Are Headaches Associated with Bruxism in Children?

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Objective

To investigate the risk factors associated with primary headaches among pediatrics patients with bruxism by employing a comprehensive approach that incorporates headache questionnaires, clinical examinations, and radiographic assessments.

Introduction/Background

Bruxism is defined as "repetitive masticatory muscle activity characterized by the clenching or grinding of teeth and/or bracing or thrusting of the mandible" [1].

A potential downstream effect of bruxism are primary headaches. Primary headache is a neurological disorder in which headache is present without an "underlying pathologic process, disease, or traumatic injury" [2]. Recent studies have indicated that bruxism is associated with temporal headaches, tooth wear, orofacial pain, tooth damage, and sleep breathing disorders [3].

Although research is limited, based on a systematic review of population-based studies, the headache prevalence in children and adolescents (age <20) is 58.4% [4] with a gradual increase in headaches with age [5]. Although studies have shown significant differences in prevalence rates of bruxism across development, research in bruxism and primary headache amongst the pediatric population is not well studied. Research on this topic is lacking but warranted, given the increased rates of bruxism in this population and the potential impact of headaches on patient quality of life and health.

Methods

A cross-sectional study of pediatric patients with bruxism ages six to fifteen presenting to dental clinic at Jamaica Hospital Medical Center in 2024. Bruxism was determined by radiographs and patient and parent self-report. The Pediatric Migraine Disability Assessment (PedMIDAS) questionnaire [Figure 1] was administered to assess headache-related functionality loss. Age, gender, race, parents' marital status, and parental history of headaches were collected. Parental history of headaches was assessed by asking parents/caregivers if they experience headaches. Patients rated their stress levels on a 1-5 scale by pointing to emotional faces [Figure 2].

PedMIDAS Score Range	Disability Grade
0 to 10	Little to none
11 to 30	Mild
31 to 50	Moderate
Greater than 50	Severe

Figure 1

Figure 2

Results

The final analytic sample consisted of 22 patients diagnosed with sleep bruxism per American Academy of Sleep Medicine (AASM) criteria and ranging in age from 4 to 11(M = 7.09, SD = 1.72). The rate of headaches was 33.33% among patients ages 7 to 10 in comparison to 10% among the remainder of the sample. The sample was highly ethnically diverse (Asian: n = 3, 13.64%; Black or African American: n = 3, 13.64%; Hispanic or Latino: n = 12, 54.55%; Middle Eastern: n = 3, 13.64%; multi-ethnic: n = 1, 4.55%) and the majority of patients were male (n = 14, 63.64%). Four patients (18.18%) had co-morbid awake bruxism per self-report. Specifically, two patients (9.09%) reported clenching and grinding often and two patients (9.09%) reported grinding sometimes. The majority of patients headache severity was rated as Little to None (n = 17, 77.27%), with the remaining patients rated as Mild (n = 3, 13.64%) or Severe (n = 2, 9.09%). There is a high rate of known maternal family history of headache (n = 12, 57.14%).

Discussion

The findings revealed that approximately one-third (33.33%) of patients aged 7 to 10 experienced headaches. This age-related pattern may suggest a developmental component or heightened vulnerability during middle childhood, warranting further investigation. Despite the observed association between bruxism and headaches, the severity of headaches was generally low, with the majority of patients reporting little to no headache intensity. Only a small proportion of the sample reported mild (13.64%) or severe (9.09%) headaches. This suggests that while headaches are relatively common among children with sleep bruxism, they are typically not severe. Furthermore, headache severity did not appear to significantly influence the overall association between bruxism and headaches, aligning with previous literature that suggests a complex and multifactorial relationship between the two conditions. The sample was ethnically diverse and predominantly male, though the current sample size limits the ability to draw conclusions regarding the role of sex or ethnicity in the bruxism-headache relationship. However, the high rate of known maternal family history of headaches (57.14%) is notable and may reflect a potential genetic or environmental influence. It is also possible that this rate is influenced by a greater likelihood of maternal involvement during clinical visits, which can enhance the accuracy of family history reporting.

Conclusion

We found that one-third of pediatric patients with bruxism experienced headaches, supporting the observed association between bruxism and headaches. In contrast, two-thirds of the patients did not report headaches. Headache severity did not appear to significantly influence this association. The study indicated a limited impact of various risk factors on headaches in the context of pediatric bruxism. Future longitudinal research is warranted to better understand the contributing factors to headaches in this population.

References

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