Bruxism and Sleep Quality Among Iraqi Dental Students

Noor S. Mohammed Ali, B.D.S., M.Sc. [1]

ABSTRACT

Background: Undergraduate dental students are more susceptible to situations of stress that affected quality of sleep, such profiles of stress may result in sleep bruxism and/or awake bruxism, parafunctions that can affect oral and general health. The aim of the study was to evaluate the association of sleep bruxism, awake bruxism and sleep quality among dental students.

Materials and methods: A cross-sectional study was performed including 260 Iraqi dental students from university of Baghdad aged from 20to25years old. Students enrolled in the third and fifth class participated in the study. The Pittsburgh Sleep Questionnaire Index (PSQI) was used for data collection. The PSQI was distributed during lecture classes. Sleep bruxism and awake bruxism diagnosis was based on self-reported data.

Results: prevalence of sleep bruxism was 9.62% and prevalence of awake bruxism was 15.76%. Statistically significant differences were observed between students who had awake bruxism and the mean of PSQI global score and its components of sleep categories: PSQI global score and day time dysfunction ($p<0.001$), habitual sleep efficiency ($p=0.044$; $p<0.05$) and sleep quality ($p=0.046$; $p<0.05$). While for students had sleep bruxism the statistically significant differences were observed in sleep disturbance ($p=0.021$; $p<0.05$) and sleep duration ($p=0.042$; $p<0.05$).

Conclusion: Poor sleep quality was an important factor among dental students, who reported awake bruxism as well as among those who presented sleep bruxism.

Key words: awake bruxism, sleep bruxism, sleep quality. **(J Bagh Coll Dentistry 2018; 30(1): 28-32)**

INTRODUCTION

Bruxism is defined as nocturnal or diurnal parafunctional activity of muscles of jaw that is characterized by bracing, clenching, gnashing and grinding of teeth[1, 2]. Parafunctions assume an essential part in oral and general wellbeing[3].the abnormal force created by bruxism is destructive to teeth, periodontal tissue, masticatory muscles, temporomandibular joints and causes muscle fatigue[4]. There are two sorts of bruxism; awake bruxism (AB) and asleep bruxism (SB) with various etiologies. AB is characterized by clenching-type activity and SB by mix of clenching and grinding-type activity. Various studies were done on sleep-related bruxism, which is more reasonable for a reliable diagnosis in a scientific research setting[5]. Prevalence rate of AB and SB is about 20 and 8–16% respectively in adult population[6]. SB Onset is around 1yearof age shortly after the eruption of deciduous incisors; the disorder is appearing more frequently in the younger population[7]. The prevalence in children is between 14 to 20%. In adults aged above 60 years and over only 3%arebeing aware of frequent grinding[8]. AB is found to occur predominantly among females while no such gender variation is seen for SB[9]. Self-reported bruxism was lately shown to be coherently associated with stress and stress-related disorders and a possible signal of intrapersonal or interpersonal reactivity or dissatisfaction in a sound population, besides disrupted sleep was observed to be associated with bruxism and orofacial pain, recommending a vortex among these factors[10].

(1) Assistant Lecturer, Department of oral diagnosis, College of Dentistry, University of Baghdad.

A few reviews have connected reduction in sleep duration and sleep quality to changes in life style, increased work and social requests and further more over abundance utilization of technology, Studies done on university students have revealed that anxiety, nervousness and depressive presentations are normal mental associates found among them and there is an immediate connection between academic performances and sleep quality[11, 12].

The aim of this cross-sectional study was to evaluate quality of sleep, sleep bruxism and awake bruxism among dental students in College of Dentistry, University of Baghdad.

MATERIALANDMETHODS

Study Design and Sample:

Across-sectional study was performed of a group of dental students from University of Baghdad. The choice of these groups is based on the aim of observing the behavior of students of (third class) and those in the (fifth class). Data were collected from February to March 2016. The target sample population of the study comprised of 260 undergraduate dental students aged from 20 to 25 years. Students' participation in the study was voluntary.

Data Collection:

The participants were approached during lecture classes. Once a consent form had been signed, the participants completed the original version of the Pittsburgh Sleep Quality Index (PSQI) which is a self-report questionnaire that assesses sleep quality over a one month time interval; It consists of 19 individual items generating seven (components) scores: subjective sleep quality

,sleep latency (i.e., how long it takes to fall asleep),sleep duration, habitual sleep efficiency (i.e., the percentage of time in bed that one is asleep), sleep disturbances, use of sleeping medication and day time dysfunction, the questionnaire has been used in many settings, including research and clinical activities, and has been used in the diagnosis of sleep disorders[13].
The questionnaire was applied three times in each class group, on three different occasions, in order to allow absent students to participate in the study. Students were additionally asked to answer two questions regarding SB: "In the last 30 days, has any one told you that you grind your teeth while sleeping?" and for awake bruxism: "In the last 30 days have you noticed clenching your teeth while awake and not chewing food?[2]

STATISTICAL ANALYSIS

For the initial exploratory analysis, descriptive analyses of the sample and of the PSQI components were performed. The association between PSQI components, global scores and third and fifth class, and the association between PSQI components and gender, also comparison between SB, AB and PSQI components were evaluated using the Mann-Whitney U tests, mean and standard deviation For this analysis the outcome variables SB and AB were dichotomized as "no" (individuals who reported that they had not ground their teeth while asleep or clenched their teeth while awake in the last 30 days) and "yes" (individuals who reported that they had ground their teeth while asleep or clenched their teeth while awake in the last 30 days). The level of significance was set to 5% ($p<0.05$). Data analysis was performed using the Statistical Package for Social Sciences program (SPSS for Windows, version 21.0, SPSS Inc, Chicago, IL, USA).

RESULTS

In this study the total number of students enrolled in third and fifth class from the College of dentistry, University of Baghdad was 260 students, 77 males (29.6 %) and183 females (70.4%). The mean age of the students was21.47±1.28 years. The prevalence of SB was 9.62% and 15.76% of students had AB.
The study showed that 46 students subjectively consider their sleep quality as very good (17.7%), 169 as good (65%), 42 as bad (16.2%) and only three as very bad. While for sleep latency 70 students (26.9%) took ≤ 15 min to fall asleep while 104 students took 16-30 min ,64 students (24.6%) took 31-60 min and 22 students (8.5%) took more than 60 min to fall asleep. as sleep duration 36 students (13.8%) had more than seven hours of sleep per night. While, 48 (18.5%) had 6-7 hours, also 145 (55.8%) had 6-5 hours and 31 (11.9%) had less than 5 hours of sleep per night. for habitual sleep efficiency 154 students (59.2%) had > 85%, while 71(27.3%) had 75-84%, also 24(9.2%) had 74-65% and 11(4.2%) had > 65%. For sleep disturbance 24 students (9.2%) had no disturbance during sleep. for sleep medication uses 220 students (84.6%) had never took medicine to help them to sleep during the previous month. While, 26 (10%) took less than once a week, also 11 (4.2%) took 1-2 in a week and only 3 students (1.2%) took 3 or more in a week. and about difficulty of staying awake while driving, eating, doing social activities 59.6% had day time dysfunction (Table 1).
There were no statistically significant differences were observed between the third and fifth class of the dentistry undergraduate students in sleep categories (Table 2).
While there were statistically significant differences were observed between PSQI components and gender in sleep medication ($p=0.02$; $p<0.05$), habitual sleep efficiency ($p=0.005$; $p<0.01$) and sleep quality ($p=0.009$; $p<0.01$) (Table 3).
Statistically significant differences were observed between students who had awake bruxism and the mean of PSQI global score and its components of sleep categories: PSQI global score and day time dysfunction ($p<0.001$), habitual sleep efficiency ($p=0.044$; $p<0.05$) and sleep quality ($p=0.046$; $p<0.05$).
While, for students had SB the statistically significant differences were observed in sleep disturbance ($p=0.021$; $p<0.05$) and sleep duration ($p=0.042$; $p<0.05$) (Table 4).

DISCUSSION

The prevalence of AB among the students who participated in the present study (15.76%) is greater than SB (9.62%), This is similar to cross sectional study among Brazilian dental students which also found The prevalence of AB was greater than SB[2], And fifth class were more prevalence of both SB and AB this due to the student life is full of pressures and demands, which may result in stress and subsequently lead to the release of tensions by clenching the teeth[14, 15]. Especially that fifth class had more practical requirements than third class. Studies in Brazil, Lebanon and in Nigeria used a similar age range as in the present study, but the samples in Lebanon and in Nigeria were much larger and collected information from various university departments, not just dentistry students [16, 17].

Table 1: Scores of PSQI components' descriptive analyses.

Variables	Score 0		Score 1		Score 2		Score 3	
	NO	%	NO	%	NO	%	NO	%
Daytime dysfunction	105	40.4	98	37.7	47	18.1	10	3.8
Sleep medication	220	84.6	26	10.0	11	4.2	3	1.2
Sleep disturbance	24	9.2	220	84.6	16	6.2	0	0
Sleep efficiency	154	59.2	71	27.3	24	9.2	11	4.2
Sleep duration	36	13.8	48	18.5	145	55.8	31	11.9
Sleep latency	70	26.9	104	40.0	64	24.6	22	8.5
Sleep quality	46	17.7	169	65.0	42	16.2	3	1.2

Table 2: Third and fifth class students PSQI score.

	Third class students		Fifth class students		Mann-Whitney U test		Total	
	Mean	±SD	Mean	±SD	Z	Sig.	Mean	±SD
Global Score	6.36	2.37	6.51	2.84			6.43	2.61
Daytime dysfunction	0.88	0.85	0.83	0.85	-0.460	0.645	0.85	0.85
Sleep medication	0.22	0.59	0.22	0.56	-0.009	0.993	0.22	0.57
Sleep disturbance	0.98	0.33	0.95	0.45	-0.663	0.507	0.97	0.39
Sleep efficiency	0.57	0.77	0.60	0.89	-0.207	0.836	0.58	0.83
Sleep duration	1.55	0.90	1.76	0.81	-1.842	0.065	1.66	0.86
Sleep latency	1.15	0.88	1.14	0.95	-0.370	0.711	1.15	0.91
Sleep quality	1.00	0.57	1.02	0.67	-0.045	0.964	1.01	0.62

Table 3: The association between PSQI components and gender.

	Males		Females		Mann-Whitney U test		Total	
	Mean	±SD	Mean	±SD	Z	Sig.	Mean	±SD
Global Score	6.71	2.58	6.32	2.62			6.43	2.61
Daytime dysfunction	0.71	0.82	0.91	0.85	-1.75	0.080	0.85	0.85
Sleep medication	0.35	0.74	0.16	0.48	-2.32	0.020	0.22	0.57
Sleep disturbance	0.95	0.36	0.98	0.41	-0.55	0.580	0.97	0.39
Sleep efficiency	0.81	0.92	0.49	0.77	-2.84	0.005	0.58	0.83
Sleep duration	1.74	0.88	1.62	0.85	-1.11	0.268	1.66	0.86
Sleep latency	1.00	0.78	1.21	0.96	-1.45	0.148	1.15	0.91
Sleep quality	1.17	0.71	0.94	0.57	-2.61	0.009	1.01	0.62

Table 4: Comparison between SB, AB and PSQI components.

		No		Yes		Mann-Whitney U test		Total	
		Mean	±SD	Mean	±SD	Z	Sig.	Mean	SD
AB	Global Score	6.16	2.48	7.93	2.79	-3.921	0.000	6.43	2.61
	Daytime dysfunction	0.77	0.83	1.29	0.84	-3.748	0.000	0.85	0.85
	Sleep medication	0.19	0.54	0.37	0.70	-1.814	0.070	0.22	0.57
	Sleep disturbance	0.96	0.40	1.02	0.35	-0.989	0.323	0.97	0.39
	Sleep efficiency	0.54	0.80	0.83	0.95	-2.015	0.044	0.58	0.83
	Sleep duration	1.62	0.87	1.88	0.78	-1.616	0.106	1.66	0.86
	Sleep latency	1.11	0.89	1.37	1.02	-1.473	0.141	1.15	0.91
	Sleep quality	0.98	0.61	1.17	0.67	-1.998	0.046	1.01	0.62
SB	Global Score	6.36	2.54	7.12	3.14	-1.216	0.224	6.43	2.61
	Daytime dysfunction	0.85	0.83	0.92	1.00	-0.099	0.921	0.85	0.85
	Sleep medication	0.22	0.55	0.24	0.72	-0.388	0.698	0.22	0.57
	Sleep disturbance	0.99	0.36	0.80	0.58	-2.311	0.021	0.97	0.39
	Sleep efficiency	0.58	0.81	0.64	0.95	-0.032	0.975	0.58	0.83
	Sleep duration	1.62	0.86	2.00	0.82	-2.036	0.042	1.66	0.86
	Sleep latency	1.11	0.90	1.44	1.04	-1.373	0.170	1.15	0.91
	Sleep quality	1.00	0.61	1.08	0.70	-0.706	0.480	1.01	0.62

The proportion of students with poor sleep quality in the study population was generally consistent with the results of previous studies that used the PSQI[2]. Some participants in the present study had taken medicine to help them sleep (15.4%). Among the university students who participated in the study in Ethiopia, 8.7% reported using sleep medication [18] while among Palestinians only 1% used such medication[19]. The cultural differences of the population may explain this discrepancy in sleep characteristics[3]. The World Health Organization recommends a minimum of eight hours sleep per night as the ideal amount for a good quality night's sleep[5].

In this study, the proportion of students who slept more than 7 hours was 13.8%. A study in brazil of 222 dental students also used PSQI found that students who slept more than 7 hours were 27.3% The cultural differences of the sample groups should be observed, as customs in Brazil and Iraq differ greatly[2]. In this study, when students were asked about difficulty in concentration while performing daytime activities, about 59.6% had day time dysfunction, this similar to other study among medical students that had 46% day time dysfunction There is always an increased risk for deprivation of sleep with mental and physical morbidity because of working on a tight schedule and changes in pattern of sleep wake cycle[20]. When the PSQI components were analyzed for the two groups of dental students, it was found that no significant differences in scores between students in the third grade than students in fifth grade, in other study the PSQI components were analyzed for the three groups of university students, it was found that students in the first semester scored higher than students in other semesters[2].The association between PSQI components and the presence of SB and AB was evaluated. There was an association between SB and sleep duration and sleep disturbance this consistent with other studies [21-23], while there was an association between AB, PSQI global score, daytime dysfunction, habitual sleep efficiency and sleep quality. The physiology and pathology of AB is not widely known, but emotional problems, anxiety and stress can be risk factors for this parafunctions[24].

Studies done on university students have reported that stress, anxiety and depressive symptoms are common psychological correlates found among them [20] and there is a direct relationship between sleep quality and academic performances. Studies have shown sufficient sleep lead to higher academic performances and insufficient sleep lead to fatigue, concentration and attention disturbances. Sleep deprivation also results in school absenteeism and suppression of other cognitive functions like abstraction and problem solving[25].

There was significant correlation with gender and PSQI components in both sleep medication and sleep efficiency. Other studies have identified female students having amplified risk of poor sleep quality[17,26].

The prevalence of psychological distress is higher among students than among working nonstudent populations of the same sex and age[27].

Cross sectional studies are commonly used in epidemiological studies to analyze risk factors and associations, but not to evaluate causes. Longitudinal studies on this subject, with representative samples, should be performed[2].

The findings of the present study reveal that both poor sleeping pattern and stress is an important factor among dental students, who reported SB and AB; attention should be directed to the quality of sleep of undergraduate students.

Interdisciplinary educational campaigns should be encouraged, stressing the importance of the quality of sleep for the physical and emotional health of young people therefore; the management of bruxism may modify or improve sleeping patterns.

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