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**Title:** Bruxism among sleep apnea patients – Characteristics and CPAP compliance: The Icelandic Sleep Apnea Cohort

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**Body:** Objectives: To analyze the clinical characteristics of sleep bruxism (SB) among subjects with obstructive sleep apnea (OSA) and upper airway morphology based on MRI. Also the effect of CPAP treatment on bruxism. Materials and Methods: The OSA subjects were newly diagnosed; 479 males and 111 females. The patients were assessed again after 2 years. Results: Among OSA patients 18.8% reported SB. There was no gender difference. SB was more common in younger age groups ( $p < 0.001$ ). Subjects with SB had lower sleep apnea severity than those without SB. SB was not related to hypertension, respiratory diseases or the metabolic syndrome. SB was not related to insomnia, nocturnal sweating, RLS or excessive daytime sleepiness. Subjects with SB had based on SF-12, a lower mental quality of life than those without SB ( $p = 0.002$ ) but no difference was found in physical quality of life. MRI of upper airway in those subjects with SB had significantly smaller volumes of the retropalatal airway ( $p = 0.042$ ) and tongue ( $p = 0.0145$ ) compared to non-SB. Subjects using CPAP full-time had a decreased prevalence of SB from 15.8% to 10.8% while no change in SB prevalence was observed in those subjects not using CPAP. Noncompliant CPAP subjects were more likely to report SB at baseline (27.2% vs. 15.8% for fully treated ( $p = 0.007$ )). Conclusions: SB is most prevalent among young OSA patients with a lower OSA severity. Subjects with SB had smaller volumes of the retropalatal airway and tongue compared to non-SB and lower mental quality of life. CPAP treatment of OSA decreases SB symptoms significantly but subjects with bruxism are also less likely to adhere to treatment.