

## Association of Headache with Bruxism

**Received:** 11 February 2023, **Revised:** 16 March 2023, **Accepted:** 20 April 2023

### C Nandini

Professor and HOD, Department of Oral Pathology and Microbiology, Karnavati School of Dentistry, Karnavati University, Gandhinagar, Gujarat, India. Contact: 9978908684 Email: nandini.chaduvla@gmail.com

### Dr Vijay Asarani

MDS in Oral medicine and radiology ,PHD scholar Contact: 9426584978 Email : drvijayasrani@gmail.com

### Hima Acharya

Intern posted in Department of Oral Pathology and Microbiology, Karnavati School of Dentistry, Karnavati University, Gandhinagar, Gujarat, India. Contact: 7575859535 Email: himaacharya0690@gmail.com

### Vrusti Chaudhary

Intern posted in Department of Oral Pathology and Microbiology, Karnavati School of Dentistry, Karnavati University, Gandhinagar, Gujarat, India. Contact: 9265461402 Email: vrusti8@gmail.com

### Bansari Ajmera

Intern posted in Department of Oral Pathology and Microbiology, Karnavati School of Dentistry, Karnavati University, Gandhinagar, Gujarat, India. Contact: 9727703615 Email: bansari.ajmera26@gmail.com

### Suchit Shrimali

MDS in Oral pathology and microbiology Contact: 9879575582 Email: suchit.shrimali@gmail.com

## Abstract

### BACKGROUND

The phenomenon of bruxism involves the unintentional and repetitive grinding of teeth, often occurring while asleep. Bruxism can occur with enough frequency and intensity to result in jaw complications, headaches, dental damage, and various other issues. This study aimed to assess the connection between bruxism and headaches.

### MATERIAL AND METHODS

This cross sectional study was conducted on 201 adult patients attending the outpatient department for routine dental checkup during the period of December 2021 to September 2022 at Karnavati school of dentistry, Gandhinagar, Gujarat, India.

All the male and female patients between age range 15 to 80 years of age, who came for routine dental check up and were willing to participate in the study were included in the study. Headache with bruxism by clinically evaluating the patient with mouth mirror and probe and questionnaire was filled by online mode.

### RESULT

The present questionnaire based study comprised of 201 patient, in which female shows more evident finding. The age range of study population is 15-40 years which were significant from all the age groups. It was observed that subject complained of having stress showed more relevant of Bruxism and headache.

### CONCLUSION

The present study gave an insight of the contributing factor of bruxism. Female and young population has been found to be more prone to suffer from bruxism and temporal headache due to high level of stress, that determine the presence and severity of symptom.

## 1. Introduction

Bruxism refers to a harmful oral behaviour that frequently involves repetitive muscle activity in the jaw, characterized by either clenching or grinding of the teeth. It can be categorized into two types: awake bruxism and sleep bruxism. Despite sharing common

risk factors and causing similar effects on the chewing system, these two types may have distinct causes and pathological mechanisms.(1) Most important risk factors include stress, consumption of tobacco, alcohol, coffee, sleep apnea syndrome and anxiety disorder (2). Bruxism is a widespread occurrence, and recent findings indicate that biological, psychological, and

# Journal of Coastal Life Medicine

external factors play a more significant role in its cause than morphological factors. When diagnosing bruxism, it is recommended to utilize a grinding system that classifies cases as possible, probable, or definite.

At the individual level, the suggested mechanism for the relationship between bruxism and pain involves stress, sensitivity, and anxious personality traits potentially contributing to bruxism activities. These bruxism activities can then lead to temporomandibular pain, which in turn, can be influenced by psychosocial factors.

Bruxism includes temporomandibular disorders, headache, tooth wear, sensitivity and muscle tenderness and other oral changes like polished facet and abfraction.

Awake bruxism refers to the conscious awareness of jaw clenching or teeth grinding. It is primarily linked to nervous tics and is often associated with stress. On the other hand, sleep bruxism is classified as a “sleep movement disorder”. In sleep bruxism, there is rhythmic activity of the jaw muscles, and it reaches its peak a few minutes before the rapid eye movement(REM) sleep stage. The hypothesis mechanism include stress serving as a unique trigger for the individual attack and nociceptive activator and as a moderator for activity of grinding of teeth resulting in headache. The present study was performed to determine the association of headache with bruxism in outpatient department at Karnavati school of dentistry, Gandhinagar.

## 2. Material and Methods

Case selection:

This cross sectional study was conducted on 201 adult patients attending the outpatient department for routine dental check-up during the period of December 2021 to September 2022 at Karnavati school of dentistry, Gandhinagar, Gujarat, India.

The diagnosis of probable sleep bruxism was made on positive clinical inspection of the following symptoms: masticatory muscle hypertrophy, indentations on the tongue or lip and/or a linear alba on the inner cheek, damage to the dental hard tissues (e.g., cracked teeth), mechanical wear of the teeth (i.e., attrition), or repetitive failures of restorative work/prosthetic constructions and/or a positive self-report of teeth

grinding, clenching, or bracing of the mandible during sleep (8).

All the male and female patients between age range 15 to 80 years of age, who came for routine dental check up and were willing to participate in the study were included in the study. Whereas, patients with age below 15 years having mixed dentition, patients with severe systemic (including genetic) diseases; presence of secondary bruxism induced by systemic diseases, e.g., Parkinson's disease; use of medicines that can significantly affect the function of the nervous and muscular systems; Alzheimer's disease; presence of neurological disorders and/or neuropathic pain in the last six months were excluded. headache with bruxism by clinically evaluating the patient with mouth mirror and probe and questionnaire was filled by online mode. The questionnaire included questions as follows: 1 Have you ever felt stress in your life? 2 Do you know consequences of stress on oral cavity? 3 Do you suffer from any medical illness? 4 Do you suffer from any mental illness? 5 Do you become angry on small thing? 6 Do you suffer from any nutritional deficiency? 7 Are you taking medication on regular basis? 8 Do you know about teeth clenching? 9 Have you/your partner heard clenching sound? 10 Have you notice wearing of teeth? 11 Have you notice reduction of teeth height? 12 Have you felt increase in sensitivity after wearing? 13 Have you felt heaviness of jaw in morning? 14 Have felt difficulty in mouth opening? 15 Have you felt fatigue of muscle in morning? 16 Have you ever felt clicking of jaw? 17 Have you felt headache.

The diagnosis of probable bruxism was established based on positive clinical observations of several symptoms: teeth grinding, clenching, damage to the dental hard tissues (such as wear facets), mechanical wear of the teeth (attrition), or bracing of the jaw during sleep. other indicators considered were the sensation of heaviness and fatigue in the jaw muscles upon waking up in the morning, clicking sounds in the temporomandibular joint, and experiencing temporal headaches. These clinical findings played a crucial role in determining the probable presence of bruxism.

### DATA ANALYSIS

All the collected data was entered and organized in an excel spreadsheet. To analyze the data, the statistical software package SPSS Version 26.0 for MS windows was utilized. The data which has been collected in an excel file, underwent through analysis. The chi-square

# Journal of Coastal Life Medicine

test was employed to assess the association between frequencies with one or more categories. A significant level of 5% ( $p < 0.05$ ) was chosen to determine statistical significance. Additionally, the power sample was

evaluated using the chi-square likelihood ratio. The responses were compiled, and a comprehensive statistical analysis was conducted.

**TABLE 1:** Age and Gender with Symptoms Related to Bruxism

AGE GROUPS IN YRS (NO.)	GENDER	HABIT					
		TEETH CLENCHING	ATTRITION	HEAVINESS OF JAW IN MORNING	MUSCLE FATIGUE	CLICKING OF JAW	TEMPORAL HEADACHE
15-40 (115)	M (31, 41.9%)	1(3.2%)	4(12.9%)	1 (3.2%)	1(3.2%)	1(3.2%)	4(12.9%)
	F (84.,66.1%)	18 (21.4%)	17.. (20.2%)	10 (11.9%)	7 (8.3%)	18(21.4%)	36(42.9%)
40-60 (70)	M (32,43.2%)	3 (9.4%)	15 (46.9%)	1 (3.1%)	0(0%)	3. (9.4%)	3. (9.4%)
	F (38.,29.9%)	2 (5.3%)	17(44.7%)	2(5.3%)	2(5.3%)	2 (5.3%)	14 (36.8%)
60-80(16)	M (11,14.9 %)	0. (%)	9(63.6%)	0(0%)	0. (0%)	0 (0%)	1 (9.1%)
	F (5,3.9%)	0(0%)	7(40%)	2(40%)	1 (20%)	1 (20%)	2(40%)
TOTAL							

**TABLE 2 :** CORRELATION BETWEEN CONTRIBUTING

LIFESTYLE FACTOR(N0,%)	CLINICAL FINDING					
	TEETH CLENCHING	ATTRITION	HEAVINESS OF JAW IN MORNING	MUSCLE FATIGUE	CLICKING OF JAW	TEMPORAL HEADACHE
STRESS (128,63.7%)	22(17.2%)	42(32.8%)	15(11.7%)	10(7.8%)	23(18%)	52 (40.6%)
NUTRITIONAL DEFICIENCY (35,17.4%)	7(20%)	14 (40%)	9(25.7%)	7(20%)	10(28.6%)	23(65.7%)
ANGRY / ANXIOUS( 75,37.3%)	16 (21.3%)	27 (36%)	9(12%)	8 (10.7%)	16(21.3%)	34(45.3%)
TOTAL (201, 100%)	45(19.5%)	83(36.26%)	33(16.46%)	25(12.83%)	49(22.63%)	109(50.53%)

**TABLE 3:** Correlation of Temporal Headache with Clinical Features Of Bruxism

TEMPORAL HEADACHE	CLINICAL FINDING				
	TEETH CLENCHING	ATTRITION	HEAVINESS OF JAW IN MORNING	MUSCLE FATIGUE	CLICKING OF JAW
YES (60,29%)	12 (50%)	26(40.3%)	11(68.8%)	8(72.7%)	17. (68%)
NO (141,70.1%)	48 (27.1%)	35. (25%)	49. (26.5%)	52 (27.4%)	43 (24.4%)
TOTAL (201, 100%)	60(29.9%)	60(29.9%)	60(29.9%)	60(29.9%)	6(29.9%)

### 3. Results:

The present questionnaire based study comprised of 201 patients, out of which, 74 (36.8%) were males and 127 (63.2%) patients were females. The age range of the study population was 15 to 80 years and the mean age was found to be 36.65 years. It was observed that the maximum number of subjects Female subjects belonging to the age group 15 to 40 years showed clinical findings of bruxism and the minimum incidence of the same was seen in age group 60 to 80 years (Table 1). It was observed that amongst the subjects who complained of having stress 128 (63.8%), nutritional deficiency (35, 17.4%) and anger/anxiety issues (75,37.3%) attrition of teeth 83(36.26%) and temporal headache 109(50.53%) were the most common findings, followed by clicking of jaw 49(22.63%) as depicted in table 2.

Temporal headache (60 subjects; 29%) was most commonly associated with attrition of teeth 26(40.3%) and clicking of jaw(17; 68%) followed by clenching of teeth 12 (50%) (Table 3).

### 4. Discussion:

Bruxism is defined as a repetitive activity of the masticatory muscles that causes clenching or grinding of the teeth, associated with bracing or thrusting (projecting forward or sideways) of the mandible. (Lobbezoo F., Ahlberg J., Glaros A.G., Kato T., Koyano K., Lavigne G.J., de Leeuw R., Manfredini D., Svensson P., Winocur E. Bruxism defined and graded: An international consensus. *J. Oral. Rehabil.* 2013;**40**:2-4. doi: 10.1111/joor.12011.) Large number of etiological factors for bruxism have been suggested and studied in the past. The present

study is a questionnaire based study aimed at finding an association between clinical findings encountered in patients with bruxism with demographic factors like age and gender and contributing factors like stress, nutritional deficiency, anger/ anxiety etc. Also, temporal headache remains an important clinical details seen in patients with bruxism and hence, the association and co existence of temporal headaches with features like teeth clenching, attrition, heaviness in masticatory muscles in morning, joint clicking and jaw fatigue.

Bruxism in pre adolescent and adolescent children frequently is because of occlusal instabilities related to the mixed dentition period. Therefore, the age range considered for the present study was 15 to 80 years of age such that subjects with permanent dentition only are studied. It was observed that subject belonging to the age group 15 to 40 years showed maximum incidence of bruxism. This finding was in accordance with findings of Kato et al 1,Hublin et al Lavigne et al and Ohayon et al were similar to the present study. These studies have discussed the possibility that a higher proportion of tooth loss (e.g. edentulism in the elderly) results in a low prevalence of teeth grinding during sleep.(Kato et al). The present study was aimed at finding the relationship between relationship of headache and the clinical findings of bruxism and it was found that temporal headache was most commonly associated with attrition of teeth, clicking of jaw and clenching of teeth. Many authors in the recent past have associated bruxism with stress levels and have found emotional stress to be a stronger contributing factor that nutritional deficiency and anxiety to bruxism.

## 5. Conclusion:

The present study gave an insight of the contributing factors to bruxism. Students and young population has been found to be more prone to suffer from bruxism and levels of stress play an important role in determining the presence and severity of the symptoms. Patients complaining of temporal headache should always be examined for the clinical findings of bruxism, especially for attrition, clenching of teeth, clicking sounds in jaw and muscle fatigue. However, further studies with larger sample size are recommended for finding definite risk factors for bruxism.

## References

- [1] Yap AU, Chua AP. Sleep bruxism: Current knowledge and contemporary management. *J Conserv Dent*. 2016 Sep-Oct;19(5):383-9. doi: 10.4103/0972-0707.190007. PMID: 27656052; PMCID: PMC5026093.
- [2] Stein MD, Friedmann PD. Disturbed sleep and its relationship to alcohol use. *Subst Abus*. 2005 Mar;26(1):1-13. doi: 10.1300/j465v26n01\_01. PMID: 16492658; PMCID: PMC2775419.
- [3] Kato, Takafumi & Velly, Ana & Nakane, Takashi & Masuda, Yuji & Maki, Shigeru. (2011). Age is associated with self-reported sleep bruxism, independently of tooth loss. *Sleep & breathing = Schlaf & Atmung*. 16. 10.1007/s11325-011-0625-7.),
- [4] Hublin C, Kaprio J, Partinen M, Koskenvuo M (1998) Sleep bruxism based on self-report in a nationwide twin cohort. *J Sleep Res* 7(1):61–67
- [5] Lavigne GJ, Montplaisir JY (1994) Restless legs syndrome and sleep bruxism: prevalence and association among Canadians. *Sleep* 17(8):739–743
- [6] Ohayon MM, Li KK, Guilleminault C (2001) Risk factors for sleep bruxism in the general population. *Chest* 119(1):53–61
- [7] Lobbezoo F, Ahlberg J, Glaros AG, Kato T, Koyano K, Lavigne GJ, de Leeuw R, Manfredini D, Svensson P, Winocur E. Bruxism defined and graded: an international consensus. *J Oral Rehabil*. 2013 Jan;40(1):2-4. doi: 10.1111/joor.12011. Epub 2012 Nov 4. PMID: 23121262.