

Journal of Pharmacy & BioAllied Sciences

An Official Publication of
Organization of Pharmaceutical Unity with BioAllied Sciences (OPUBS)

Vol 13 / Supplement 1 / June 2021



Prevalence of Bruxism among the Students of Gulf Medical University: A Cross-Sectional Questionnaire Study

Anam Hussain¹, Marsha Rizvi¹, Umika Vohra¹, Kavleen Kohli¹, Sundus Asim¹, Manahil Fikree¹, Zainab Ovais¹, Sura Ali Ahmed²

¹Interns, Gulf Medical University, Ajman, UAE,
²Diagnostic and Surgical Dental Sciences Department, Gulf Medical University, UAE

Submitted: 04-Oct-2020
Revised : 12-Oct-2020
Accepted : 30-Nov-2020
Published : ***

ABSTRACT

Introduction: Bruxism is a multifactorial phenomenon that involves grinding or clenching of teeth. The parafunctional habit includes abnormal tooth wear, tooth fracture, pain, and tooth mobility, along with headaches and facial muscle hypertrophy. It is imperative for students to be conscious of teeth grinding along with its possible causes. The student will be alert to visit the dentist if required and contribute to the recognition of etiological factors, to eliminate them. **Objective:** This study aims to find the prevalence and understanding of bruxism among Gulf Medical University (GMU) students. **Materials and Methods:** A cross-sectional, questionnaire-based study was conducted among 451 GMU students. The parameters for data collection were age, gender, prevalence, associated signs and symptoms, causes, genetic predisposition, time of day, and effect on the appearance of teeth. **Results:** While 35.9% were unaware, 41.7% of our samples reported bruxism. The majority recognized temporomandibular joint and facial pain as causative, and 24.8% reported symptoms. Headache (26.4%) was prime and 7.5% were associated with fracture and abnormal tooth wear to bruxism (38.1%) experienced night bruxism. A significant number of students (32.4%) identified abnormal anterior teeth relationship as the cause and (64.3%) associated bruxism and esthetics. **Conclusion:** Nearly 41.7% of the students reported bruxism. Around 35.9% of the samples were uninformed. Nearly 20.8% believed that bruxism had genetic relevance. Nearly 51.9% of the participants were asymptomatic. Around 38.1% had night bruxism and 32.4% identified abnormal anterior teeth relationship as the cause. The majority of the sample (64.3%) connected bruxism to negative effects on teeth and esthetics.

KEYWORDS: *Bruxism, clenching, etiological factors, prevalence*

INTRODUCTION

Bruxism is a multifactorial phenomenon involving subconscious grinding or clenching of teeth, originating from a Greek term “brychein” which means “gnashing.”^[1]

Dentists acknowledge bruxism as it results in abnormal tooth wear, fracture and mobility, pain, headaches, facial muscle hypertrophy, and occasionally temporomandibular joint disorders (TMDs).^[2,3]

General malocclusion previously included bruxism; however, its etiology involves:^[4] sleeping disorders such as obstructive sleep apnea. It is the highest

risk factor as it influences the motor neurons during sleep. Electromyograph detects bruxism by collecting electric signals while chewing. The activation of the central mechanism of the brain causes conscious clenching, whereas semiconscious conditions such as hypnagogic/hypnopompic hallucinations are reported in bruxers.^[5,6]

Address for correspondence: Dr. Anam Hussain,
Dental Intern, Gulf Medical University, Ajman, UAE.
E-mail: anamhuss@hotmail.com

This is an open access journal, and articles are distributed under the terms of the Creative Commons Attribution-NonCommercial-ShareAlike 4.0 License, which allows others to remix, tweak, and build upon the work non-commercially, as long as appropriate credit is given and the new creations are licensed under the identical terms.

For reprints contact: WKHLRPMedknow_reprints@wolterskluwer.com

How to cite this article: Hussain AM, Rizvi MH, Vohra US, Kohli KK, Asim SS, Fikree MK, et al. Prevalence of bruxism among the students of gulf medical university: A cross-sectional questionnaire study. J Pharm Bioall Sci 2021;13:S501-5.

Access this article online

Quick Response Code:



Website: www.jpbonline.org

DOI: 10.4103/jpbs.JPBS_644_20

A study of 148 parents concludes that 32.4% of children, aged 3–12 years, have no correlation of bruxism and gender.^[7] In a cross-sectional study at Children's Hospital Boston Dental Clinic, the average age was 8.1 years, wherein 52% were female bruxers. According to the National Sleep Foundation, 8% of adults and 14%–20% of 11-year olds have sleep bruxism.^[8] To diagnose bruxism, teeth grinding, sore jaw muscles, transient cerebral pain, mobility, attrition, and recession are significant. Common causes of bruxism are aggressive toothbrushing, acidic drinks, and tough foods.^[9] Patients who are competitive, aggressive, or hyperactive are prone to bruxism. There is an interrelationship between marital status and bruxism wherein divorcees and widowers have a greater prevalence.^[10]

In Manfredini and Landi study of 160 participants, 41.8% had bruxism due to the imbalance between centric occlusion and centric relation; however, there is no evidence.^[11]

The primary cause of bruxism is the central dysregulation of direct and indirect paths of the basal ganglia. Patients with Alzheimer's disease, Parkinson's disease, and other frontal lobe dysfunctions have bruxism according to Kwak *et al.*^[12,13] According to Fernandes *et al.*, there is a stronger correlation between chronic migraine and bruxism compared to TMD.^[14] Sleep bruxism is associated with morning headaches; however, the impact is uncertain.^[15]

Psychosocial factors such as stress initiate the development of bruxism; therefore, bruxers should incorporate meditation. Psychological counseling and modifying daily habits, such as chewing gum, can prevent bruxism.^[16]

Caffeine, alcohol, or drugs (such as amphetamines, L-dopa, and selective serotonin reuptake inhibitors) induce bruxism.^[17]

The management of bruxism is undermined. To relieve discomfort or damage to the tooth, medications (benzodiazepam) or dental therapy is used. However, Botox injections are more effective. In addition, sleep bruxers are advised to use appliances such as braces, occlusal splints, and mouthguard.^[18]

Bruxism has short- and long-term effects. Short-term effects include headaches, which is most common, trismus and otalgia, which predispose to TMD.^[19]

The correlation between bruxism and trismus compromises the facial musculature.^[20] The long-term effects include attrition or TMD; however, it is an inconsistent marker. TMD patients have pain and trismus, causing locking and thumping joint sounds.^[21] If bruxism

is left untreated, it results in gum recession, headache, TMD, and tooth mobility.^[22]

Bruxism is multifactorial due to several etiologies such as genetics, psychosocial factors, and medications. Its management includes occlusal appliances and interventions and pharmacological approaches.^[22] The aim of this study is to find the prevalence and risk factors of bruxism among Gulf Medical University (GMU) students.

MATERIALS AND METHODS

A cross-sectional study design was used. The sample size was 451 students at GMU. Research protocol was approved by the GMU Institution Research Board, and ethical committee report approval of proposal was on December 6, 2017, before data collection. The students were addressed in groups, and a brief description of the study and its purpose was explained to them. Final data collection was done and then fed to Google Forms and then exported to Google Sheets for data comparison and analysis.

RESULTS

Our research team targeted 451 students. The questionnaire form was read and consented to. Three hundred and forty-three were females, among which 198 (57.7%) reported no bruxism and 145 (42.3%) reported experiencing bruxism. Sixty-five (60.2%) of 108 males reported no bruxism, showing no significant relationship of bruxism to gender using Chi-square test. The majority of our respondents (41.7%) were aged 18–19, followed by the ages 20–21 years (39%). The next age group, 22–23, comprised (11.5%) of the study population. Ages 16–17 make 4.9% and age 24 above made up 2.9% of the population. Interestingly, 35.9% of the participants were unaware of bruxism, while 64.1% had previous knowledge [Figure 1].

Regarding bruxism and genetic predisposition, 357 (79.2%) participants dismissed any association, whereas 94 (20.8%) of the samples identified a correlation between the two. When asked about the associated signs and symptoms, around 51.9% chose none and 26.4% associated headaches with bruxism. Nearly 24.8% reported experiencing facial and temporomandibular joint pain. About 19.7% disclosed tooth sensitivity, 10.6% listed persistent toothache, 10.4% reported sore and inflamed gums, and 7.5% chose fracture, abnormal tooth wear, and gum recession with tooth mobility as illustrated by the bar graph in Figure 2. Participants experiencing bruxism responded differently. When asked about the time of day at which their habit occurred, “night time” had the greatest percentage (38.1), followed

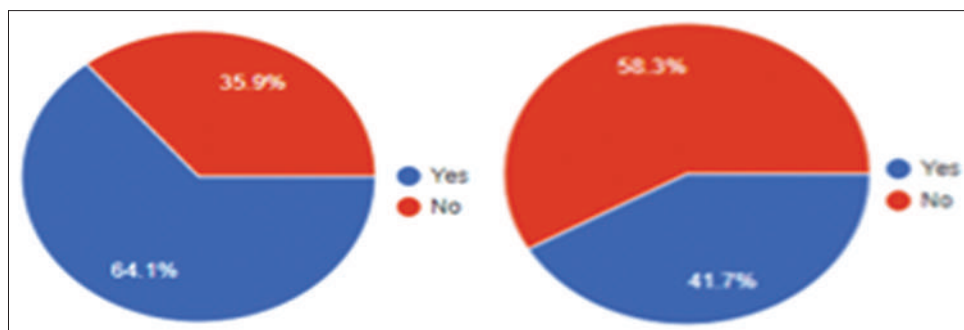


Figure 1: Knowledge about bruxism

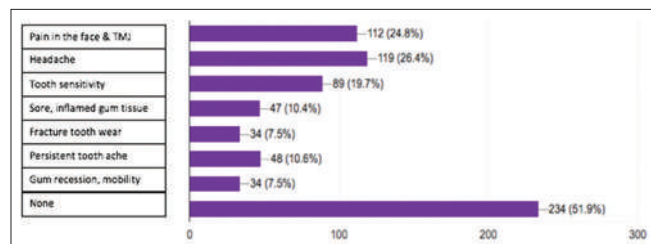


Figure 2: Discomfort accompany bruxism

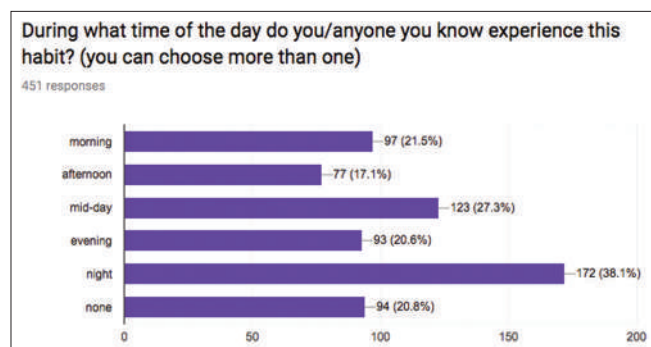


Figure 3: Day time of bruxism

by “mid-day” with 27.3%. “Morning,” “afternoon,” “evening,” and “none” came to 21.5%, 17.1%, 20.6%, and 20.8%, respectively, illustrated in Figure 3.

In perceiving the cause of bruxism, among 451 responses, only (2.20%) students blamed the loss of posterior teeth and abnormal anterior teeth. Nearly 4.0% of students believed that posterior teeth and abnormal posterior teeth relationship is the reason behind bruxism. Around 8.4% of students chose abnormal anterior and posterior teeth relationship as the cause. Nearly 10% of students associated all three factors to bruxism. In addition, 12% of the respondents believed bruxism resulted from the loss of the posterior teeth. Around 31% of the students chose abnormal posterior teeth relationship to be the cause of bruxism, and 32.4% identified abnormal anterior teeth relationship as the causative factor [Figure 4].

Upon inquiring about opinions on the effect of bruxism on the overall appearance of teeth, 290 (64.3%) replied with

a “Yes,” inferring that the dentition may be negatively affected. One hundred and sixty-one (35.7%) responded with “No.” These negative responses suggested that the students doubted the effect of bruxism on the overall appearance of teeth. This is demonstrated in Figure 5.

DISCUSSION

Bruxism is a parafunctional activity that is characterized by clenching and grinding of teeth.

Our research was conducted on 451 medical students. The sample consisted of students aged from 17 to 24 and above within the university. The result demonstrated that there was no significant difference between age groups concerning the prevalence of bruxism. This result was in agreement with a study conducted on 183 Brazilian medical students, conducted by Serra-Negra *et al.*^[23] Both studies concluded that the manifestation of the habit was found to be in a much higher prevalence among the younger students than in the older ones.^[23]

In our study, the female participants were more than males. A study was conducted on the prevalence of bruxism in undergraduate students at the Federal University of Brazil by Olga Flecha and Karine Tais. Their sample size was 253 students, involving 106 males and 147 females. Their results showed that females of the sample population had a higher incidence of bruxism than males, which were compatible with the results of our study.^[24]

In regards to the relation between bruxism and headaches, out of 451 participants, 321 (71.2%) believe that bruxism does cause headache. However, only 119 (26.4%) of the sample population experienced headaches that are associated with bruxism. Patients with sleep bruxism, associated with factors such as teeth grinding, pain, and attrition of teeth, as well as bitemporal headaches in the morning.^[25]

In comparison with a study done by Vierola *et al.*, a research was done in the University of Finland, correlating bruxism and headache among 439 children.

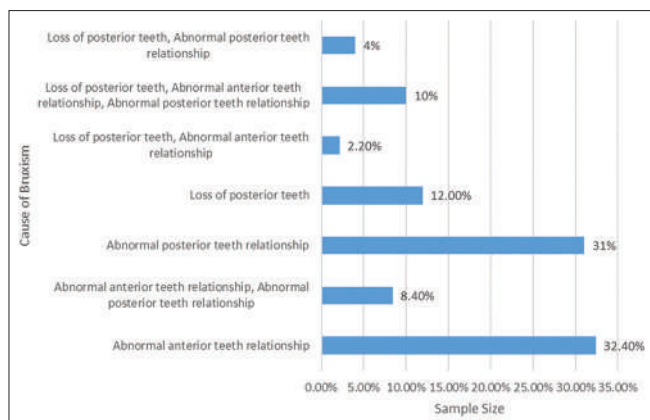


Figure 4: Cause of bruxism

About 31% of the children reported experiencing headache for the past 3 months, out of which 17% of the sample size experienced headache during the morning. According to the study, we conducted, about 21.5% of the sample population, which is 97 students out of 451, experienced headache in the morning.^[26]

In 2013, the University of Sao Paulo conducted a study by de Siqueira *et al.* to investigate the main etiology of headache in Brazilian citizens. Around 48.6% of the adults and 58.7% of the elders experienced discomforts, of which 55.5% were due to headache that is caused by bruxism. However, headache was more prevalent in bruxing adults than elders.^[27]

A study was held by the University of Helsinki, Finland, on five birth cohorts' pairs of twins between the ages of 23 and 27 based on dominant genetic effects and additive genetic effects. It was noted that genetic effects do contribute to half the substantial proportion for the liability of bruxism.^[28]

CONCLUSION

Although the etiology of bruxism is not identified completely, 41.7% of GMU students reported to either having or knowing someone with the habit of bruxism. There was no significant relationship found between bruxism with either age or gender. Only 35.9% of the samples had a background knowledge about bruxism and only 20.8% believed that bruxism had a genetic relevance. Nearly 51.9% of the participants reported that they had bruxism but did not present any signs or symptoms, whereas the highest percentage (26.4%) reported headache. Night bruxism was reported by 38.1% of the participants. Regarding the causes of bruxism, 31% of the participants reported abnormal posterior teeth relationship as the causative factor for tooth grinding, whereas 32.4% reported abnormal anterior teeth relationship. Nearly 12% of the reported

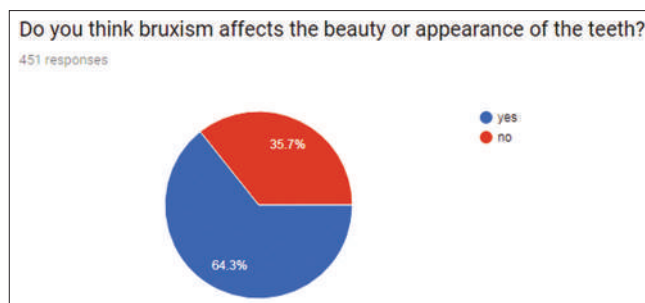


Figure 5: Effect of bruxism evident on teeth

bruxism was attributed to the loss of posterior teeth. The majority (64.3%) of the participants believed that bruxism had a negative effect on teeth and esthetic. There is no exact treatment for bruxism, but various habits can be developed or modified. In most cases, prevention of bruxism may come to be more important and beneficial than its treatment as, once initiated, bruxism might not be identified until it causes a significant amount of damage to the dentition.

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

REFERENCES

1. Veiga N, Ângelo T, Ribeiro O, Baptista A. Bruxism – Literature review. *Int J Dent Oral Health* 2015;1:1-5.
2. See SJ, Tan EK. Severe amphetamine-induced bruxism: Treatment with botulinum toxin. *Acta Neurologica Scandinavica* 2003;107:161-3.
3. Demjaha G, Kapusevska B, Pejkovska-Shahpaska B. Bruxism unconscious oral habit in everyday life. *Open Access Maced J Med Sci* 2019;7:876-81.
4. Shetty S, Pitti V, Babu S, Kumar S, Deepthi B. Bruxism: A literature review. *J Indian Prosthodont Soc* 2010;10:141-8.
5. Oksenberg A, Arons E. Sleep bruxism related to obstructive sleep apnea: The effect of continuous positive airway pressure. *Sleep Med* 2002;3:513-5.
6. Saito M, Yamaguchi T, Mikami S, Watanabe K, Gotouda A, Okada K, *et al.* Temporal association between sleep apnea-hypopnea and sleep bruxism events. *J Sleep Res* 2013;10.1111:196-203.
7. Clementino MA, Siqueira MB, Serra-Negra JM, Paiva SM, Granville-Garcia AF. The prevalence of sleep bruxism and associated factors in children: A report by parents. *Eur Arch Paediatr Dent* 2017;18:399-404.
8. Cheifetz AT, Osganian SK, Allred EN, Needleman HL. Prevalence of bruxism and associated correlates in children as reported by parents. *J Dent Child (Chic)* 2005;72:67-73.
9. Guaita M, Högl B. Current treatments of bruxism. *Curr Treat Options Neurol* 2016;18:10.
10. Melis M, Abou-Atme YS. Prevalence of bruxism awareness in a Sardinian population. *Cranio* 2003;21:144-51.
11. Manfredini D, Landi N, Tognini F, Montagnani G, Bosco M. Occlusal features are not a reliable predictor of bruxism. *Minerva*

- Stomatol 2004;53:231-9.
12. Orlova O, Alekseeva A, Mingazova L, Konovalova Z. Bruxism as a neurological problem (literature review). *Neuromusc Dis* 2018;8:20-7.
 13. Kwak YT, Han IW, Lee PH, Yoon JK, Suk SH. Associated conditions and clinical significance of awake bruxism. *Geriatr Gerontol Int* 2009;9:382-90.
 14. Fernandes G, Franco A, Aparecida D, Geraldo J, Marcelo B, Cinara C. Temporomandibular disorders, sleep bruxism and primary headaches are mutually associated. *J Orofac Pain* 2013;27:14-20.
 15. Helena M, Smardz J, Michalek-Zrabkowska M, Gac P, Poreba R, Wojakowska A, *et al.* Evaluation of relationship between sleep bruxism and headache impact test-6 (HIT-6) scores: A polysomnographic study. *Front Neurol* 2019;10:487.
 16. Farhanaz F, Yashoda R, Manjunath P. Psychosocial factors and bruxism A review. *Int J Health Sci Res* 2016;6:435-42.
 17. Bertazzo-Silveira E, Kruger C, De Toledo I, Porporatti A, Dick B, Flores-Mir C, *et al.* Association between sleep bruxism and alcohol, caffeine, tobacco, and drug abuse: A systematic review. *Am Dent Assoc* 2016;147:859-66.
 18. Yap A, Chua A. Sleep bruxism: Current knowledge and contemporary management. *Conserv Dent* 2016;19:383-9.
 19. Zhou WN, Fu HY, Du YF, Sun JH, Zhang JL, Wang C, *et al.* Short-term effects of repetitive transcranial magnetic stimulation on sleep bruxism A pilot study. *Int J Oral Sci* 2016;8:61-5.
 20. Chikhani L, Dichamp J. Bruxisme, syndrome algodysfonctionnel des articulations temporo-mandibulaires et toxine botulique [Bruxism, temporo-mandibular dysfunction and botulinum toxin]. *Ann Readapt Med Phys* 2003;46:333-7.
 21. Commisso MS, Martínez-Reina J, Mayo J. A study of the temporomandibular joint during bruxism. *Int J Oral Sci* 2014;6:116-23.
 22. Reddy S, Kumar M, Sravanthi D, Abdul Habeeb M, Anuhya A. Bruxism: A literature review. *J Int Oral Health* 2014;6:105-9.
 23. Serra-Negra J, Scarpelli A, Tirsá-Costa D, Guimarães F, Pordeus I, Paiva S. Sleep bruxism, awake bruxism and sleep quality among Brazilian dental students: A cross-sectional study. *Braz Dent J* 2014;25:241-7.
 24. Soares LG, Costa IR, Brum Júnior JDS, Cerqueira WSB, Oliveira ES, Douglas de Oliveira DW, *et al.* Prevalence of bruxism in undergraduate students. *Cranio* 2017;35:298-303.
 25. Das S, Gupta R, Dhyani M, Goel D. Headache secondary to sleep-related bruxism: A case with polysomnographic findings. *J Neurosci Rural Pract* 2015;6:248-51.
 26. Vierola A, Suominen A, Eloranta A, Lintu N, Ikävalko T, Närhi M, *et al.* Determinants for craniofacial pains in children 6-8 years of age: The PANIC study. *Acta Odontol Scand* 2017;75:453-60.
 27. de Siqueira S, Vilela T, Florindo A. Prevalence of headache and orofacial pain in adults and elders in a Brazilian community: An epidemiological study. *Gerodontology* 2015;32:123-31.
 28. Rintakoski K, Hublin C, Lobbezoo F, Rose RJ, Kaprio J. Genetic factors account for half of the phenotypic variance in liability to sleep-related bruxism in young adults: A nationwide Finnish twin cohort study. *Twin Res Hum Genet* 2012;15:714-9.