

"Association Between Stress, Anxiety, and Bruxism in School-Aged Children: A Cross-Sectional Study"

Pérez Porras B¹, Trejo Tejeda SE¹, Maldonado Ramírez MA¹, Castillo Leyva MD¹, Barreto Orta Y¹, Luna García B¹, Palomares Rodríguez MA¹

¹Faculty of Dentistry Tamaulipas, México. Autonomous University of Tamaulipas

Corresponding Author: Palomares Rodriguez Mario Alberto

Abstract : *Bruxism is a parafunctional activity characterized by tooth clenching and grinding during sleep or wakefulness. It is considered one of the most detrimental parafunctional disorders affecting the stomatognathic system and has a multifactorial etiology. Psychological factors such as stress and anxiety have been identified as potential contributors to its development and progression. **Objectives:** To determine the relationship between bruxism, stress, and anxiety in children aged 6 to 10 years. **Methods:** An observational, descriptive, cross-sectional study was conducted on 50 children of both sexes aged 6–10 years who met the inclusion criteria between May and December 2024. Clinical examinations were performed to identify dental wear and bruxism. Anxiety levels were assessed using the Children's Manifest Anxiety Scale-Revised, Second Edition (CMASR-2). Data were analyzed to establish associations between dental wear, bruxism severity, and stress/anxiety levels. **Results:** Among the 50 participating children, 7 (14%) showed no evidence of dental wear or bruxism, 15 (30%) presented dental wear associated with stress, 13 (26%) exhibited mild bruxism, and 15 (30%) demonstrated moderate-to-severe bruxism associated with pathological anxiety. Significant differences were observed between stress/anxiety percentile scores and both dental wear ($p = 0.011$) and bruxism severity ($p = 0.003$). **Conclusions:** A significant relationship was identified between stress and dental wear, as well as between anxiety and bruxism. Higher stress and anxiety levels were associated with increased severity of bruxism among school-aged children.*

KEYWORDS: Stress; Anxiety; Bruxism; Children; Dental Wear.

Date of Submission: 05-08-2026

Date of acceptance: 17-08-2026

I. INTRODUCTION

Childhood is characterized by numerous events, changes, and challenges that require substantial adaptive efforts and the mobilization of coping resources. During this developmental stage, children must continuously adjust to new social, academic, and emotional demands.

Stress and anxiety are psychological conditions that can significantly influence oral health. Their effects extend beyond patient management during dental treatment and may also affect treatment adherence and long-term oral health outcomes.

According to Compas et al, González-Forteza et al, and other authors, although stressors may be similar among individuals, responses vary depending on personal vulnerability and psychological characteristics. Consequently, an event perceived as stressful by one child may not necessarily produce the same reaction in another.

Gore, Eckenrode, Lucio, and colleagues have reported that stressful life experiences may adversely affect individual well-being and increase susceptibility to both physical and psychological disorders.

Stress is generally defined as a physiological and psychological response triggered by identifiable situations capable of disrupting an individual's equilibrium. Such disturbances may lead to neurophysiological, cognitive, and emotional consequences that compromise adaptation and overall functioning.

Orozco et al, reported that stress may exert both positive and negative effects; however, younger children tend to be more vulnerable to novel experiences, making stress potentially more intense and harmful.

Anxiety, often manifested as fear or apprehension, can be described as an inappropriate response to adverse or threatening situations. Beyond behavioral manifestations, anxiety may also produce physiological alterations, including increased heart rate, muscular tension, and gastrointestinal discomfort.

Sandín and Sierra emphasized the importance of distinguishing between normal and pathological anxiety. Although both share common psychological foundations, pathological anxiety is associated with more severe consequences and may interfere significantly with daily functioning.

Bruxism has been classified as centric or eccentric. Centric bruxism refers primarily to tooth clenching in centric occlusion, resulting in limited occlusal wear but often causing substantial muscular damage. In contrast, eccentric bruxism involves grinding movements during mandibular excursions, typically producing wear on non-functional tooth surfaces.

Given the growing recognition of psychological influences on oral health, this study aimed to evaluate the relationship between stress, anxiety, and bruxism in school-aged children.

II. MATERIALS AND METHODS

Following approval by the Institutional Bioethics Committee, an observational, descriptive, cross-sectional study was conducted involving children aged 6 to 10 years presenting with wear on primary or permanent anterior and/or posterior teeth.

Eligible participants were recruited from the Pediatric Dentistry Clinic. Data collection included demographic information such as name, age, date of birth, sex, and guardian contact information.

Parents or legal guardians completed an anamnestic questionnaire designed to support the diagnosis of bruxism and assess the child's physiological, social, and academic development. Clinical examinations were performed by previously trained and calibrated examiners. Inter-examiner reliability demonstrated a Kappa coefficient of 0.80 and an agreement percentage of 0.92.

Anxiety levels were evaluated using the Children's Manifest Anxiety Scale-Revised, Second Edition (CMASR-2) developed by Reynolds and Richmond. This instrument provides age-adjusted percentile scores based on several domains, including defensiveness, physiological anxiety, social anxiety, and restlessness. Scores above the established threshold were considered indicative of clinically relevant anxiety.

Each participant received a unique identification code to ensure confidentiality and facilitate data management. All collected information was entered into a standardized database for subsequent statistical analysis aimed at identifying associations between stress, anxiety, dental wear, and bruxism.



Figure 1. Pediatric dentistry clinic and study participants completing the form.



Figure 2. Pediatric dentistry postgraduate students examining the study patients.

III. RESULTS

The study included 50 pediatric patients treated at the Pediatric Dentistry Graduate Clinic of the Faculty of Dentistry, Autonomous University of Tamaulipas. The sample consisted of 29 boys (58%) and 21 girls (42%), with a mean age of 6.92 ± 0.92 years.

Among all participants, 15 children (30%) presented dental wear, 13 (26%) exhibited mild bruxism, and 15 (30%) demonstrated moderate-to-severe bruxism.

No statistically significant association was found between sex and dental wear ($p = 0.851$). Similarly, no significant differences were observed between sex and bruxism severity ($p = 0.302$).

Table 1. Comparison of gender versus dental wear.

		Wear		Total	<i>p</i> value
		Absence	Presence		
Gender	Male	20	9	29	0.851
	Female	15	6	21	
Total		35	15	50	

The mean stress/anxiety percentile score among participants was $37.03 \pm 27.01\%$.

A statistically significant difference was identified between stress/anxiety percentile scores and dental wear ($p = 0.011$). Children without dental wear showed a mean percentile score of $22.47 \pm 4.60\%$, whereas those presenting dental wear demonstrated significantly higher scores ($43.27 \pm 30.16\%$).

Table 2. Comparison of gender versus bruxism

		Bruxism			Total	p value
		Absence	Low	Moderate/ Severe		
Gender	Male	15	6	8	29	0.302
	Female	7	7	7	21	
Total		22	13	15	50	

Furthermore, significant differences were observed between stress/anxiety percentile scores and bruxism severity ($p = 0.003$). Children without bruxism exhibited a mean score of $16.50 \pm 9.75\%$, while those with mild bruxism demonstrated a mean score of $38.00 \pm 5.60\%$. The highest values were observed among children with moderate-

Table 3. Descriptive statistics for stress/anxiety percentiles in relation to dental wear.

			Percentile	p value
Wear	Absence	Mean	22.47	0.011
		SD	4.60	
		Min.	16.00	
		Max.	28.00	
		Range	12.00	
	Presence	Mean	43.27	
		SD	30.16	
		Min.	0.50	
		Max.	99.00	
		Range	98.50	



Figure 3 Comparison of stress/anxiety percentiles in relation to dental wear.

Table 4. Descriptive statistics for stress/anxiety percentiles by bruxism level.

			Percentile	<i>p</i> value
Bruxism	Absence	Mean	16.50	0.003
		SD	9.75	
		Min.	2.00	
		Max.	28.00	
		Range	26.00	
	Low	Mean	38.00	
		SD	5.60	
		Min.	31.00	
		Max.	46.00	
		Range	15.00	
	Moderate/Severe	Mean	66.30	
		SD	28.36	
		Min.	0.50	
		Max.	99.00	
		Range	98.50	

Post hoc analyses confirmed statistically significant differences among all bruxism severity categories ($p < 0.05$).

Table 5. Post-hoc comparisons

Multiple Comparisons		
Bruxism		Sig.
Absence	Low	0.003
	Moderate/Severe	0.000
Low	Moderate/Severe	0.000

* The difference between the means is significant at the 0.05 level.

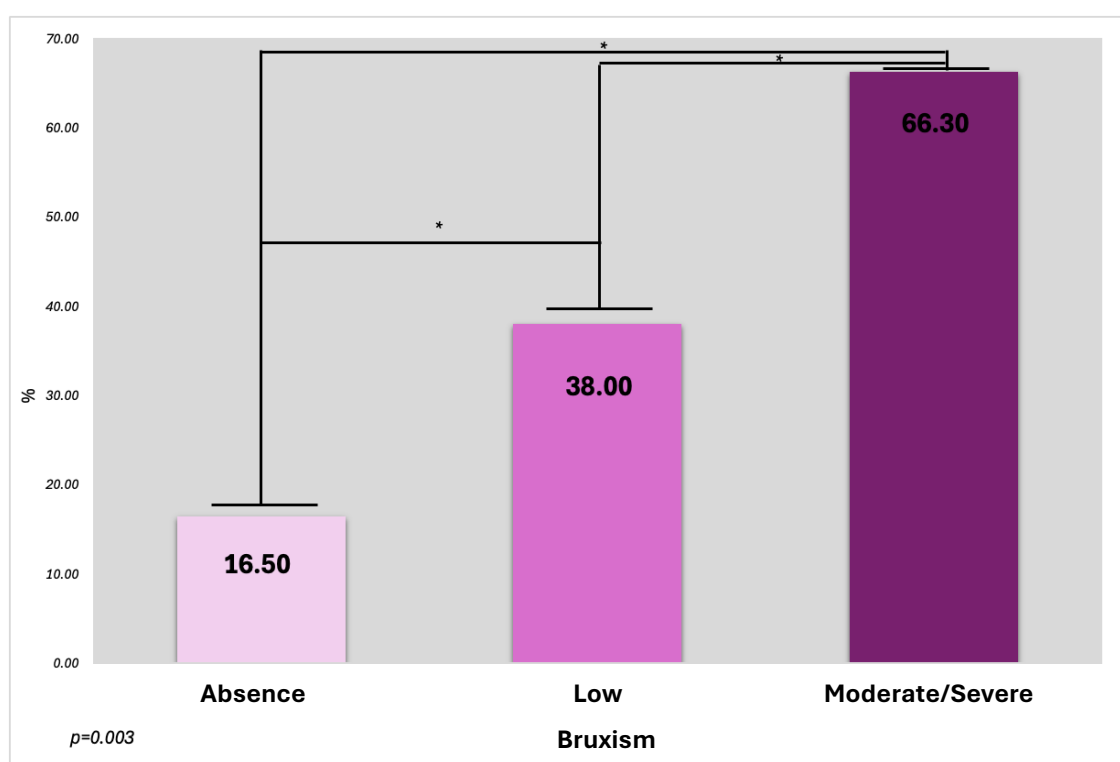


Figure 4. Comparison of stress/anxiety percentiles relative to bruxism levels.

IV. DISCUSSION

Findings of the present study support previous evidence suggesting that psychological factors play a relevant role in the development of bruxism during childhood.

Orozco & Giménez reported that younger children are particularly vulnerable to stressful experiences. Similarly, our results indicate that stress-related events may substantially influence emotional and behavioral responses, contributing to oral manifestations such as dental wear and bruxism.

Consistent with the observations of Gore, Eckenrode, Lucio, and colleagues, stressful life experiences appear to negatively affect children's well-being and may contribute to elevated anxiety levels. Situations such as bullying,

family conflicts, and social insecurity were frequently associated with increased anxiety scores among participants. (Méndez, Morales, Serrano, Ramjford).

Compas and González-Forteza emphasized that stress responses depend largely on individual vulnerability and psychological characteristics. Our findings corroborate this perspective, as children exposed to similar stressful situations demonstrated varying emotional responses and oral manifestations.

The association observed between stress, anxiety, and bruxism is also consistent with previous reports describing neurophysiological consequences of emotional distress. Children exposed to threatening or adverse experiences often exhibited signs compatible with bruxism and dental wear.

Within the limitations of this in vitro study, the 3D-printed composite Moreover, the CMASR-2 questionnaire enabled differentiation between adaptive physiological anxiety and pathological anxiety. While some children demonstrated elevated scores in isolated domains, pathological anxiety was more commonly observed among participants with moderate-to-severe bruxism.

Regarding bruxism classification, centric bruxism was more prevalent than eccentric bruxism. However, eccentric bruxism produced more extensive wear patterns, particularly on the palatal surfaces of maxillary anterior primary teeth. (Arnold, Trianes, Castañeda).

Overall, the present findings reinforce the concept that emotional and psychological factors should be considered when evaluating and managing pediatric patients presenting with bruxism.

V. CONCLUSION

1. Bruxism was identified in both sexes, with comparable distributions of mild and severe forms among boys and girls.
2. Dental wear associated with stress was observed in 30% of participants, predominantly affecting the maxillary central incisors.
3. Mild bruxism was identified in 26% of children and was primarily associated with adaptive or physiological anxiety.
4. Moderate-to-severe bruxism was observed in 30% of participants and was associated with pathological anxiety involving all evaluated anxiety domains.
5. A significant relationship was identified between stress, anxiety, and bruxism. Children with higher anxiety and stress scores exhibited greater severity of dental wear and bruxism.

REFERENCES

- [1]. Arnold L. E. (2020). *Childhood Stress*. New York: John Wiley & Sons. Inteligencia emocional percibida y estrategias de afrontamiento al estrés en profesores de enseñanza primaria: propuesta de un modelo explicativo con ecuaciones estructurales (SEM). *Revista de psicología social*, 26(3), 413-425.
- [2]. Castañeda R., Campos C., Del Castillo A. (2022). Relaciones entre ansiedad-rasgo y ansiedad-estado en competiciones deportivas. *Cuadernos de Psicología del Deporte*, vol. 12, núm. 2, 202, pp. 9-16 Universidad de Murcia Murcia, España.
- [3]. Compas B., Davis, G., Forsythe, C. & Warner, B. (2021). Assessment of major and daily stress full events during adolescence. The Adolescent Perceived Events Scale. *Journal of Consulting and Clinical Psychology*, 55(4), 534-541.
- [4]. Giménez P., Correché, M. y Rivarola, M. (2022). Situaciones cotidianas estresantes en la niñez y adolescencia. *Revista diálogos*, 3 (2), 109-115.
- [5]. González-Forteza C, & Andrade Palos. (2023), "Estrés cotidianos, malestar depresivo e ideación suicida en adolescentes mexicanos", *Acta Psiquiátrica y Psicológica de América Latina* 40 (2), 156-163.
- [6]. Gore T, Eckenrode I, Borge A, & Loncaric D. (2021). Adolescent coping with everyday stressors: A seven nation-study with youth from central, Eastern, Southern and northern Europe. *European Journal of developmental psychology*, 4 (2), 129-156.
- [7]. Lucio E, Barcelata B, Durán C. & Villafraña L. (2023). Sucesos de vida estresantes: Un estudio transcultural de adolescentes venezolanos y mexicanos. *Revista Iberoamericana de Diagnóstico y Evaluación Psicológica*, 17(1), 123-138.
- [8]. Méndez FX, Ingles CJ, Hidalgo MD, García-Fernández JM, & Quiles MJ. (2020). Los miedos en la infancia y la adolescencia: un estudio descriptivo. *Revista Electrónica de Motivación y Emoción*, 6(13), 4-16.

- [9]. Morales F, Trianes M. y Miranda J. (2021). Diferencias por sexo y edad en el afrontamiento infantil del estrés cotidiano. *Electronic Journal of Research in Educational Psychology*, 10 (1), 95 – 110.
- [10]. Orozco L. A, Almanza A.M. y Ybarra J.L. (2022) Estilos de afrontamiento al estrés y salud mental en niños de 6 a 9 años. *Eurythmie*, 1 (1), 6-13.
- [11]. Ramjford y Ash. “Bruxismo céntrico y excéntrico”, oclusión (2ª edición) Saunders. Philadelphia.2002.
- [12]. Sandin B., Valiente, R.M., Chorot, P., Santed, M.A. & Lostao, L. (2023). Sensibilidad a la ansiedad versus rasgo de ansiedad en la predicción del nivel de miedos. *Análisis y Modificación de Conducta*, 33, 140-158.
- [13]. Serrano C, Rojas A, y Ruggero C. (2022). Depresión, ansiedad y rendimiento académico en estudiantes universitarios. *Revista Intercontinental de Psicología y Educación*. 15 (1), 47-60.
- [14]. Sierra J., Ortega, V. y Zubeidat, I. (2023). Ansiedad, angustia y estrés: tres conceptos a diferenciar. Brasil, *Revista Mal-estar E Subjetividade*, 3(1), p. 10 – 59.
- [15]. Trianes M. (2020). Estrés en la infancia: su prevención y tratamiento. Madrid: Narcea. *Revista iberoamericana de educación* 33 (1), 30-35.