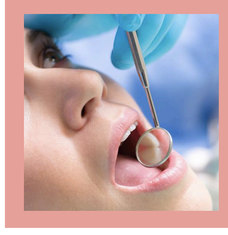
OPEN YOUR MOUTH!
SHOULD THE SOMNOLOGIST CARE MORE ABOUT YOUR TEETH? RELATIONS BETWEEN SLEEP BRUXISM DISTRIBUTION AND NON-RESTORATIVE SLEEP.



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Introduction

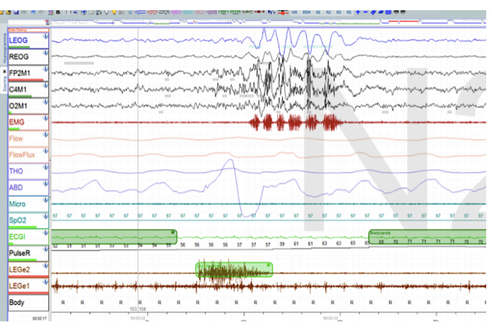
Beyond increased and abnormal teeth attrition, Sleep Bruxism (SB) may also directly impact sleep quality and related symptoms. We aimed at unraveling the existing relationships between nocturnal SB events (i.e. type, duration and sleep stage incidence) and structured clinical evaluations regarding sleep related daytime symptoms.

Methods

Within a cross-sectional protocol, we investigated polysomnographic recordings and assessed clinical symptoms from 22 SB patients in comparison to 12 control subjects. SB was visually analyzed and categorized by sleep stage, bruxism type (tonic / phasic) and duration. Clinical instruments comprised the Epworth Sleepiness (ESS), the Fatigue Severity (FSS) and the Hospital Anxiety and Depression Rating (HADRS) Scales. Perceived sleep quality was measured by means of the Pittsburgh Sleep Quality Index (PSQI).

Results

Control subjects and SB patients presented similar sleep architecture with respect to sleep stage distributions and proportions. Alongside with a higher AHI, more PLMS (trend), and lowered sleep efficiency, sleep fragmentation was significantly increased in SB (all $p < 0.05$). SB patients also presented with higher levels of sleepiness ($p = 0.02$), greater fatigue intensity ($p = 0.016$) and subclinical but statistically significant higher depression symptoms ($p = 0.04$) and a trend for more anxiety symptoms ($p = 0.085$). **Total SB duration, but not PLMS index or AHI, was significantly correlated to a decrease of perceived sleep quality (PSQI)** ($p = 0.019$)**.**



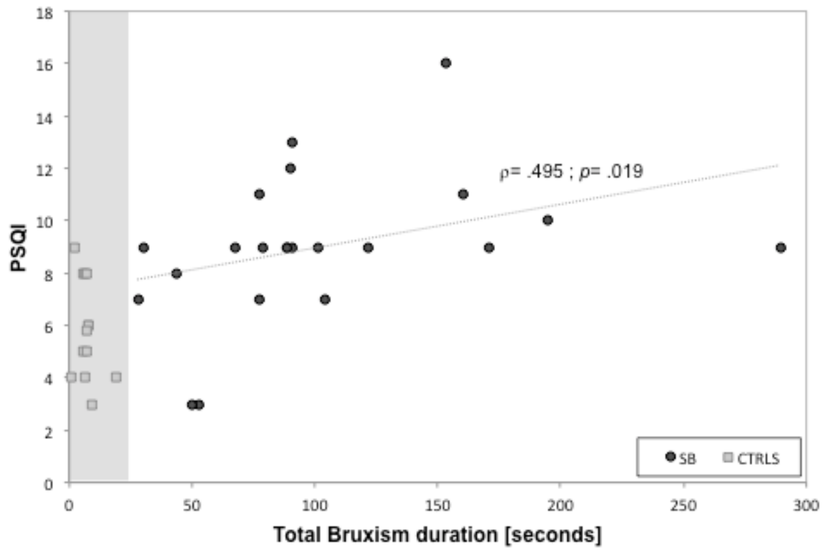
Picture 1a and 1b illustrating PSG screenshots of phasic (left) and tonic (right) SB events during N2 respectively.

Conclusions

Our results evidence that SB can display degrees of altered sleep (i.e. lower efficiency, increased fragmentation) and confirm its common associations to comorbid sleep-related respiratory events or limb movements. **SB patients** do not only present with higher levels of daytime fatigue or potential sleepiness, but **may** also **exhibit sleep quality impairments directly related to the total duration of bruxism occurrences.**

Picture 2a and 2b SB subject: illustration of masseterian hypertrophy (left) and teeth attrition (right) respectively.

Figure 1: Relation between bruxism duration and sleep quality



Legend:
Black dots and light gray squares, depicting sleep bruxism patients (SB) and controls (CTRLS) respectively. Gray area illustrates scatter location of CTRLS. Dotted light gray line depicts linear approximation between total sleep bruxism duration perceived sleep quality (PSQI) in SB patients (ρ= .495 ; p= .019).

Table 1 : Demographics and Sleep variables

	SB	CTRLS		
	median(Q1;Q3) ; m (sd)	median (Q1;Q3) ; m (sd)	***U***	***p***
Age	42.1 (11,6)	41.0 (11,5)	*139.5*	*ns*
BMI	26.8 (5,8)	24.3 (3,0)	*131.5*	*ns*
TST	398.8 (80,9)	412.0 (56.7)	*119.5*	*ns*
SOL	19.5 (14.0;33.6)	34.9 (25.4)	*109.0*	*ns*
WASO	66.5 (38.3)	33.7 (17.0)	*75.5*	*0.02*
SE	85.3 (7.8)	92.2 (4.1)	*71.5*	*0.013*
N1	64.5 (36.7)	56.9 (32.0)	*137.0*	*ns*
N2	206.4 (65.6)	207.3 (35.8)	*133.5*	*ns*
N3	74.4 (48.9)	86.7 (30.5)	*104.5*	*ns*
REM	53.4 (22.9)	61.2 (31.9)	*115.0*	*ns*
ArI	22.4 (10.6)	9.6 (2.7)	*35.0*	*< 0.001*
AHI	6.4 (1.8 ;11.7)	3.0 (2.3)	*83.0*	*0.041*
ODI	2.0 (1.4)	1.3 (1.7)	*102.5*	*ns*
PLMSi	3.4 (1.2;17.9)	2.3 (2.9)	*75.0*	*(0.082)*
BrxN1	4.9 (4.1)	1.0 (0.0;1.0)	*41.0*	*<0.001*
BrxN2	12.0 (8.2;13.7)	2.0 (1.4)	*17.5*	*<0.001*
BrxN3	1.0 (0.0;2.0)	0.0 (0.0;0.0)	*66.0*	*0.008*
BrxREM	3.0 (1.0;6.0)	0.0 (0.0;0.0)	*32.0*	*<0.001*
BrxTonic	12.8 (7.9)	2.0 (1.0;2.0)	*16.0*	*< 0.001*
BrxPhasic	7.5 (4.7;11.0)	1.0(1.0;2.0)	*12.5*	*<0.001*
BrxTotDur	89.3 (63.8;129.4)	7.2 (4.2)	*0.0*	*<0.001*
BrxINDEX	3.2 (2.4;3.9)	0.4 (0.4;0.5)	*1.0*	*<0.001*

Legend:
Healthy Controls (CTRLS); Sleep Bruxism patients (SB); Body Mass Index (BMI) in kg/m2; Total Sleep Time (TST), Sleep Onset Latency (SOL), Wake After Sleep Onset (WASO), Non Rapid Eye Movement (NREM) sleep stage 1 & 2 (N1 & N2), slow wave sleep (N3), Rapid Eye Movement sleep (REM) in minutes (min) ; Sleep Efficiency SE = (TST/Sleep Period Time)*100 in percent (%). Arousal Index (ArI) and Periodic Limb Movement during Sleep Index (PLMSi) in events per hour of sleep. Total bruxism event per sleep stage as event counts without units (BrxN1, BrxN2, BrxN3, BrxREM); Total tonic (BrxTonic) and phasic (BrxPhasic) bruxism event counts during sleep without units; Total cumulated bruxism duration (BrxTotDur) during sleep in seconds (sec); Index of total SB per hour of sleep (BruxINDEX). Variables with statistically significant comparison outcomes in bold.

Table 2 : Clinical symptom scales

	SB (n=22)	CTRLS (n=12)		
	median (Q1;Q3) ; m (sd)	m (sd)	***U***	***p***
HAD-A	8.5 (6.0;15.0)	7.3 (4.0)	*92.0*	*(0.085)*
HAD-D	5.9 (4.4)	3.2 (3.0)	*82.0*	*0.04*
FSS	4.2 (1.5)	2.9 (1.1)	*73.0*	*0.016*
ESS	10.5 (8.7;12.2)	7.1 (2.5)	*56.5*	*0.02*
PSQI	9.0(7.8;10.2)	4.8 (1.9)	*45.0*	*<0.001*
BFS-M	4.7 (2.1)	2.0 (1.0)	*33.5*	*<0.001*
BFS-P	4.0(3.0;6.2)	2.3 (1.4)	*62.0*	*0.005*
BFS-TOT	9.3 (3.8)	4.9 (3.6)	*52.5*	*0.001*

Legend:
Hospital Anxiety and Depression Scale Anxiety Subscale (HAD-A), HAD Depression Subscale (HAD-D); Fatigue Severity Scale (FSS); Epworth Sleepiness Scale (ESS); Pittsburgh Sleep Quality Index (PSQI);
Rest propensity measured by the Brugmann Fatigue Scale (BFS), mental (BFS-M) and physical (BFS-P) subscales.

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