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ORIGINAL RESEARCH

Parental Sociodemographic Characteristics and Bruxism's Risk Factors Among Children: Saudi Arabian Evaluation

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Objective: This study aimed to assess the association between sleep bruxism (SB) among children and parental sociodemographic characteristics and SB risk factors (eg, nose obstruction).

Methods: A cross-sectional survey was conducted with 250 parents of children under the age of 13 who visited pediatric dental clinics. Data were collected through a questionnaire completed by parents. Sociodemographic characteristics, the child's medical history, sleep patterns and parents' awareness of bruxism and its symptoms were investigated. Descriptive, bivariate and binary logistic regression analyses were performed.

Results: The response rate was 85.2% (55% females, 45% males) and 25.8% of the parents self-reported that their children had bruxism. The regression analysis revealed that parents reporting SB among their children were significantly more likely to have SB themselves (8.62 [3.68–20.16], p = 0.001). While children whose mothers had lower education level and were unaware of bruxism-related symptoms (such as teeth, jaw, or face pain) were less likely to be reported as having SB (0.35 [0.16–0.75], p = 0.007; 0.36 [0.14–0.97], p = 0.043, respectively). Parents who identified nose obstruction as a cause of bruxism also had children with a higher likelihood of having SB (5.49 [1.04–29.08], p = 0.045).

Conclusion: The findings highlighted that parental sociodemographic characteristic and SB risk factors associated signficantly with the prevalence of childhood SB.

Keywords: sleep bruxism, children, parental sociodemographic factors, Saudi Arabia

Introduction

Bruxism is defined as the repetitive movement of the masticatory muscles that involves grinding and clenching the teeth and/or bracing or thrusting the mandible.[1] It is classified into two main types: awake bruxism (AB) and sleep bruxism (SB).[1,2] While AB occurs during waking hours with partial awareness, SB occurs unconsciously during sleep and is classified as a sleep-related movement disorder. According to the International Classification of Sleep Disorders (ICSD-3).[3] Sleep Bruxism is particularly prevalent in children, with reported rates ranging from 13% to 49%.[4]

Identifying SB is crucial, as it can lead to significant oral health consequences, including migraine, dental wear, temporomandibular dysfunction, muscular and ear pain, and potential impacts on overall quality of life.[5,6] Early diagnosis and intervention are essential to prevent these complications and to manage the condition effectively.

Based on the etiopathogenesis, SB can be classified as primary – idiopathic) (no accompanying comorbidities) and secondary—iatrogenic (associated with diseases or caused by the use of specific medications).[7–9] Understanding the distinction between these types is vital for developing appropriate treatment strategies.

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Sleep bruxism in children is stimulated by many induction factors, including psychological (stress and anxiety), socioeconomic and cultural factors, as well as sleep disturbance, and genetics predispositions.[7–9] Socioeconomic and cultural characteristics may influence the prevalence of sleep bruxism,[10] with studies indicating a higher occurrence in children from families with better socioeconomic status,[11] though this association remains unclear and require further investigation, particularly concerning daily activities. Psychosocial factors, such as a mother's sense of coherence—which reflects the ability to adapt to stress—have been linked to children's oral health problems, with sleep bruxism moderately associated with parafunctional behaviours and stress.[12,13] However, the analysed psychosocial and socioeconomic variables did not demonstrate significant associations in this context.[14]

Despite existing research on the prevalence and parental awareness of SB in Saudi Arabia,[15,16] there is a notable lack of studies examining the impact of sociodemographic characteristics on SB in children. Therefore, this study aimed to examine the association between sleep bruxism among children and parental sociodemographic characteristics and SB risk factors (eg, nose obstruction).

Materials and Methods

Study Design and Sample

An analytical cross-sectional design was employed with a convenience sample of parents visiting the pediatric dental clinics of four major hospitals in Madinah, Saudi Arabia, who met the inclusion criteria, which were having children under the age of 13, willing to participate, Saudi national and literate. Parents whose children were under long-term medication that induce SB or guardians who were not the child's parents were excluded from the study. Epi Info StatCalc was used to determine the sample size, applying a 95% confidence level and accounting for an expected frequency of 50%. A calculated sample size of 184 participants ensured an acceptable power of 80%. To account for potential incomplete or invalid questionnaires, 250 participants were invited to participate in the study. Incomplete questionnaires particularly with the outcome investigated in this study were excluded from the dataset.

Measures and Data Collection

The data were collected using a paper-pencil self-administered questionnaire which covered various aspects related to SB was given to the parents to complete during their waiting at their visit to the aforementioned four dental care hospitals. The study design was guided by the Health Belief Model.[17] This model explores how parental perceptions of susceptibility, along with their sociodemographic characteristics and cues to action (eg, awareness of symptoms and causes like nose obstruction), influence the likelihood of reporting sleep bruxism in their children. Questions were adapted from different studies that considered the genetic, psychosocial, and behavioural factors, along with the causes and symptoms of SB.[7,18,19] Parental sociodemographic characteristics included age, gender, educational level, employment status and marital status. Additionally, the parents were asked about their own experiences with SB and their children's sociodemographic characteristics, including age, gender, place of residence, birth order, and the type of school the child attended alongside the pattern of school attendance.

Furthermore, the questionnaire explored the children's sleeping characteristics, medical condition, sleep location, hours of sleep, time taken to fall asleep and the frequency of nighttime awakenings. The questionnaire also included a section on the child's SB and the parents' knowledge of its causes and symptoms.

Statistical Analysis

The data analysis was performed using IBM SPSS software (version 28.0, Chicago, IL, USA). A descriptive analysis was conducted to describe the characteristics of the survey respondents and their children using frequencies, percentages, median and interquartile range (IQR). These analyses were performed for the entire sample and further analysed according to the presence or absence of SB in parents and children. A chi-squared bivariate analysis and the Mann Whitney Tests were conducted to explore potential statistically significant associations between explanatory variables and

the dependent variable, which was parents reporting SB (yes, no) in their children. A binary logistic regression was conducted to identify the variables associated with SB among children. Statistical significance was set at $p < 0.05$. The variables included in the logistic regression were selected based on their statistical significance in the Chi-square and the Mann Whitney Test analyses ($p < 0.05$).

Ethical Approval

Ethical clearance to conduct this study was obtained from the Research Ethical Committee of Taibah University College of Dentistry (TUCDREC20170228AlEkhmimi). A cover page was included in the questionnaire to explain the study and provide the researchers' contact details for any research-related queries. No personal information (names or telephone numbers) was required for participation. All the data were collected into one database without differentiation, and information confidentiality was assured. No animals were used in this research. All research procedures on humans followed the ethical standards of the committee responsible for human experimentation (institutional and national) and the Helsinki Declaration of 1975, as revised in 2008.[20]

Results

Of the 250 parents invited to participate, 213 completed the survey and met the inclusion criteria, corresponding to a response rate of 85.2%. Among the participating parents, 117 (55%) were mothers, and the median parental age was 35 years (IQR: 12). Of the parents 68.5% of fathers vs 56% mothers had obtained a university education. Eight-six percent of the responding fathers reported being employed versus 38% of the mothers and 16% were in a single marital status (Table 1).

The prevalence of parent-reported SB among the children was 25.8%. Sleeping bruxism in children living with a single parent was significantly higher (50%, $p < 0.01$) than in those living with both parents (21.2%). Parents who experienced SB themselves were more likely to report that their children also suffered from SB compared to parents who did not experience SB (65% vs 16.8%, $p < 0.001$).

Table 2 shows the bivariate analysis of sociodemographic characteristics of the children based on their parent-reported SB status. Sleep bruxism was significantly more common among children aged 6 years and older than among those aged 5

Table 1 Parents' Sociodemographic Characteristics and Their Association with Reported Sleep Bruxism in Children (N = 213)

Parental Variables		Total N (%) Median [IQR]	Reported Sleep Bruxism in Children (yes)	p-value*
			Present n (%)	
Age (years, M[IQR])		35[12]	38[10]	–
Gender	**Male**	96(45)	24(25)	0.80
	Female	117(55)	31(26.5)	
Marital status	**Married**	179(84)	38(21.2)	**<0.001**
	Single	34(16)	17(50)	
Mother's educational level	**School level**	94(44)	33(35.1)	**0.01**
	University level	119(56)	22(18.5)	
Father's educational level	**School level**	67(31.5)	16(23.9)	0.66
	University level	146(68.5)	39(26.7)	

(*Continued*)

Table 1 (Continued).

Parental Variables		Total N (%) Median [IQR]	Reported Sleep Bruxism in Children (yes)	p-value*
			Present n (%)	
Mother's employment status	**Unemployed**	131(61.5)	34(26)	0.96
	Employed	82(38.5)	21(25.6)	
Father's employment status	**Unemployed**	29(14)	10(34.5)	0.25
	Employed	184(86)	45(24.5)	
Own experiences with sleep bruxism	**Yes**	40(19)	26(65)	**<0.001**
	No	173(81)	29(16.8)	

Note: Chi-square test Bold values signify significant at $p < 0.05$.
Abbreviation: M,IQR, Median and interquartile range.

Table 2 Children's Sociodemographic Characteristics Based on Their Parent-Reported Sleep Bruxism Status

Children's Variables		Total N (%) Median [IQR]	Possible Sleep Bruxism in Children (Yes)	p-value*
			Present n (%)	
Age (years)	**≤ 5 years**	65(30.5)	11(17)	**0.049**
	6–12 years	148(69.5)	44(30)	
Gender	**Male**	130(61)	29(57.7)	0.143
	Female	83(39)	26(47.3)	
Child's position in the family	**Firstborn**	99(46.5)	21(21)	0.325
	Second	35(16.4)	13(37)	
	Middle	37(17.4)	10(27)	
	Youngest	42(19.7)	11(26)	
Medical condition	**Yes**	30(14.1)	12(40)	0.056
	No	183(85.9)	43(24)	
School type	**Private**	49(23)	17(35)	0.060
	Public	105(49.3)	29(28)	
	Below school age	59(27.7)	9(15)	
School attendance pattern	**Regular**	138(64.8)	38(28)	**0.014**
	Irregular	16(7.5)	8(50)	
	Not applicable	59(27.7)	9(15.3)	
Sleep location	**With parents**	70(32.9)	15(21)	0.099
	With brother/sister	102(47.9)	33(32)	
	Alone	41(19.2)	7(17)	

(*Continued*)

Table 2 (Continued).

Children's Variables		Total N (%) Median [IQR]	Possible Sleep Bruxism in Children (Yes)	p-value*
			Present n (%)	
Hours of sleep	**> 8 hours**	118(55.4)	34(29)	0.266
	≤ 8 hours	95(44.5)	21(22)	
Time taken to fall to sleep (minutes)	**≤ 30 min**	80(37.6)	19(24)	0.592
	> 30 min	133(62.4)	36(27)	
Frequency of nighttime awakenings	**Never**	85(39.9)	23(27)	0.940
	Once a night	55(25.8)	14(26)	
	≥ Twice a night	73(34.3)	18(25)	

Note: * Chi-square test, Bold values signify significant at $p < 0.05$.
Abbreviation: IQR; interquartile range.

years and younger (30% vs 17%, $p = 0.049$). Sixty-one percent of respondents had a male child, and 37% reported that their second-born child had SB; however, there were no statistically significant differences between the groups. Less frequent school attendance was associated with SB than regular school attendance (50% vs 28%, $p = 0.014$).

Table 3 shows the bivariate analysis of causes of SB, the parents generally exhibited low awareness of the causes of SB in children. Despite this, differences did not reach statistical significance for most causes, except for nose obstruction. Nasal obstruction was significantly more likely to be perceived as a potential cause of SB by parents of children with the

Table 3 Parents' Awareness of the Causes and Symptoms Related to Sleeping Bruxism in Children

Causes/Symptoms of Sleeping Bruxism			Total n(%)	Possible Sleep Bruxism in Children	p-value*
				Present n (%)	
Causes	**Stress**	**Yes**	62(29)	20(32)	0.169
		No	151(71)	35(23)	
	Personality type	**Yes**	26(21.2)	7(27)	0.891
		No	187(87.8)	48(26)	
	Malocclusion	**Yes**	27(12.7)	9(33)	0.340
		No	186(87.3)	46(25)	
	Nose obstruction	**Yes**	8(3.8)	5(63)	**0.016**
		No	205(96.2)	50(24)	
	Stomach acid reflex	**Yes**	3(1.4)	0	0.303
		No	210(98.6)	55(26)	
	Sleep problems	**Yes**	18(8.5)	3(17)	0.354
		No	195(91.5)	52(27)	
	I do not know	**Yes**	109(51.2)	23(21)	0.107
		No	104(48.8)	32(31)	

(*Continued*)

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Table 3 (Continued).

Causes/Symptoms of Sleeping Bruxism			Total n(%)	Possible Sleep Bruxism in Children	p-value*
				Present n (%)	
Symptoms	**Teeth grinding**	**Yes**	64(30)	22(34)	0.062
		No	149(70)	33(22)	
	Teeth sensitivity	**Yes**	29(13.6)	8(28)	0.815
		No	184(86.4)	47(26)	
	Teeth flattened or fracture	**Yes**	17(8)	4(24)	0.822
		No	196(92)	51(26)	
	Teeth/jaw/face pain	**Yes**	29(13.6)	13(45)	**0.012**
		No	184(86.4)	42(23)	
	Tired jaw muscles	**Yes**	19(9)	8(42)	0.089
		No	194(91)	47(24)	
	Earache	**Yes**	18(8.5)	4(22)	0.715
		No	195(91.5)	51(26)	
	Headache	**Yes**	24(11.3)	4(17)	0.277
		No	189(88.7)	51(27)	
	Cheek biting	**Yes**	18(8.5)	5(28)	0.843
		No	195(91.5)	50(26)	
	Tongue indentations	**Yes**	4(2)	**0**	0.231
		No	207(98)	55(27)	
	I do not know	**Yes**	92(43.2)	8(9)	**0.001**
		No	121(56.8)	47(39)	

Note: *Chi-square test, Bold values signify significant at p<0.05.

condition (63% vs 24%, p = 0.016). Similarly, parents who reported that their children had SB were less informed about the symptoms associated with the condition. Among these symptoms, teeth, jaw and face pain were the most significantly recognised (45% vs 23%, p = 0.012).

In Figure 1 and Table 4, the logistic regression shows that the odds ratios [95% confidence interval] for parents reporting their children as having SB were as follows: 8.62 [3.68–20.16], p < 0.001 for the parents who self-reported their own SB; 3.41 [1.39–8.39], p = 0.007, for the parents who were single; and 5.49 [1.04–29.08], p = 0.043 for the parents who were aware of nose obstruction as a cause of bruxism. However, the mother's education level and awareness of symptoms such as teeth, jaw, or face pain as related to bruxism were negatively associated with SB among children, ie, children whose mother had an education level less than university and were not aware that teeth/jaw/face pain related to bruxism were 0.35 and 0.36 less likely to report their children as having SB (0.35 [0.16–0.75], p = 0.007; 0.36 [0.14–0.97], p = 0.043). The other variables showed a non-significant association with children's SB, and the model explained between 24.1% (Cox and Snell R squared) and 35.3% (Nagelkerke R squared) of the variance in bruxism.

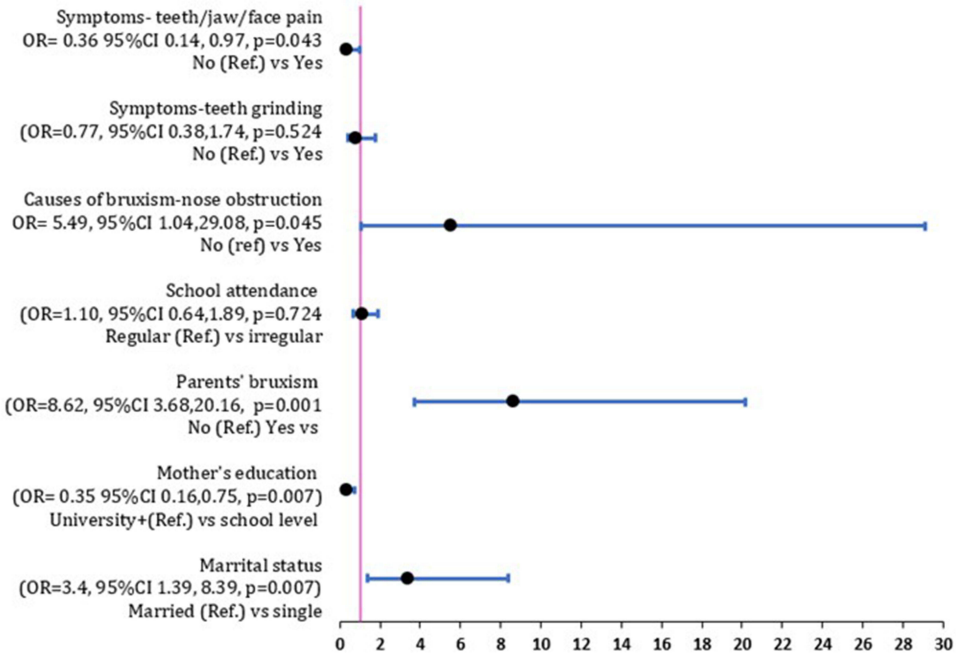

Figure 1 Logistic regression forest plot for odd ratios and 95% confidence intervals for variables associated with likelihood of parents reporting sleeping bruxism among their children.

Discussion

This study highlighted the significant association of SB among children in SA with parental sociodemographic characteristics and SB risk factots. A notable finding is that children whose parents self-reported SB were significantly more likely to experience the condition. This finding aligns with previous studies suggesting genetic influences on SB, as many etiologic factors of malocclusion have genetic origins, with research showing that bruxism in parents is significantly associated with bruxism in their children.[11,21–23] Another explanation is that parents with personal experience or awareness of SB, including recognizing nose obstruction as a potential cause, may be more attuned to identifying SB symptoms in their children. However, these similarities between parents and children, which may contribute to SB, are

Table 4 Logistic Regression Predicting Likelihood of Reporting Children's Sleeping Bruxism (N = 213)

Explanatory Variable	B	Wald	OR (95% CI)	p-value
Parent reporting bruxism				
No			Reference	
Yes	2.154	24.65	8.62(3.68–20.16)	**<0.001**
Mother's education				
School level			Reference	
University level	−1.054	7.31	0.35(0.16–0.75)	**0.007**
Marital status				
Married			Reference	
Single	1.227	7.16	3.41(1.39–8.39)	**0.007**
School attendance pattern				
Regular			Reference	
Irregular	0.097	0.13	1.10(0.64–1.89)	0.724

(*Continued*)

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Table 4 (Continued).

Explanatory Variable	B	Wald	OR (95% CI)	p-value
Causes of bruxism – nose obstruction				
No			Reference	
Yes	1.702	4.00	5.49(1.04–29.08)	**0.045**
Symptoms – teeth grinding				
No			Reference	
Yes	−0.267	0.41	0.77(0.38–1.74)	0.524
Symptoms – teeth/jaw/face pain				
No			Reference	
Yes	−1.017	4.08	0.36(0.14–0.97)	**0.043**

Note: Bold values indicate significant at p<0.05.

not solely attributed to genetic factors. The potential familial or behavioural link to SB in children may arise from shared environmental influences such as lifestyle habits, stress management, and sleep routines, where children mimic their parents' behaviours.[24]

Additionally, children raised by single parents were at higher risk of experiencing SB compared to those from two-parent households, suggesting the potential influences of family structure on children' stress events, separation anxiety, sleep behaviour or emotional disturbances.[25–29] Therefore, future intervention addressing family stressors, especially for single parent, may help reduce risks in children. Healthcare providers should also consider family dynamics and parental behaviours when developing treatment plan for paediatric SB.

Lower maternal education and limited awareness of bruxism-related symptoms were associated with reduced likelihood of parents reporting SB in their children. This finding is in line with previous research suggesting that education plays a role in health awareness and reporting accuracy.[30] Furthermore, parents who identified nose obstruction as a cause of SB were more likely to report SB in their children, which aligns with previous research suggesting that nasal obstruction can disrupt sleep and trigger bruxism.[31] These results highlight the need for a multidisciplinary approach, involving paediatricians, dentist, sleep specialists to screen and mang SB effectively.

One interesting finding regarding the children's age is that SB was more prevalent in children aged 6 years and older, compared to the children below 6 years old. This may be related to developmental milestones and physiological adjustment at this age. The completion of the deciduous dental arch around age 2.5 and the onset of tooth replacement around 5–6 years of age could contribute to these differences.[32] Furthermore, children in this age group may reach new milestones in social-emotional development, developing more complex coping strategies for emotional situations.

Implications

Understanding the factors associated with probable SB is important for professionals to comprehend the mechanisms underlying this condition and provide guidance to parents and guardians for prevention or mitigation. The current study contributes to our understanding of the sociodemographic characteristics associated with the possibility of sleep bruxism in children. Sleep bruxism in children was significantly associated with factors including parents who self-reported their own SB, single parents, and parents who were aware of nose obstruction as a potential cause of bruxism. Further investigations are needed to explore additional factors related to SB.

Limitations

Several limitations should be acknowledged, as they may limit the generalisability of certain conclusions. The inherent weakness of this study was its reliance on self-reported parent questionnaires about bruxism, which can be influenced by subjective limitations and recall bias. Clinical assessment is a more objective method for assessment

bruxism in parents and their children. While parental reporting of teeth grinding is a reliable method for diagnose bruxism in children, further studies should consider incorporating clinical signs and symptoms of SB in addition to questionnaires. Furthermore, the cross-sectional nature of the study design allows for the demonstration of associations but not causality, necessitating cautious interpretation of the results. It is also important to acknowledge that the sample was a convenience sample, limiting the generalisability of the study's outcomes to other populations. Another limitation is the overrepresentation of women among the respondents, this gender imbalance may introduce bias, as mothers might report their children's SB, differently from fathers due to differences in caregiving roles, stress levels, or health awareness. As a result, the findings may limit the study's reflection of diverse family dynamics and the generalisability of its outcomes. Future studies should incorporate validated child sleep questionnaires and ensure psychometric validation of the SB knowledge survey to enhance the reliability and generalizability of the findings.

Conclusion

The current study enhance our understanding of how parental factors, including self-reported SB, marital status, educational background and awareness of SB causes and symptoms, impact the prevalence of SB. Understanding the influence of parental sociodemographic characteristics and SB risk factors on SB in children is important for professionals to comprehend the underlying mechanisms of the condition and provide guidance to parents and guardians for its prevention or management. Further investigations are needed to explore additional factors related to SB.

Institutional Review Board Statement

The study was conducted in accordance with the Declaration of Helsinki and approved by the Research Ethical Committee of Taibah University College of Dentistry (TUCDREC20170228AlEkhmimi).

Informed Consent Statement

Informed consent was obtained from all parents of subjects involved in the study.

Data Sharing Statement

The data presented in this study are available on request from the corresponding author. The data are not publicly available due to specific ethical and privacy considerations.

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Author Contributions

All authors made a significant contribution to the work reported, whether that is in the conception, study design, execution, acquisition of data, analysis and interpretation, or in all these areas; took part in drafting, revising or critically reviewing the article; gave final approval of the version to be published; have agreed on the journal to which the article has been submitted; and agree to be accountable for all aspects of the work.

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Disclosure

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References

1. Lobbezoo F, Ahlberg J, Glaros AG, et al. Bruxism defined and graded: an international consensus. *J Oral Rehabil*. 2013;40(1):2–4. doi:10.1111/joor.12011
2. Lobbezoo F, Ahlberg J, Raphael KG, et al. International consensus on the assessment of bruxism: report of a work in progress. *J Oral Rehabil*. 2018;45(11):837–844. doi:10.1111/joor.12663
3. Medicine AAo S. International classification of sleep disorders—third edition (ICSD-3). *AASM Resour Libr*. 2014;281:2313.
4. Lavigne GJ, Rompré PH, Poirier G, Huard H, Kato T, Montplaisir JY. Rhythmic masticatory muscle activity during sleep in humans. *J Dent Res*. 2001;80(2):443–448. doi:10.1177/00220345010800020801
5. Ohrbach R, Fillingim RB, Mulkey F, et al. Clinical findings and pain symptoms as potential risk factors for chronic TMD: descriptive data and empirically identified domains from the OPPERA case-control study. *J Pain*. 2011;12(11 Suppl):T27–45. doi:10.1016/j.jpain.2011.09.001
6. Murali RV, Rangarajan P, Mounissamy A. Bruxism: conceptual discussion and review. *J Pharm Bioallied Sci*. 2015;7(Suppl 1):S265–70. doi:10.4103/0975-7406.155948
7. Bulanda S, Ilczuk-Rypuła D, Nitecka-Buchta A, Nowak Z, Baron S, Postek-Stefańska L. Sleep bruxism in children: etiology, diagnosis, and treatment-A literature review. *Int J Environ Res Public Health*. 2021;18(18):9544. doi:10.3390/ijerph18189544
8. Oliveira MT, Bittencourt ST, Marcon K, Destro S, Pereira JR. Sleep bruxism and anxiety level in children. *Brazilian Oral Res*. 2015;29:1–5. doi:10.1590/1807-3107BOR-2015.vol29.0024
9. Lee YH. Relationship analogy between sleep bruxism and temporomandibular disorders in children: a narrative review. *Children*. 2022;910. doi:10.3390/children9101466.
10. Machado E, Dal-Fabbro C, Cunali PA, Kaizer OB. Prevalence of sleep bruxism in children: a systematic review. *Dental Press j Orthodontics*. 2014;19(6):54–61. doi:10.1590/2176-9451.19.6.054-061.oar
11. Serra-Negra JM, Paiva SM, Seabra AP, Dorella C, Lemos BF, Pordeus IA. Prevalence of sleep bruxism in a group of Brazilian schoolchildren. *European Arch Paediatric Dentistry*. 2010;11(4):192–195. doi:10.1007/bf03262743
12. Bonanato K, Paiva SM, Pordeus IA, Ramos-Jorge ML, Barbabela D, Allison PJ. Relationship between mothers' sense of coherence and oral health status of preschool children. *Caries Res*. 2009;43(2):103–109. doi:10.1159/000209342
13. Castroflorio T, Bargellini A, Rossini G, Cugliari G, Rainoldi A, Deregibus A. Risk factors related to sleep bruxism in children: a systematic literature review. *Arch Oral Biol*. 2015;60(11):1618–1624. doi:10.1016/j.archoralbio.2015.08.014
14. Gomes MC, É T N, Perazzo MF, et al. Evaluation of the association of bruxism, psychosocial and sociodemographic factors in preschoolers. *Brazilian Oral Res*. 2018;32:e009. doi:10.1590/1807-3107bor-2018.vol32.0009
15. AlEidan A, Al-Shamrani M, AlGhofaily M, et al. Prevalence of sleep problems and habits among children in Saudi Arabia: a cross-sectional study. *Saudi med j*. 2023;44(3):289–295. doi:10.15537/smj.2023.44.3.20220894
16. Hafiz Z. Parental awareness of bruxism in Saudi Children: a public health concern. *Biosci Biotechnol Res Commu*. 2021;14(3):974–980. doi:10.21786/bbrc/14.3.11
17. Glanz K. CHAPTER 6 - current theoretical bases for nutrition intervention and their uses. In: Coulston AM, Rock CL, Monsen ER, editors. *Nutrition in the Prevention and Treatment of Disease*. Academic Press; 2001:83–93.
18. Sousa HCS, Lima MDM, Dantas Neta NB, Tobias RQ, Moura MS, Moura L. Prevalence and associated factors to sleep bruxism in adolescents from Teresina, Piauí. *Rev Bras Epidemiol*. 2018;21:e180002. doi:10.1590/1980-549720180002
19. Clementino MA, Siqueira MB, Serra-Negra JM, Paiva SM, Granville-Garcia AF. The prevalence of sleep bruxism and associated factors in children: a report by parents. *Eur Arch Paediatr Dent*. 2017;18(6):399–404. doi:10.1007/s40368-017-0312-x
20. Wma WDo H Ethical principles for medical research involving human subjects. World Med Assoc. Available from: https://www.wma.net/policies-post/wma-declaration-of-helsinki/. Accessed 15, October 2024.
21. Ahlberg J, Piirtola M, Lobbezoo F, et al. Correlates and genetics of self-reported sleep and awake bruxism in a nationwide twin cohort. *J Oral Rehabil*. 2020;47(9):1110–1119. doi:10.1111/joor.13042
22. Lobbezoo F, Visscher CM, Ahlberg J, Manfredini D. Bruxism and genetics: a review of the literature. *J Oral Rehabil*. 2014;41(9):709–714. doi:10.1111/joor.12177
23. Strausz T, Strausz S, Palotie T, Ahlberg J, Ollila HM. Genetic analysis of probable sleep bruxism and its associations with clinical and behavioral traits. *Sleep*. 2023;46(10). doi:10.1093/sleep/zsad107
24. Restrepo-Serna C, Winocur E. Sleep bruxism in children, from evidence to the clinic. A systematic review. *Front Oral Health*. 2023;4:1166091. doi:10.3389/froh.2023.1166091
25. Craciun AE, Cerghizan D, Popsor S, Bica C. Bruxism in children and adolescents and its association with some possible aetiological factors. *Current Health Sci J*. 2023;49(2):257–262. doi:10.12865/chsj.49.02.257
26. Yazıcıoğlu İ, Ray P. Evaluation of anxiety levels in children and their mothers and appearance of sleep bruxism in Turkish children and associated risk factors: a cross-sectional study. *J Oral Facial Pain Headache*. 2022;36(2):147–154. doi:10.11607/ofph.3011
27. Restrepo CC, Alvarez E, Jaramillo C, Vélez C, Valencia I. Effects of psychological techniques on bruxism in children with primary teeth. *J Oral Rehabil*. 2001;28(4):354–360. doi:10.1046/j.1365-2842.2001.00663.x
28. Monaco A, Ciammella NM, Marci MC, Pirro R, Giannoni M. The anxiety in bruxer child. A case-control study. *Minerva stomatologica*. 2002;51(6):247–250.
29. Garmroudinezhad Rostami E, É T, Huynh N, et al. High separation anxiety trajectory in early childhood is a risk factor for sleep bruxism at age 7. *Sleep*. 2020;43(7). doi:10.1093/sleep/zsz317
30. Pleasant A, Kuruvilla S. A tale of two health literacies: public health and clinical approaches to health literacy. *Health Promot Int*. 2008;23(2):152–159. doi:10.1093/heapro/dan001
31. Grechi TH, Trawitzki LV, de Felício CM, Valera FCP, Alnselmo-Lima FC, de Felício CM. Bruxism in children with nasal obstruction. *Int J Pediatric Otorhinolaryngol*. 2008;72(3):391–396. doi:10.1016/j.ijporl.2007.11.014
32. Tachibana M, Kato T, Kato-Nishimura K, Matsuzawa S, Mohri I, Taniike M. Associations of sleep bruxism with age, sleep apnea, and daytime problematic behaviors in children. *Oral Dis*. 2016;22(6):557–565. doi:10.1111/odi.12492