

Bruxism in Mosul City Part 2

Basser Ali Abdullah*, Gassan Yassin Hamed

Oral and Maxillofacial Surgery, Oral Medicine, College of Dentistry, Mosul, Iraq

*Corresponding author: basserali30@yahoo.com

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Abstract Bruxism is defined as the grinding or clenching of the teeth. Pathological bruxism can cause damage to dental surfaces, joint pain and many other dentally related tissues. It is assumed that 8-20% of the population suffer from bruxism. This study aimed to determine the prevalence of sleep bruxism and awake bruxism and their relation with age, gender, previous trauma, unilateral chewing, headache and ear problems. This research included 450 patients, two hundred seventy one females and one hundred seventy nine males, the age ranged between 13-65 years old, signs and symptoms of TMDs were recorded according to Helkimo index, grinding, clenching, history of previous trauma, unilateral chewing, and headache reported by the patients were recorded in a case sheet, ear problems complaints including (pain, ringing sound, buzzing sound and subjective hearing loss) were investigated and recorded. Statistical analysis was done by using Chi square and one way ANOVA tests. The result of this study reveal that the prevalence of grinding was 28.8% whereas the prevalence of clenching was 24.8%, female to male ratio was 1.5:1, the group of age between 21-30 years represent the most prevalent cluster age, they represent 60.4% from the study sample. A highly significant relationships $p \leq 0.001$ among sleep, awake bruxism and previous trauma, unilateral chewing and headache were found in this study. There were highly significant relations between grinding, clenching and ear problems $p \leq 0.001$

Keywords: *sleep bruxism, awake bruxism, previous trauma, headache, unilateral chewing, and ear problems*

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1. Introduction

In humans, bruxism is defined as the grinding or clenching of the teeth. Pathological bruxism can cause damage to dental surfaces, joint pain and many other dentally related tissues. [1]. Bruxism is a naturally occurring behavior in humans, it can be pathological in certain individuals. It is assumed that 8-20% of the population displays pathological bruxism [2]. Bruxism has been associated with many problems such as abrasions of teeth, chips occur on the tooth, trouble of sleeping, pain in the temporal area, muscles spasm and tenderness of the joints. Although bruxism can lead to many problems, it remains understudied and its mechanisms are not fully understood [3]. Lobbezoo et. al. (2013) settled on the meaning of bruxism is: Bruxism is a continuous contraction of jaw-muscle categorized by grinding or clenching of the teeth and/or by forcing of the mandible. Bruxism clinically appear in two form: it may happen at sleep (named as sleep bruxism) or may happen at wakefulness (named as awake bruxism). Human bruxism has been described as non-functional in nature [4]. Recent research suggests that bruxism is largely controlled by the central nervous system [5]. Many studies suggest that the nigrostriatal dopaminergic pathway of the basal ganglia regulates bruxism [3]. Evidence of the nigrostriatal pathway is supported by

observations in case reports, a clinical trial on sleep bruxism, and evidence of bruxism being exacerbated by long term dopaminergic drug use (such as amphetamines) [6]. It is consequent that conflicts in systemic neurotransmitter center may be the cause of the bruxism [7,8]. The disturbance of the five subcortical nuclei which are responsible for movements coordination is observed in bruxiser [9]. Headache which is happening more than 15 days each month for at least 3 months is defined as chronic headache [10]. The more prevalent types of primary headaches are the Migraine and tension-type headache, while the head injury is the most public secondary headaches [11]. An intimate association between sleep and headache have been recorded [12]. So headache is the end result of Sleep disturbances and stress [13]. Recently bruxism considered as a sleep disorder [14], then once headache and sleep disorder coexist, they lead to exacerbate the pain in patients complain from chronic headache [15]. Some study have emphasized a relationship among ear problems and TMD [16,17,18]. The most repeatedly described symptoms in the studies are ringing sound, ear pain, a fullness sensation, defeat of hearing and vertigo [16,17,18,19]. The association of these symptoms can be explained by the anatomic, neurologic and emotional relationships of these structures [20]. According to these finding we conclude that hyper action of the muscles of mastication may lead to contraction of tensor tympani muscle and tympanic membrane, which will lead to disturbances in acoustic

tube function leading to ear fullness, balance dysfunction and hearing defect [21].

2. Material and Method

This research conducted on 450 patients attending oral diagnosis clinic at Mosul university for two years duration, this sample includes 271 females & 179 males. Their age fluctuated from 13 to 65 years. The patients identified to have tempromandibular disorders since there is no other disease entities, which explain their symptoms. To decrease bias and ensure standardization, the examination of patients were done in oral diagnosis clinic at Mosul university by the same author. Patients with history of head injury were excluded. Also patients how taken antidepressant drugs were excluded. The severity of the signs & symptoms of tempromandibular disorders were assessed numerically by using Helkimo index 1974 which is essential to assess the treatment need and to simplify comparison with other researches. previous trauma and unilateral chewing were recorded. Headache was reported as symptom which occurs once weekly or more, and it is classified as unilateral and bilateral. Aural symptoms were reported as otalgia, ringing sound, buzzing sounds and subjective hearing loss. Statistical analysis with 11.5 window SPSS (statistical package of social science) was used with one way ANOVA and a chi square tests with $p \leq 0.001$ considered significant value.

3. Result

Table 1 demonstrates distribution of the patients according to age and gender, the age group (21-30) years was the most prevalent age cluster, it was constituted 59.3% from the total sample, Females represented more than males constituting 60.4% of whole sample.

Table 1. Sample distribution according to age and sex

Age group/years	Man %	Woman %	Total %
11-20	3 (18.5%)	64 (23.5%)	97 (21.5%)
21-30	12 (67.9%)	146 (53.7%)	267 (59.3%)
31-40	1 (7.8%)	44 (16.1%)	58 (12.8%)
41-50	5 (2.8%)	16 (5.7%)	21 (4.6%)
51-65	5 (2.8%)	2 (0.7%)	7 (1.5%)
	178 (39.5%)	272 (60.4)	450

Participants who complained of sleep bruxism were account 28.8% (130 patients) from the whole sample and the group of age (21-30) years was the most prevalent age group, women were complained from grinding more often than men, they represent 70% in competition with men whom represent 30 % as revealed in Table 2.

Table 2. Distribution of sleep bruxism patients in relation to age and gender

Age range/years	Man %	Woman %	Total %
11-20	8 (20.5%)	23 (25.2 %)	31 (23.8%)
21-30	26 (66.6%)	49 (53.8%)	75 (57.6%)
31-40	4 (10.2%)	16 (17.5%)	20 (15.38%)
41-50	1 (2.56%)	3 (3.2%)	4 (3.07%)
51-65	0 (0%)	0 (0 %)	0 (0%)
	39 (30%)	91 (70%)	130

Table 3 shows the number of participants who complained of awake bruxism, it shows that 112 patients suffered from awake bruxism, the age group (21-30) years was the most represented age group and female to male ratio was 2:1.

Table 3. Distribution of awake bruxism patients in relation to age and gender

Age group /years	Man %	Woman %	Total %
11-20	5 (12.1%)	18 (25.3%)	23 (20.5%)
21-30	31 (75.6%)	34 (47.8%)	65 (58 %)
31-40	3 (7.3%)	13 (18.3%)	16 (14.2%)
41-50	1 (2.4%)	6 (8.4%)	7 (6.25%)
51-65	1 (2.4%)	0 (0 %)	1 (0.89%)
	41 (36.6%)	71 (63.3%)	112

Table 4 illustrate the relationships of grinding with, previous trauma, headache and unilateral chewing, a high significant relationships ($P \leq 0.001$) were found.

Table 4. Relationships of sleep bruxism with previous trauma, headache and unilateral chewing

variables	Grinding	No Grinding	Total	CHI square	P valu	
Previous trauma	yes	23	60	83	179.236	0.000
	no	107	260	367		
Headache	yes	31	72	103	131.512	0.000
	no	99	248	347		
Unilateral chewing	yes	16	48	64	80.22	0.000
	no	114	272	386		

A highly significant relationship were found among a wake bruxism, previous trauma, headache and unilateral chewing as shown in Table 5.

Table 5. Relationships of awake bruxism with previous trauma headache and unilateral chewing

Variable	Clenching	No clenching	total	CHI square	P value	
Previous trauma	yes	24	59	83	426.32	0.000
	no	88	279	3 67		
Headache	yes	33	70	103	131.512	0.000
	no	79	268	347		
Unilateral chewing	yes	36	67	103	179.236	0.000
	no	76	271	347		

A significant relationships among grinding, otalgia, tinnitus, buzzing sound and subjective hearing loss were found in this study as revealed by Figure 1.

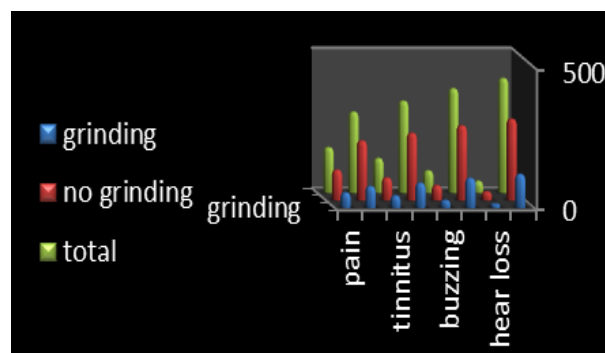


Figure 1. Relationship of sleep bruxism with ear problems ($F= 0.163$, $P=0.957$, $DF=4$)

Figure 2 demonstrate a highly significant relationships between awake bruxism, otalgia, tinnitus, buzzing sounds and subjective hearing loss.

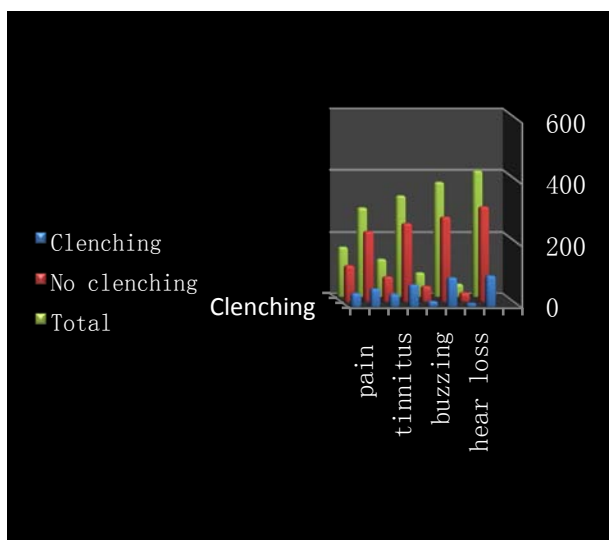


Figure 2. Relationship of awake bruxism with ear problems ($F=0.163$, $P=0.957$, $DF=4$)

4. Discussion

The result of this study reveals that prevalence of grinding was 28.8% whereas the prevalence of clenching was 24.8% and this outcome disagree with other researches [22,23] and consistent with other study done on italian students [24]. The high percentage of bruxsim may be related to many factors including psychological and socioeconomic as the people in this country are exposed to many stressful factors like war, sanction and insecurity. According to this study the prevalence of bruxsim was more in female than male at a ratio 1.5/1 and this is consistent with other study, [25] and the age group between (21-30) years was the most represented age and this agrees with other study [26]. The high prevalence of bruxsim in female in this study is attributed to that men showed higher levels of the desirability for stress control than women [22]. Regarding the age, this study agree with hypothesis that there is common trend that the prevalence of bruxsim is reduces with age [25]. Researchers proposed that estrogen receptors control metabolic functions with regard to the relaxation of ligaments, which may donate to the progression of temporomandibular disorder [27]. They conclude that, both age and sex have a significant role in temporomandibular disorder and and both aural symptoms and sleep bruxism when studied at the same time. Thus, it is essential to regard the temporomandibular disorder-sleep bruxism-aural symptoms triad in experimental and epidemiological analytic study systems so that patients can be properly managed [28]. A highly significant relations between sleep, awake bruxsim and unilateral chewing were found in this study and this agrees with Yeler et al 2017 who conclude that unilateral chewing seems to be a common factors which may lead to bruxsim and temporomandibular disorder [29]. This study shows positive relationships between sleep, awake bruxsim and headache and this result is consistent with

other study [25], the relation between SB and the pain is difficult to evaluate however central pathophysiological mechanism are play a part in initiation of bruxim and many psychological factors like anxiety and stress seem to aggravate sleep bruxsim leading to complex pattern of combined conditions [10]. The result of current study reveals significant relationships of sleep and awake bruxsim with ear problems as shown in Figure 1 and Figure 2. The study of the model also showed a real link concerning ear pain symptoms and temporomandibular disorder, This is coincide with certain studies [30,31]. Earlier researchers established that signs of temporomandibular disorder are forecasters of the progress of some aural symptoms, like ringing sound. The association between temporomandibular disorder and aural symptoms is not completely explained. This association explained by embryological, functional and anatomic associations within the area that includes the temporomandibular joint, muscles supplied by the fifth cranial nerve and middle ear, it has been proposed that spasms of the lateral pterygoid muscle, lead to hypertonia in the tensor tympani muscle, so producing alterations in the acoustic tube and a consequential decrease in the air circulation of the middle ear [26]. Therefore, the unusual action of the tensor tympani muscle is connected with aural complains, like ear fullness, ringing sound, vertigo and sound loudness [21]. A research performed by Felício et al (2008). proposed that the unusual changes occurred in the masticatory muscles due to bruxism not solitary source of distress, on the other hand may be due to changes in the TMJ [26]. The environmental and biological factors play a significant role in the temporomandibular disorder and bruxism [31,32,33].

5. Conclusion

Sleep and awake bruxim are significantly prevailing disorder in Mosul affecting females in the ratio of 1.5:1 with males. Headache, ear problems, previous trauma and unilateral chewing are the most predisposing factors for bruxim.

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