

CLINICAL RESEARCH

The Prevalence of Awake and Sleep Bruxism in Afghan Youths Aged to 15 Years - 26 Years Olds: A Cross-Sectional Study

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ABSTRACT

BACKGROUND

An agreement proposal based on the idea that bruxism is a "repetitive jaw activity" that can occur while sleeping (sleep bruxism) or during waking (awake bruxism) was released by an international group of bruxism experts in 2013.

AIM

To determine the prevalence of wakefulness and sleep bruxism among Afghan youth aged 15 years - 26 years in Kabul city.

METHODS

This cross-sectional questionnaire-based study was carried out in two academic centers located in Kabul city. A total of 173 students of both genders participated in the study. Sleep and awake bruxism, chewing difficulties, joint noise, facial pain, anxiety, and stress were evaluated in the questionnaire. The data were gathered and input into SPSS 20.0.

RESULTS

A total of 173 male and female students in various age categories composed the initial study population. There were 96 females and 77 males. The results show that there is no significant association between bruxism and gender. A total of 109 (63.3%) reported not experiencing any form of bruxism (neither sleep nor awake). A total of 10.3% of the participants experienced both AB and SB. A total of 16.1% experienced SB, and 10.3% reported AB. Overall, 64 of the participants (36.7%) had bruxism-23% were girls, and 13.7% were boys. This difference was not statistically significant; the most frequent symptom associated with dysfunction of the masticatory system

was neck pain (28.2%), followed by joint noises (27.3%), facial pain (19.1%), and pain and difficulties in chewing (16.1%).

CONCLUSION

More than one-third of Afghan youths responded positively to awake and sleep bruxism, and there was a strong correlation between bruxism, chewing difficulties, and facial pain. The youth reported varying levels of anxiety and stress, and more investigations are needed.

KEYWORDS

Bruxism; Facial pain; Chewing difficulties; Stress/Anxiety; Afghans

INTRODUCTION

There was significant discussion regarding the definition of bruxism. An agreement proposal based on the idea that bruxism is a "repetitive jaw activity" that can occur while sleeping (sleep bruxism) or during waking (awake bruxism) was released by an international group of bruxism experts in 2013 [1]. In 2018, it was proposed that awake bruxism is a masticatory activity of muscles that manifests as frequent or continuous mandibular clenching and/or tooth contact during wakefulness [2]. This type of behavior is not always associated with other daily habits, such as biting one's lips or pens. Muscle mastication during sleep, known as sleep bruxism, can be classified as rhythmic (phasic) or nonrhythmic (tonic). In healthy individuals, none of the kinds of bruxism are classified as a movement condition or a sleep disorder [2]. Each of the definitions [1,2] defines bruxism as a repeated muscular action that results in tooth clenching or grinding.

The epidemiology data for both awake and sleep bruxism patients have shown significant variance [3]. The primary causes of these disparate prevalence results are the variations in definitions, diagnostic techniques, population attributes, and research methodologies among various investigations. Despite this high frequency, research on the age distribution of sleep bruxism has consistently revealed a decreasing trend in prevalence as age increases [4-6]. The range of bruxism prevalence is relatively large: 4.1%-59.2% for sleep bruxism and 2.7%-57.3% for awake bruxism [7].

Clinical diagnosis of tooth grinding is only possible in cases of ignorance. Abnormal tooth wear is the most prevalent clinical sign of bruxism [8]. Additional symptoms include headaches, neck discomfort, temporomandibular problems, jaw pain upon waking up, tooth fractures, tooth sensitivity, and failure to repair teeth. A few parafunctional behaviors associated with bruxism are biting one's cheek, pressing one's teeth against the tongue, and experiencing a burning feeling on the tongue [9].

The causes, processes, and consequences of bruxism are unknown [7]. The exact etiology of bruxism is yet unknown and may involve multiple contributing factors. In certain instances, bruxism is impacted by psychological and stress variables [8]. In social, professional, educational, and psychological contexts, the term "stress" is widely used and understood [10].

Overstressing students in higher education can have detrimental effects on their academic performance as well as their psychological, emotional, and health outcomes. In recent years, more research has been conducted on the

connection between student stress and bruxism. With its transitional character, demands, and difficulties, an educational setting can either teach students how to deal with it or remain oblivious to it or become vulnerable to its harmful effects [10]. The stressors in students' lives include schoolwork, relationships, the environment, schedules, and financial circumstances [11].

The lack of research on the subject of bruxism among students in Afghanistan's universities, academic institutes, and other institutions might be interpreted as evidence of the uniqueness of this study. Thus, the prevalence of wakefulness and sleep bruxism among Afghan youth aged 15 years - 26 years in Kabul city was examined in this study.

METHODOLOGY

The purpose of the study was to determine the prevalence of awake and sleep bruxism among 15 years - 26 years old young Afghans living in Kabul. The following criteria for inclusion were used in the selection of participants: Aged 15 years to 26 years, people who agreed to participate at the time of the study, and students enrolled in educational centers. However, those who were mentally or physically handicapped were not allowed to participate in this study. The Dari language was used to compose the questionnaire. Twenty subjects participated in a pretest and validation of the questionnaire to evaluate its responsiveness, clarity, and level of expertise.

Ethical Clearance

The study received ethical approval from the research ethics committee of Kabul University of Medical Sciences. The data were collected from students in two academic centers located in Kabul city. The researcher and the teachers handed questionnaires to the students in the classrooms after they coordinated with the management of the academic centers. The researcher was not acquainted with any of the students personally and was not granted access to their personal information. Students were urged to participate after receiving a thorough explanation of the purpose and significance of the study. They received guarantees that the research would remain fully anonymous and that declining to take part would not have any negative effects on their academic records. Informed consent was obtained from the participants before they completed the questionnaire.

Questionnaire

The questionnaire was broken up into three sections: the first asked questions about name, age, and gender; the second section included yes/no questions about the major factors. joint noise, facial pain, neck ache, difficulty chewing [12], and wakefulness and sleep bruxism [13-14]. The final section consisted of multiple-choice questions to gauge the degree of anxiety [15] and stress [16].

The following variables were assessed: Do you experience pain in your jaws, face, ears, or in front of your ears? (Facial pain). Do you experience neck pain? (Neck Pain). Do you experience any difficulty chewing? (Chewing difficulties). "Have you noticed that you clench your jaws or grind your teeth while you're asleep, or have you been told this by someone else?" (Yes, No) Sleep bruxism (SB). "Have you ever noticed that when you're awake, you're clenching or grinding your teeth?" (Yes, No) Awake bruxism (AB). Does the sound of your jaw click or pop when you open and close it or when you chew? (Joint Noise) When you open or close your mouth, or when you are chewing, does your jaw create a scraping or grating sound? (Joint Noise). Participants were asked how frequently each of the seven main items-such as worrying excessively about various things, feeling worried that

something terrible might happen, or being unable to stop or control worrying-had bothered participants over the last two weeks. Every item is evaluated using a Likert scale ranging from 1-4 (not at all - almost every day). Four severity levels were derived from the index scores of the answers: 0 represented no anxiety at all, 1 represented mild anxiety, 2 represented moderate anxiety, and 3 represented severe anxiety (anxiety). Participants were asked to rate their frequency of experiencing stress or a particular emotion. On a 5-point rating system from 0 to 4, each item is ranked as "Never," "Rarely," "Sometimes," "Fairly Often," or "Very Often." The overall score is between 0 and 40. The scale underwent continuous variable analysis (stress).

The data were gathered and input into SPSS 20.0. For qualitative characteristics such as sex and bruxism prevalence, descriptive statistics were calculated as frequencies and percentages. The chi-square test was used to stratify bruxism among age and sex categories. P values less than 0.05 were regarded as significant.

RESULTS

A cross-sectional study using questionnaires was conducted among educational centers in Kabul. Using a random sampling technique, 173 (96 female and 77 male) students in various age categories composed the initial study population. The results show that there is no significant association between bruxism and gender. As shown in Table 1, most participants were between the ages of 24 years and 26 years.

Table 1: Sample size by age and sex groups.

Gender	Boys	77	44.50%
	Girls	96	55.50%
	Total	173	100%
Age group	15 Years - 17 Years	17	10.10%
	18 Years - 20 Years	19	11.30%
	21 Years - 23 Years	49	29.20%
	24 Years - 26 Years	83	49.40%

The final study sample included 173 patients, 109 (63.3%) of whom reported not experiencing any form of bruxism (neither sleep nor awake). Eighteen (10.3%) participants experienced both AB and SB. Twenty-eight (16.1%) experienced SB, and 18 participants (10.3%) reported AB. Overall, 64 of the participants (36.7%) had bruxism-23% were girls, and 13.7% were boys. This difference was not statistically significant (Table 2).

Table 2: Describes the prevalence of bruxism stratified by sex and number.

Gender	Both SB and AB	SB Only	AB Only	Neither SB nor AB
Boys	10	9	5	53
Girls	8	19	13	56
Total	18	28	18	109

At least 80% of the participants reported different degrees of anxiety and stress; severe anxiety was found in 10.3% of the participants, moderate anxiety was found in 43.1% of the participants, and mild anxiety was found in 27.6%. More details are provided in Table 3.

Table 3: Frequencies and percentages of study variables by sex.

	Total (n)	Total %	Girls (n)	Boys (n)	Chi-square	p value
SB					2.068	0.15
Yes	28	16.10%	19	9		
No	109	83.90%	77	68		
AB					2.277	0.131
Yes	18	10.30%	13	5		
No	109	89.70%	83	72		
SB+AB					1.564	0.211

Yes	18	10.30%	7	10		
No	108	89.70%	89	67		
Facial Pain					6.739	> 0.009
Yes	33	19.10%	16	17		
No	140	80.90%	79	60		
Chewing Difficulties					5.452	> 0.02
Yes	28	16.10%	12	16		
No	146	83.90%	84	61		
Neck Pain					4.731	0.3
Yes	49	28.20%	24	25		
No	124	71.80%	72	52		
TMJ Noises					1.363	0.243
Yes	47	27.30%	28	18		
No	125	72.70%	68	57		
Anxiety					4.238	0.237
None	33	19%	16	17		
Mild	48	27.60%	24	23		
Moderate	75	43.10%	44	31		
Severe	18	10.30%	12	6		
Stress					5.988	0.112
Never	26	15%	10	16		
Mild	70	40.50%	40	30		
Moderate	58	33.50%	31	26		
Severe	19	11%	14	5		

DISCUSSION

The maxillofacial region may be negatively impacted by muscular activities such as bruxism during sleep or while awake [1]. Based on self-report questionnaires, which indicate the lowest (or "possible") grade of bruxism diagnosis, an epidemiological study was conducted to determine the diagnosis of bruxism [1-2]. Electromyography for awake bruxism and polysomnography for sleep bruxism are required for a definitive diagnosis. Unfortunately, it is not possible to perform such tests in an epidemiological study. In research such as this one, self-report surveys are a standard instrument [14,17,18].

Overall, 36.7% of participants had a habit of bruxism, according to our findings. This is comparable to results from studies by Nagarale R, et al. (2022) [8], Cavallo P, et al. (2016) [10], and Andrew TC, et al. (2005) [13], which were 35.5%, 37.9%, and 38%, respectively. This finding is greater than that of Azodo CC, et al. (2016) [19] (24.7%). Additionally, this percentage is lower than that reported in research conducted in Peshawar (45.38%) by Mohammad AK, et al. (2019) [20] and in Israel (56.6%) by Winocur E, et al. (2019) [7]. The findings of the present study on the prevalence of bruxism differ from those of previous studies due to possible causes such as demographic factors, socioeconomic status, cultural factors, geographic location, and diagnostic criteria and indices.

The study sample of students had a greater prevalence of SB (16.1%) than AB (10.3%). These findings are consistent with research conducted in Canada [21] (15% of SB and 12.4% of AB), Germany [14] (14.8% of SB and 8.7% of AB), Nigeria [19] (15.4% of SB), and Israel [7] (14.8%). Conversely, Brazil's [22] results show that bruxism is more common among dentistry students (AB 36.5% and SB 21.5%), Nigeria [19] (AB 48.3%), Israel [7] (AB 34.5%), and Iraq [23] (AB 15.7% and SB 9.62%). This is because student life is full of demands and pressures, which can cause stress and then cause people to clench their teeth in an attempt to release tension [24].

This may be because academic pressures and societal inconsistencies in the form of amenities cause stress for students in developing nations. A total of 55.5% of the participants were female; this might be attributed to the shuttling of universities, the prohibition of girls above the sixth grade continuing their education, their inability to

work, and other similar condemnations. These factors may also be the main causes of the significant number of girls who turned to learning institutions in Kabul. The results of this study indicated that there is no sex difference in bruxism prevalence. Friedman Rubin et al. reported similar outcomes [25]. However, they used orphans in their study, with the incidence of TMJ problems serving as the secondary outcome. However, according to a study performed on dental students at Necmettin Erbakan University, women were more likely than men to have bruxism [26].

Students who were bruxed often experienced neck aches, joint noise, and facial pain. This may be the reason why bruxism is a pathological activity of the stomatognathic system characterized by clenching and grinding of the teeth during abnormal movements of the jaw; several etiological causes, including systemic, psychological, genetic, and local causes, have been identified [27].

Stress has a role in the etiology of bruxism, as those who brux more frequently than those who do not, and stressful life events, in general, are linked to some parafunctional oral behaviors [28]. A possible explanation for the connection between bruxism and stress can be found in earlier studies that mentioned the masticatory organ as a last resort during episodes of psychic overloading [29]. The best strategy to prevent the stomatognathic system from becoming dysfunctional is to diagnose TMJ issues early, and para-functioning is thought to be essential for this purpose [30]. A severe TMJ has been linked to a decreased understanding of oral parafunctional and impaired general health. One of the most common risk factors for TMDs is bruxism [31,32].

In this study, 28.2% of patients reported having neck pain, while 27.3% experienced TMJ noise or pain. Additionally, it was shown that bruxism was linked to trouble chewing and TMJ pain or noise. Similarly, a positive association between self-reported bruxism and self-reported jaw functional restriction has been reported [33]. The masticatory system's tissues adjust to bruxism behavior; nevertheless, in certain people, the cumulative stresses of this mandibular parafunction activity will exceed the ability of the tissues to adapt, leading to masticatory system malfunction and pain [34]. Previous literature reports on the common relationship between sleep and wake-time parafunctions and symptoms and indications suggestive of temporomandibular disorders [35]. The study's report might be restricted because it only used self-reports, even though there are alternative objective ways to measure bruxism, such as clinical oral examination and electromyography. Nonetheless, self-reporting is a recognized style of evaluation since it makes it easier to use other, more objective evaluation techniques and helps determine whether an issue exists [19].

More than 80% of the participants in this study reported increased levels of tension and anxiety, which may be related to Afghanistan's unfavourable political and economic circumstances. There is evidence that the psycho-emotional component plays a significant role in the etiology of bruxism-1 [36]. The degree of stress and anxiety were the primary constituents. Stress appears to be a factor in both sleep and waking bruxism, in addition to dental anxiety and gagging [37]. Compared to those who did not brux, patients who reported bruxism claimed to be under more emotional stress. This finding supported earlier research indicating that personality traits and stress are factors in the etiology of bruxism [36,37].

CONCLUSION

More than one-third of Afghan youths had positive responses regarding wakefulness and sleep bruxism, and there was a strong correlation between bruxism, chewing difficulties, and facial pain. The youth reported varying levels of anxiety and stress. We propose that additional studies be conducted to differentiate between bruxism during sleep and bruxism during awakening, taking into account the corresponding etiology. Additionally, we propose to evaluate the association between bruxism and stressors, potentially by comparing different populations to account for the effects of various sociocultural and academic settings.

STRENGTHS AND LIMITATIONS

The strength of this research is that it is the first study of its kind undertaken in Afghanistan among health profession students, with no previous reports. Furthermore, this study was supervised and confirmed following the ethical principles (10 specific Helsinki principles: Scientific requirements and research protocols, informed consent, privacy and confidentiality, research registration and publications, and so on) of the research ethics committee of Kabul University of Medical Sciences. Since female students are not permitted to attend universities, we conducted a survey at academic centers in Kabul, which is the only location where we can reach both genders.

These data are not sufficient to answer all the questions; they are only a sample of data from Kabul. Therefore, broader data covering most of the Afghan population are needed.

DATA AVAILABILITY

The data that support the findings of this study are available from research ethics committee of Kabul University of Medical Sciences, but restrictions apply to the availability of these data, which were used under license for the current study, and so are not publicly available. Data are available from the corresponding author of this paper upon reasonable request.

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DISCLOSURE

The authors declare no competing interests in this work.

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