Original Research Paper

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# Stress a Determinant for Bruxism in Medical Students- A Qualitative and Quantitative Qssessment.

**Abstract:**

**Background :** Bruxism is an oral habit consisting of involuntary rhythmic or spasmodic nonfunctional gnashing, grinding, or clenching of teeth, unlike chewing movements of the mandible, which may lead to occlusal trauma. There are many scientific reports about the coexistence of bruxism, stress.

**Objective:** the purpose of this study is to assess the development of symptoms of bruxism due to stress in medical students and to evaluate the correlation between occurrence of bruxism and perceived stress.

**Methodology:** A mixed method survey questionnaire was prepared regarding questions based on scientific evidence of co-relation between bruxism, stress and stress faced by medical students. This survey based questionnaire was circulated digitally pan India and the respondents were undergraduate, post graduate students and junior and senior residents from different medical institutions. Therefore a random sample of 300 participants was selected, and gender, age, stress factors specific results were derived.

**Result:** 14.7% of students are suffering from moderate bruxism and 85.3% of students suffering from severe bruxism due to stress.

The test result showed that stress was main factor affecting the habit of bruxism with chi square value 12.39 and p value is 0.006.

**Conclusion:** The study found thatmajority of the participating medical students reported to have bruxism majorly due to stress and Corelated variables majorly responsible for stress are large course of study, competition in this field, over thinking about the study related problems and uncertainty of result what is expected and do not feel happy with their own work performance.

**Key-words:** medical students, bruxism, stress

## Introduction:

Bruxism is an oral habit consisting of involuntary rhythmic or spasmodic nonfunctional gnashing, grinding, or clenching of teeth, unlike chewing movements of the mandible, which may lead to occlusal trauma. It is estimated that it occurs in 8–31% of the population without significant differences in relation to gender. It can be divided into awake bruxism (AB) and sleep bruxism (SB)[1–3]. Both awake and sleep bruxism are sub classified into either primary, not related to any other medical condition, or secondary, associated to neurological disorders or considered an adverse effect of drugs[10-11].

Lobbezoo et al. in 2018 international consensus proposed two separated definitions of bruxism[6]. Awake bruxism is the activity of the masticatory muscles occurring during the waking period, which is characterized by sustained or repetitive contact between the teeth or/and stiffening or thrusting of the mandible and is not a movement disorder in otherwise healthy individuals[6]. Sleep bruxism is defined as the activity of masticatory muscles during sleep, which may be rhythmic (phasic) or non-rhythmic (tonic) and is not a movement disorder or a sleep disorder in otherwise healthy

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individuals[6]. Research shows that the most dangerous form of this pathology is night bruxism, which has a psychoemotional and occlusal origin. If not treated, it leads to damage of the teeth, periodontium and oral mucosa, pathology of the muscles constituting the masticatory system, headache and cervical pain, temporomandibular, and hearing disorders[5].

According to researchers as teeth grinding is connected with malocclusions, Dental patients (5–30%) suffer from this type of disorders occurring in the temporomandibular joint, whereas 50–75% of society needs to be treated orthodontically, at least to a moderate degree.

here are many scientific reports indicating connection between sleep bruxism and stress.

Winocur et al. in his study on self-reported bruxism associations with perceived stress reported that participants reporting sleep and awake bruxism showed higher scores of PSS-10 [7].

According to Hans Selye in 1936, "Stress is the nonspecific response of the body to any demand for change"[12]. It is one of the most common psychological problems faced by medical students and is present among 27% of the medical students[13] . There are various factors that lead to stress in medical students including exams, the vastness of the subject, lack of time management, competition in the field or even peer pressure[14] . Due to this, stress is really a topic of discussion among medical students. Stress can manifest as a variety of symptoms that directly or indirectly hamper the normal day-to-day lifestyle of a medical student.

There are also scientific reports indicating a connection between the occurrence of bruxism and symptoms of depression. Gungormus et al. in the study assessing the relationship between anxiety, depression, and bruxism reported that the anxiety and depression results were statistically significantly higher for bruxers than non-bruxers [9].

Hence, need for study is clearly required. Therefore,the purpose of this study is to evaluate the development of symptoms of bruxism due to stress experienced after during the course in medical students. So, in orderto diagnose and prevent it at an early stage.

## Material and Methods:

This is an independent study with individualistic research work.

## Bruxism assessment:

A mixed method survey questionnaire was prepared regarding questions based on scientific evidence of co-relation between bruxism, stress and stress faced by medical students.

To answer this, we construct a questionnaire that consists questions regarding bruxism and stress and correlation between the two.

## Participants:

The survey was circulated digitally, pan India and the respondents were undergraduate and post graduate students and residents from different medical institutions. Therefore a random sample of participants was selected, and gender, age, stress factors specific results were derived.

## Participants Selection:

Randomized control trial is performed for selection of sample in medical students from different medical institutions.

- **Inclusion criteria:**

Medical students and residents in age group from 18 years to 30 years of age including different socioeconomic status.

- **Exclusion criteria:**

1) Students undergone any orthodontic treatment .
2) Students undergone any restorative procedure of teeth.
3) Students with prosthesis .

## Sample size estimation:

The sample size is calculated on the basis of the result of pilot study. The prevalence of severe bruxism habit found was 75%. It is calculated by formula:

$$n = \frac{Z^2_{1-\alpha/2} \times p(1-P)}{d^2}$$

$$n = \frac{(1.96)^2 \times 0.75(1-0.75)}{(0.05)^2}$$

$$n = 286$$

$\alpha$ = probability of type I error = 0.05, Confidence interval = 0.95

$Z_{1-\alpha/2}$ = critical Z value for a given $\alpha$ = 1.96

Expected Prevalence of severe bruxism = 75%

The minimum sample size calculated was 286. Therefore 300 participants would be included in the study.

Data Collection and Analysis:

The data collected will be recorded in googleform and Microsoft excel and subjected to statistical analysis.

## Result:

The study tries to find the effect of stress on bruxism. There were 172 (57.3%) participants between 18 -20 years, 32 (10.7%) participants between 20 -25 years, 4(1.3%) participants between 25-30 years and 4 participants of more than 30 years.

There were 188 (62.7%) males and 112 (37.3%) females in the study. 166 (88.7%) participants were graduate, 14 (4.7%) were postgraduate and 20(6.7%) were Junior or Senior resident.

Majority of participants (61.3%) take 6-8 hours of sleep while 31.3% take 4-6 hours of sleep, 6.0% take sleep of more than 8 hours and only 1.3% take less than 4 hours of sleep. Majority of participants (84%) used smoking to relive stress. (Table 1)

Table 1: Distribution of study participants according to demographic details

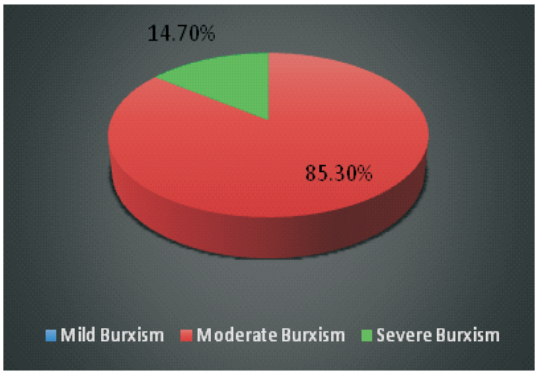
| Factors | Response | N | Percent |
|---|---|---|---|
| Age | 18-20 | 172 | 57.3 |
| | 25-30 | 32 | 10.7 |
| | 20-25 | 92 | 30.7 |
| | >30 | 4 | 1.3 |
| Gender | Male | 188 | 62.7 |
| | Female | 112 | 37.3 |
| Education | UG student | 266 | 88.7 |
| | PG student | 14 | 4.7 |
| | JR/SR | 20 | 6.7 |
| Sleeping | <4 hours | 4 | 1.3 |
| | 4-6 hours | 94 | 31.3 |
| | 6-8 hours | 184 | 61.3 |
| | >8 hours | 18 | 6.0 |
| Habit | Smoking | 252 | 84.0 |
| | Alcohol | 4 | 1.3 |
| | Both | 4 | 1.3 |
| | Caffeine | 26 | 8.7 |
| | None | 14 | 4.7 |

Among medical students 47.3% think that they were in high stress, 34.7% were in medium stress, 16.0% were in low stress and only 2% does not fell that they do not have stress. (Table 2, Graph 2) The bruxism habit was very common and found in almost every student. The frequency of bruxism episodes was evaluated as "not at all- 0" "sometimes- 1", "often- 2" and "very much-3". A total of 10 questions related to bruxism were asked in survey. So, participant with a score of 0 to 10 were affected with mild bruxism, 11 to 20 with moderate and 21 to 30 with severe bruxism. And according to the categories of questionnaire 85.3% participants were having moderate bruxism habit while 14.7% have severe bruxism habit (Table 2, Graph 1).

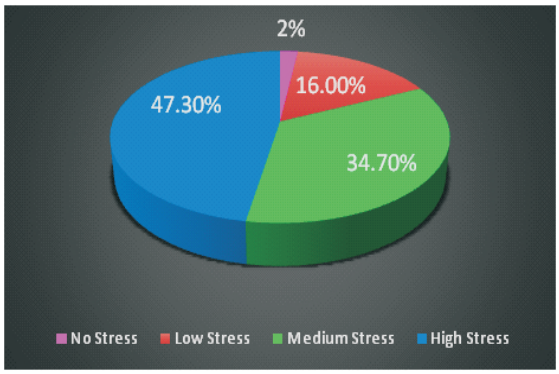
Table 2: Prevalence of stress and Bruxism among study participants as per score of 0-30 in questionnaire result.

| Factors | Response | N | Percent |
|---|---|---|---|
| Bruxism | Mild Bruxism | 0 | 0.0 |
| | Moderate Bruxism | 256 | 85.3 |
| | Severe Bruxism | 44 | 14.7 |
| Stress | No Stress | 6 | 2.0 |
| | Low Stress | 48 | 16.0 |
| | Medium Stress | 104 | 34.7 |
| | High Stress | 142 | 47.3 |

Graph1: Prevalence of Bruxism habit among medical students




Graph2: Prevalence of Stress among medical students




The association of various habits with bruxism was done by using chi square test. The test result showed that Stress was the main factor affecting the habit of bruxism with chi square value 12.39 and p value 0.006. Adverse habit also showed positive effect with the habit of bruxism with chi square value 39.87 and p value 0.01. (Table 3)

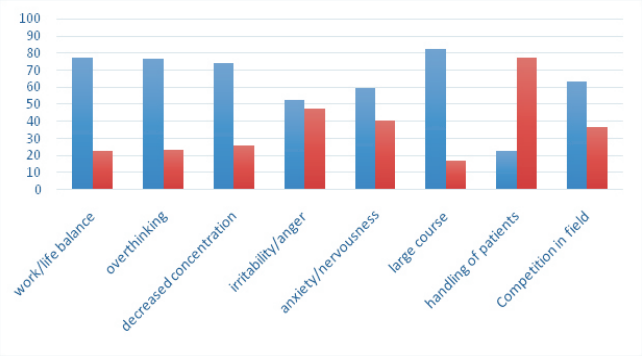
Table 3: Association of various factors with burxism

| Factor | Response | Moderate Bruxism | Sever Bruxism | Chi square value | P Value |
|---|---|---|---|---|---|
| Stress | No Stress | 6 | 0 | 12.39 | 0.006** |
| | Low | 46 | 2 | | |
| | Medium | 98 | 6 | | |
| | High | 106 | 36 | | |
| Age | 18-20 | 154 | 18 | 4.86 | 0.18 |
| | 25-30 | 24 | 8 | | |
| | 20-25 | 76 | 16 | | |
| | >30 | 2 | 2 | | |
| Gender | Male | 164 | 24 | 0.72 | 0.42 |
| | Female | 92 | 20 | | |
| Education | UG student | 232 | 34 | 5.04 | 0.10 |
| | PG student | 8 | 6 | | |
| | JR/SR | 16 | 4 | | |
| Sleeping | <4 hours | 2 | 2 | 3.38 | 0.33 |
| | 4-6 hours | 76 | 18 | | |
| | 6-8 hours | 162 | 22 | | |
| | >8 hours | 16 | 2 | | |
| Habit | Smoking | 230 | 22 | 39.87 | 0.013* |
| | Alcohol | 4 | 0 | | |
| | Both | 4 | 0 | | |
| | Caffeine | 16 | 10 | | |
| | None | 2 | 4 | | |

** Highly Significant *Singnificant

The study also reveals that the students feel more stressed due to large course of study, competition in this field, overthinking about the study related problems and uncertainty of result what is expected and do not feel happy with their own work performance (Graph 3).

Graph3: factors responsible for stress among medical students as per in questionnaire result




## Discussion:

This study addressed a topic of great interest to researchers in the field of dentistry and beyond, give the high prevalence of possible bruxism and the act that the mechanisms involved in the production of bruxism are multifactorial. The present study was conducted based on self-report questionnaire consist question regarding bruxism and stress experienced after joining the course.

The main findings of this study were that more stress were significant contributing factors for bruxism to occur among medical students. Earlier studies on medical students in India revealed that medical students feel stress due to having a large course of study.

Although, it unequivocally suggests that stress is a common feature among medical students.

The odds of experiencing bruxism were six times more if participants were more stressed compared to those who were less stressed.

The frequency of bruxism episodes was evaluated as “not at all- 0” “sometimes- 1”, “often- 2” and “very much-3”. A total of 10 questions related to bruxism were asked in survey. So, participant with a score of 0 to 10 were effected with mild bruxism , 11 to 20 with moderate and 21 to 30 with severe bruxism.

The distribution of episode frequency was similar for female and male participants, and there were no statistically significant differences between these groups ( $p = 0.42$).
The distribution of frequency of bruxism shows highly significant relevance to stress ($p=0.006$).
The participants have habit of smoking and alcohol are more significantly develop bruxism ($p=0.013$) than the participant donot have these habits.

The distribution of frequency of bruxism shows highly significant relevance to stress ($p=0.006$)

The bruxism habit was very common and found in almost every student. According to categories of questionnaire 85.3% participants were having moderate bruxism habit while 14.7% having severe bruxism habit. But only 9.8% of students consulted to dentist regarding the problem and rest of students 92.2% never consulted to any dentist.

The study also reveals that the students feel more stressed due to large course of study, competition in this field, over thinking about the study related problems and uncertainty of result what is expected and do not feel happy with their own work performance.

Stressful environment is dangerous to our health and life. In recent years, the number of patients suffering from bruxism has increased significantly. For this reasons dentist should pay more attention to this parafunction in order to diagnose and prevent it at an early stage.

## References:


1. The Academy of Prosthodontics, "The glossary of prosthodontics terms 8th edition," Journal of Prosthetic Dentistry, vol. 94, no. 1, pp. 10–29, 2005.
2. S. Shetty, V. Pitti, C. L. S. Babu, G. P. S. Kumar, and B. C. Deepthi, "Bruxism: a literature review," Journal of Indian Prosthodontist Society, vol. 10, no. 3, pp. 141–148, 2010.
3. A. de Laat and G. M. Macaluso, "Sleep bruxism as a motor disorder," Movement Disorders, vol. 17, no. 2, pp. S67–S69, 2002.
4. G. J. Lavigne, S. Khoury, S. Abe, T. Yamaguchi, and K. Raphael, "Bruxism physiology and pathology: an overview for clinicians," Journal of Oral Rehabilitation, vol. 35, no. 7, pp. 476–494, 2008.
5. D. Manfredini, N. Landi, F. Fantoni, M. Segu, and M. Bosco, ` "Anxiety symptoms in clinically diagnosed bruxers," Journal of Oral Rehabilitation, vol. 32, no. 8, pp. 584–588, 2005.
6. Lobbezoo, F.; Ahlberg, J.; Raphael, K.G.; Wetselaar, P.; Glaros, A.G.; Kato, T.; Santiago, V.; Winocur, E.; De Laat, A.; De Leeuw, R.; et al. International consensus on the assessment of bruxism: Report of a work in progress. J. Oral Rehabil. 2018, 45, 837–844
7. Winocur, E.; Uziel, N.; Lisha, T.; Goldsmith, C.; Eli, I. Self-reported bruxism—Associations with perceived stress, motivation for control, dental anxiety and gagging. J. Oral Rehabil. 2011, 38, 3–11. [
8. Abekura, H.; Tsuboi, M.; Okura, T.; Kagawa, K.; Sadamori, S.; Akagawa, Y. Association between sleep bruxism and stress sensitivity in an experimental psychological stress task. Biomed. Res. 2011, 32, 395–399.
9. Gungormus, Z.; Erciyas, K. Evaluation of the relationship between anxiety and depression and bruxism. J. Int. Med. Res. 2009, 37, 547–550.
10. Clark GT, Ram S. Four oral motor disorders: bruxism, dystonia, dyskinesia and drug-induced dystonic extra pyramidal reactions. Dent Clin N Am. 2007;51(1):225–43. 7.
11. Kwak YT, Han IW, Lee PH, Yoon JK, Suk SH. Associated conditions and clinical significance of awake bruxism. Geriatr Gerontol Int. 2009;9(4):382–90.
12. The American Institute of Stress. What is stress? [Internet]. Weatherford (US): The American Institute of Stress; [cited 2022 Feb 24]. Available from: https://www.stress.org/what-is-stress.
13. Kunwar D, Risal A, Koirala S. Study of depression, anxiety and stress among the medical students in two medical colleges of Nepal. Kathmandu Univ Med J (KUMJ). 2016 Jan-Mar;14(53).
14. Sreeramareddy CT, Shankar PR, Binu VS, Mukhopadhyay C, Ray B, Menezes RG. Psychological morbidity, sources of stress, and coping strategies among undergraduate medical students of Nepal. BMC Med Educ. 2007 Aug 2;7:26. [PubMed | Full Text | DOI].