitivity risk factors: A case-control study. *European journal of dentistry.* 2016 Jan;10(01):001-6.
22. Costa RS, Rios FS, Moura MS, Jardim JJ, Maltz M, Haas AN. Prevalence and risk indicators of dentin hypersensitivity in adult and elderly populations from Porto Alegre, Brazil. *Journal of periodontology.* 2014 Sep;85(9):1247-58.