



The Emotion Regulation, Trait Anger, And Anger Expression Styles in Bruxism: A Cross-Sectional Study Among Dental Patients

Bruksizmde Duygu Düzenleme, Sürekli Öfke ve Öfke İfade Tarzlarının İncelenmesi: Diş Kliniğine Başvuran Hastalarla Kesitsel Bir Çalışma

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ABSTRACT

Objective: This study aimed to investigate emotion regulation, trait anger, and anger expression styles in Bruxism. **Materials and Methods:** This cross-sectional study was conducted between December 2023 and March 2024, where 181 dental patients were recruited. Sociodemographic Information Form, Difficulties of Emotion Regulation Scale (DERS), and The State-Trait Anger Inventory (STAXI) were used as self-reported data collection tools. Ethical approval was obtained. We evaluated the difference between Bruxism and non-bruxism in terms of instruments and predictors of Bruxism. **Results:** The outcomes indicated that bruxists had higher trait anger, anger-in, and anger-out scores in terms of non-bruxist ($p<0.05$). A significantly positive relationship existed between the DERS, trait anger, and anger-in and anger-out ($p<0.001$). It was found that models including; -DERS-impulse, DERS-clarity, and the presence of Bruxism were statistically found to be significant and identified variables that explained 36% (adjusted) of the variance in the anger-out ($p<0.001$). Additionally, The interaction between alcohol use and anger-out score demonstrated a 13.1% effect on the likelihood of being diagnosed with Bruxism (R^2 de Nagelkerke =0,131; $p<0.05$). **Conclusion:** This study underscores the psychosomatic sides of Bruxism and its association with psychological predictors

Keywords: *Bruxism, Emotion Regulation, Anger, Dental Patients*

ÖZ

Amaç: Bu çalışma, bruksizmde duygu düzenleme, sürekli öfke ve öfke ifade tarzlarının incelenmesi amaçlamıştır. **Materyal ve Metod:** Kesitsel desende gerçekleştirilen bu araştırma, Aralık 2023 ve Mart 2024 tarihleri arasında diş kliniğine başvuran 181 kişinin katılımıyla gerçekleşmiştir. Sosyodemografik Bilgi Formu, Duygu Düzenleme Güçlüğü Ölçeği (DDGÖ) ve Durumluk-Sürekli Öfke Ölçeği (DSÖÖ) veri toplama araçları olarak kullanılmıştır. Araştırmanın etik onayı alınmıştır. Araştırmanın sonuçları Bruksizm ve Bruksizm olmayanlar arasındaki fark ve bruksizmin yordayıcıları açısından değerlendirilmiştir. **Bulgular:** Sürekli öfke, içe-öfke ve dışa-öfke puanları, Bruksizm tanısı olanlarda daha yüksek bulunmuştur ($p<0.05$). DDGÖ ile sürekli öfke, içe-öfke ve dışa-öfke puanları arasında pozitif yönde anlamlı bir ilişki vardır ($p<0.001$). DDGÖ-dürtü, DDGÖ-açıklık ve Bruksizmi içeren model, dışa-öfkenin %36'sını açıklamıştır ($p<0.001$). Alkol kullanımı ile dışa-öfkenin birlikteliği Bruksizm tanısı alma üzerinde %13,1'lik bir etki göstermiştir (R^2 de Nagelkerke =0,131; $p<0,05$). **Sonuç:** Bu çalışma bruksizmin psikosomatik yönlerini ve psikolojik belirleyicilerle olan ilişkisini vurgulamaktadır.

Anahtar Kelimeler: *Bruksizm, Duygu düzenleme, Öfke, Diş hastaları*

INTRODUCTION

Bruxism is defined as repetitive masticatory muscle activities that might occur during sleep or awake. It is characterized by sustained teeth contact or grinding linked with rigidity or pushing of the mandible. Bruxism is a common problem among adults and divides into sleep and awake bruxism (1,2). The etiology of bruxism is multifactorial, and psychological factors such as stress, anxiety, and depression have been associated with the condition (2,3). Additionally, specific personal characteristics, such as psychosocial factors, pathophysiological factors, sleep disorders, and dopaminergic system involvement, have also been linked to the etiology of bruxism (4,5,6). Thus, psychological factors and other etiological factors can contribute to the development of bruxism.

Stress and anxiety could lead to bruxism, increasing muscle tension by grinding and clenching. Although stress and anxiety were associated with bruxism in the literature, the predictors of those, such as emotion regulation and anger, were studied in a few studies (7,8). The role of emotion dysregulation and anger expressions cannot be disregarded in bruxism (9).

Anger is one of the basic emotions of human beings associated with various health problems and is frequently expressed in interpersonal relationships (10,11). Anger is divided into trait and situational. Situational anger refers to the anger individuals experience in the face of certain events. On the other hand, trait anger refers to how often situational anger is experienced (12). It is expected for individuals to feel anger in the face of events or situations that are complex for them. However, it is necessary to focus on how anger is expressed and how often it is felt (10,11). In the literature, it is reported that inappropriate anger expression styles negatively affect physical and mental health. A study by Molina et al. (8) found that individuals with bruxism had higher levels of introverted anger than controls. The observations of dentists in their daily practice show that anger and frustration can lead to bruxism (7).

There is a relationship between anger and emotion regulation. Emotion regulation is automatic and controlled processes that modify emotions' intensity, duration, and initiation (13). Anger can affect emotion regulation skills and can also be affected by emotion regulation skills (14). Those who can not express their emotions tend to have more tense muscles due to a high stress level. The response to stressful situations includes sympathetic activities such as rapid heart rate and breathing, increased blood pressure, and increased muscle tension, which are more likely to cause bruxism (7). Emotion regulation is essential in bruxism as it can help individuals manage their stress, anxiety, and depression levels, which are known to be associated with bruxism (15).

Even though bruxism is shown to be linked with psychological factors, there is scarce research addressing the association between emotion regulation, anger and bruxism (8). This study aimed to investigate emotion regulation, trait anger, and anger expression styles in Bruxism, addressing the gap in the literature.

MATERIAL and METHOD

Design and Setting

This is a cross-sectional study to investigate the relationship between bruxism (clinical examination) anger and emotional regulation (self reported) in dental patients. Participants were recruited from the private dental clinic. Approximately 150 patients seek medical appointments in this clinic for treatment monthly. We determined the minimum required number of participants using a G-power calculation with a linear multiple regression model and a medium effect size. Statistical significance was set at $\alpha = .05$ (two-tailed tests), and the power was set at 0.95. According to the estimate, the study required 172 participants. We have included all voluntary patients who visited the clinic between December 2023 and March 2024 and recruited 181 dental patients.

Population of the Study

All adults older than 18 year old, who could understand and self-report the research form, had sought the outpatient unit for a private clinic, who had evaluated by dentist, and responded to self-reported instruments to screen emotion regulation and anger. All subjects underwent a clinical examination. Two dentists independently (O.Ç and A.E.K) clinically examined and evaluated the presence of bruxism. Before the study, the two dentists had a consensus about the clinical evaluation for bruxism and evaluated each participant following this protocol.

Bruxism was assessed as probable bruxism through clinical examination. Probable bruxism refers to a clinical diagnosis characterized by the presence of specific signs indicative of bruxism, which is the involuntary grinding or clenching of teeth. This diagnosis is typically established through clinical inspection and may or may not be supported by self-reported symptoms from the patient. The latest consensus on bruxism assessment emphasizes that probable bruxism is determined by positive clinical findings, such as tooth wear, indentations on the tongue, and linea alba (a white line on the inner cheek), rather than relying solely on patient self-reports (16)

A thorough intraoral examination was performed by two dentists utilizing a dental mirror and examination probe. During the clinical assessment, each tooth was air-dried using a syringe and cotton rolls for optimal visibility, and evaluated meticulously with a dental mirror to detect potential signs of bruxism. The diagnostic criteria were aligned with the recommendations provided by the American Academy of Sleep Medicine (16).

The clinical evaluation for bruxism included the following criteria:

Presence of tooth wear or attrition

Presence of masticatory muscle discomfort, pain, fatigue, or jaw locking

Masseter muscle hypertrophy observed during voluntary, forceful clenching

Following the clinical examination, participants meeting at least one of the above criteria were classified within the bruxism group.

The Ethics Committee of the Koç University Committee on Human Research (2023.155.IRB3.075) approved this study. All participants have signed informed consent before the study.

Instruments

Sociodemographic Information Form (SIF)

The sociodemographic form includes age, gender, occupation, working status, income level, marital status, whether smoking and alcohol consumption, and whether physical or mental illness, with 12 questions (17,18).

Difficulties of Emotion Regulation Scale (DERS)

The DERS developed by Gratz and Roemer (18) is a 36-item self-report measure of six facets of emotion regulation. Items are rated on a 5-point Likert scale. The DERS divided into six subscales: Awareness (difficulties in awareness of emotions), Clarity (difficulties in understanding emotions), Impulse (difficulties in controlling impulses), Goals (difficulties in behave accordance with goals in the presence of negative affect), Non-acceptance (difficulties in acceptance of emotions) and Strategies (difficulties to access emotional regulation strategies). Higher scores indicate more difficulty in emotion regulation. Internal consistencies for the total and subscale scores in this study were good (α range from .80 to .93). The validity and reliability of the Turkish version of DERS were conducted by Rugancı and Gençöz (19). This study used the 36-item DERS, the validity and reliability of which was conducted by Rugancı and Gençöz in 2010.

The State-Trait Anger Inventory (STAXI)

The State-Trait Anger Inventory (STAXI) is a tool used to measure trait anger and how individuals generally react or behave when angry or furious. The STAXI includes 34 items that measure different aspects of anger, including the intensity of anger, the frequency of angry feelings, and the expression of anger. The items are rated on a 4 points Likert scale. High scores on the trait anger subscale indicate that the level of anger is high, high scores on the anger-control subscale indicate that anger can be controlled, high scores on the anger-out subscale indicate that anger can be expressed more outwardly, and high scores on the anger-in subscale indicate that the anger felt is suppressed (20). Internal consistencies for each subscale scores in this study were good (α s range 0,73 to 0,82). The Turkish validity and reliability were conducted by Özer (1994) (12), and this 34-item version was used in this study.

Procedures

During their regular appointment on a typical weekday, a research assistant approached consecutive attendees in the waiting room and invited them to participate to study. Two dentists determined the clinical diagnosis of bruxism after a careful dental examination. Besides, participants self-reported their sociodemographic information and psychological symptoms of emotion regulation by DERS, anger by STAXI.

Statistical Analysis

Data analysis was performed using the Statistical Package for the Social Science (SPSS) 28.0 package program (SPSS Inc., Chicago, IL, USA). The Shapiro-Wilk Test was used to determine whether the data were normally distributed. Data including sociodemographic and clinical characteristics were analyzed using descriptive statistics (mean, standard deviation, percentage and number), Chi-Square, Independent Sample T-test or Mann Whitney U. Cronbach's alpha internal consistency coefficients of the instruments used in the study were estimated. The relationship between dependent and independent variables was evaluated using hierarchical logistic regression. Logistic regression model was used for the relationship with bruxism. A value of $p < 0.05$ was accepted as the significance level of the tests.

RESULTS

There were no statistical differences between the bruxism and non-bruxism in terms of descriptive characteristics of participants. When the clinical scores were examined, there was a statistical difference found between the individuals with bruxism and non-bruxism in terms of trait anger ($p < 0.05$), anger in ($p < 0.05$), and anger out ($p < 0.001$) (Table 1).

Table 1: Descriptive and Clinical Characteristics of Participants

	Total sample (n=181)	No bruxism (n=108)	Bruxism (n=73)	p-value
Mean age, years	33.44±10.3	32.81±10.54	34.37±9.93	> .05
Gender (%)				> .05
Men	57 (31.5)	34 (59.6)	23 (40.4)	
Women	124 (68.5)	74 (59.7)	50 (40.3)	
Employment (%)				> .05
Yes	139 (76.8)	81 (75)	58 (79.5)	
No	34 (18.8)	23 (21.3)	11 (15.1)	
Retired	8 (4.4)	4 (3.7)	4 (5.5)	
Income level (%)				> .05
Income equals expenses	89 (49.2)	55 (50.9)	34 (46.6)	
Income less than expenses	39 (21.5)	21 (19.4)	18 (24.7)	
Income exceeds expenses	53 (29.3)	32 (29.6)	21 (28.8)	
Marital status (%)				> .05
Married/Cohabiting	80 (44.2)	48 (44.4)	32 (43.8)	
Single	92 (50.8)	59 (54.6)	33 (45.2)	
Divorced	9 (5)	1 (0.9)	8 (11)	
Smoking (%)				> .05
Yes	67 (37.0)	44 (40.7)	23 (31.5)	
No	96 (53)	56 (51.9)	40 (54.8)	
Sometimes	14 (7.7)	7 (6.5)	7 (9.6)	
Quitted	4 (2.2)	1 (0.9)	3 (4.1)	
Alcohol (%)				> .05
Yes	44 (24.3)	20 (18.5)	24 (54.5)	
No	80 (44.2)	57 (52.8)	23 (31.5)	
Sometimes	57 (31.5)	31 (28.7)	26 (45.6)	
Physical illness				> .05
Yes	6 (3.3)	5 (4.6)	1 (1.4)	
No	175(96.7)	103(95.4)	72 (98.6)	
Psychiatric disorder				> .05
Yes	4 (2.2)	2 (1.9)	2 (2.8)	
No	177(97.8)	106(98.1)	71 (97.2)	
Clinical scores (mean,min-max)				
DERs (Total)	80.50 (44-141)	80.35 (76-83)	80.72 (76-85)	> .05
Trait anger	19.19 (11-36)	18.54 (17-19)	20.15 (18-21)	< .05
Anger-in	17.17 (8-30)	16.70 (15-17)	17.87 (16-18)	< .05
Anger-out	15.41 (9-29)	14.72 (14-15)	16.43 (15-17)	<.001
Anger-control	21.89 (11-31)	22.23 (21-13)	21.39 (20-22)	> .05

*P-values were obtained by Chi-Square, Independent Samples T-test or Mann Whitney U Table 2 indicated that there was a significantly positive relationship between the DERs, trait anger and anger-in and anger-out ($p<0.001$). Although there was a negatively significant relationship between the DERs and anger control ($p<0.001$)

Table 2: The Relationship Between Participants' Total DERS, Trait Anger and Anger Expression Styles Scores (N=181)

		Anger-in	Anger-out	Anger-control	Trait anger
DERS	r ^a	,460	,368	-,281	,434
	p	<,001	<,001	<,001	<,001
	n	136	136	136	136

^aPearson correlation, p<0.05

Hierarchical regression analysis was performed to determine the contribution of the variables to anger-out. The level of statistical significance was set at $p < 0.05$. The anger-out was included as a dependent variable and DERS_impulse and DERS_clarity subscales were included in the model as independent variables (Table 3). DERS_impulse significantly predicted the anger-out when entered first and it explained 24% of the variance alone ($p < 0.001$). In the second step, the DERS_clarity variables added a further 7%. The overall model was statistically significant and identified variables explained 36% (adjusted) of the variance in the anger-out ($p < 0.001$).

Table 3: Hierarchical Multiple Regression Analysis Results Predicting Anger-Out Through DERS_Impulse, DERS_Clarify and Presence of Bruxism (N=181)

Step	Anger-out		
	Adjusted R ²	$\beta 1$ (%95 CI)	p
Step 1	0.24	10,124	
DERS_Impulse		,433	<0,001
Step 2	0.31	12,459	
DERS_Impulse		,529	<0,001
DERS_Clarify		-,331	<0,001
Step 3	0.36	11,695	
DERS_Impulse		,523	<0,001
DERS_Clarify		-,312	<0,001
Presence of bruxism		1,574	<0,001

*F: 13.529, Durbin Watson: 2.060, DERS (Difficulties of Emotion Regulation Scale)

The significance of coefficients associated with relevant independent variables in the logistic regression model was analyzed (Table 4). The findings revealed that when anger-out was identified as an independent risk factor ($p=0.005$). With non-alcohol use status serving as the reference, alcohol users exhibited a 2.7-fold higher risk of bruxism diagnosis compared to non-users. Additionally, the interaction between alcohol use and anger-out score demonstrated a 13.1% effect on the likelihood of being diagnosed with bruxism.

Table 4: Logistic Regression Model for The Associations with Bruxism, Dimensions of Alcohol Consumption and Anger-Out

Variables	B	S.E.	Wald	df	Sig.	Exp (B)	95% C.I.for EXP(B)	
							Lower	Upper
Alcohol use (Ref:No)	1,018	,401	6,451	1	,011	2,767	1,262	6,070
Anger-out	,132	,048	7,732	1	,005	1,141	1,040	1,253
Constant	-7,462	10048.2	,000	1	,000	,001		

*R2 de Nagelkerke =0,131 P value <0.05

DISCUSSION

Bruxism is an overlooked condition for adults, and extensive research is scarce. Our estimate of 40% of probable bruxism among dental patients (n=73) was in line with the magnitude of the problem found in previous studies (21). Bruxism has been associated with psychological conditions, suggesting a psychosomatic component to this parafunctional habit (22). Kinalski et al. (23) stated that individuals with bruxism are more likely to have signs or symptoms related to mental health problems. Given that the overall prevalence of bruxism is over 30%, early diagnosis and treatment of bruxism is a public health concern to manage the unmet need for untreated health conditions associated with bruxism, such as common mental symptoms in the general population.

The outcome of this study indicated that trait anger and anger expression styles scores were higher in bruxism- except for anger control. In line with the present study, Molina et al. (8) have found high levels of introverted anger scores in Bruxism. Another outcome of the present study showed that there was a significant relationship between DERS, trait anger, and anger expression styles ($p<0.001$). It is known that there is a two-way relationship between the anger and emotion regulation. Thus, one's anger and expression level might affect the capacity for emotion regulation (14,24). A study conducted with young adult women showed that difficulties in emotion regulation were associated with higher anger scores (25).

Difficulty in emotion regulation has been linked to bruxism (26, 27), while emotion regulation has been identified as a crucial factor in expressing anger (28). The association between bruxism and the use of adaptive and maladaptive emotion regulation strategies was emphasized (24). The outcomes of the present study have indicated that a combination of bruxism and difficulties in emotion regulation increase the prediction of anger-out. The impulse and clarity subdimensions of DERS were found to be significant in this model. The outcomes of the present study were in line with the study, indicating a potential link between impulse control issues and bruxism, particularly in individuals with attention deficit hyperactivity disorder (ADHD). Children with ADHD have been reported to exhibit higher rates of bruxism (29). The findings aligned with the model in a study conducted with individuals without bruxism. Difficulties in impulse control and lack of emotional awareness have been associated with anger (25). Furthermore, the mediating role of emotion regulation difficulties in aggressive behavior, which implies anger-out, has been emphasized (30). Individuals with bruxism have been found to avoid contact with unpleasant feelings, suppress aggression, and censor the expression of anger (31). This indicates that there may be a behavioral aspect to how individuals with bruxism manage their emotions, particularly anger.

Another outcome of this study indicated that when the non-alcohol use status served as the reference, alcohol users exhibited a 2.7-fold higher risk of bruxism diagnosis compared to non-users. While the relationship between alcohol consumption and bruxism is not entirely conclusive, several references suggest a connection between the two factors. Compared with existing literature, our results follow those reported by previous studies that alcohol consumption has been identified as a potential risk factor for bruxism in various studies (3,32,33). A study has shown that heavy alcohol drinkers are at a higher risk of reporting sleep bruxism (34). Martynowicz et al. (2019) indicated that alcohol consumption, along with other factors like emotional stress, certain drugs, and anxiety disorders, are recognized as important risk factors for bruxism among adults (32). Additionally, external factors such as caffeine consumption, smoking, and alcohol intake have been linked to bruxism (35). Furthermore, reducing the consumption of coffee, alcohol, and tobacco has been reported to have a positive effect on patients with sleep bruxism (36). The interaction between alcohol use and anger-out score demonstrated a 13.1% effect on the likelihood of being diagnosed with bruxism in the present study. Kardeş & Kardeş (2022) indicated that psychological distress and high alcohol consumption have been identified as well-documented risk factors for bruxism, potentially leading to the onset or exacerbation of bruxism, showing in line with present outcomes (36).

There are several limitations in this study related to some potential biases that might affect the interpretation of results, such as (1) participants were sequentially recruited from a private dental clinic and the final sample was not a representative of the general population, with men: women gender ratio of 2:1, and (2) interview-based applying of the measurements are missing and might affect the outcomes. But, self-report questionnaires are feasible strategies to be deployed in poor resource areas.

CONCLUSION

This study highlighted that bruxism has psychosomatic content. The anger expressions were higher in bruxism, which was associated with difficulty in emotion regulation. Also, the variables predicting the bruxism and anger-out were explained in regression models. Further studies are needed to determine if managing dysregulation in emotion and anger expressions improves bruxism. Longitudinal assessment with a large sample can contribute to clarifying the effect of psychological symptoms such as emotion regulation and anger.

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Declaration of Ethical Code: In this study, we undertake that all the rules required to be followed within the scope of the "Higher Education Institutions Scientific Research and Publication Ethics Directive" are complied with, and that none of the actions stated under the heading "Actions Against Scientific Research and Publication Ethics" are not carried out.

The study was conducted in accordance with the Declaration of Helsinki, and ethical approval was received from the Koç University Committee on Human Research for 2023.155.IRB3.075 protocol number and the date of 19.04.2023

REFERENCES

1. Lobbezoo F, Ahlberg J, Raphael KG, Wetselaar P, Glaros AG, Kato T, 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.
2. De Oliveira DD, Brum-Júnior J, Soares L, Cerqueira W, Costa I, Oliveira E, et al. Relationship between stress and bruxism among university students: a cross-sectional study. *Rev Estomatol.* 2021;29(2). doi: 10.25100/re.v29i1.11071.
3. Erdil D, Bagis N, Eren H, Camgoz M, Orhan K. Evaluation of changes in depression levels of bruxism patients treated with botulinum Toxin-A. *J Adv Oral Res.* 2021;12(2):200-205. doi:10.1177/23202068211006554.
4. Osses-Anguita AE, Sánchez-Sánchez T, Soto-Goñi XA, García-González M, Alén Fariñas F, Cid-Verdejo R, et al. Awake and sleep bruxism prevalence and their associated psychological factors in first-year university students: a pre-mid-post COVID-19 pandemic comparison. *Int J Environ Res Public Health.* 2023;20(3):2452. doi: 10.3390/ijerph20032452.
5. Soto-Goñi XA, Alen F, Buiza-González L, Marcolino-Cruz D, Sánchez-Sánchez T, Ardizzone-García I, et al. Adaptive stress coping in awake bruxism. *Front Neurol.* 2020;11:564431. doi: 10.3389/fneur.2020.564431.
6. Pejkovska-Shahpaska B, Kapuševska B, Nataša S. Application of night dentures during prosthetic rehabilitation in a patient with bruxism: A case study. *Acta Stomatol Naissi.* 2018;34(77):1804-1812. doi: 10.5937/asn1877804p.
7. Gouw S, de Wijer A, Bronkhorst EM, Kalaykova SI, Creugers NH. Association between self-reported bruxism and anger and frustration. *J Oral Rehabil.* 2019;46(2):101-108. doi: 10.1111/joor.12727.
8. Molina OF, Santos ZC, Sobreiro MA, Cano ML. Anger held inward, aggressive dream content in craniomandibular disorders and bruxers. *Rev Neurocienc.* 2015;23(4):522-529. doi: 10.4181/RNC.2015.23.04.1088.08p.
9. Goldstein G, DeSantis L, Goodacre C. Bruxism: best evidence consensus statement. *J Prosthodont.* 2021;30(S1):91-101. doi: 10.1111/jopr.13308.
10. Karababa A. The relationship between trait anger and loneliness among early adolescents: The moderating role of emotion regulation. *Pers Individ Dif.* 2020;159:109856. doi: 10.1016/j.paid.2020.109856.
11. Ham EM, You MJ. Role of irrational beliefs and anger rumination on nurses' anger expression styles. *Workplace Health Saf.* 2018;66(5):223-232. doi: 10.1177/2165079917737090.
12. Özer AK. Sürekli öfke (sl-öfke) ve öfke ifade tarzı (öfke-tarz) ölçeklerinin ön çalışması. *Türk Psikoloji Dergisi.* 1994;9(31):26-35.
13. Peña-Sarrionandia A, Mikolajczak M, Gross JJ. Integrating emotion regulation and emotional intelligence traditions: a meta-analysis. *Front Psychol.* 2015;6. doi: 10.3389/fpsyg.2015.00160.
14. Te Brinke LW, Schuiringa HD, Matthys W. Emotion regulation and angry mood among adolescents with externalizing problems and intellectual disabilities. *Res Dev Disabil.* 2021;109:103833. doi: 10.1016/j.ridd.2020.103833.
15. Smardz J, Martynowicz H, Wojakowska A, Michalek-Zrabkowska M, Mazur G, Wieckiewicz M. Correlation between Sleep Bruxism, Stress, and Depression—A Polysomnographic Study. *J Clin Med.* 2019;8(9):1344. doi: 10.3390/jcm8091344.
16. Yap AUJ, Chua A. Sleep bruxism: current knowledge and contemporary management. *J Conserv Dent.* 2016;19(5):383. doi: 10.4103/0972-0707.190007.
17. Goulart AC, Arap AM, Bufarah HB, Bismarchi D, Rienzo M, Syllos DH, et al. Anxiety, depression, and anger in bruxism: a cross-sectional study among adult attendees of a preventive center. *Psychiatry Res.* 2021;299:113844. doi: 10.1016/j.psychres.2021.113844.

18. Gratz KL, Roemer L. Multidimensional Assessment of Emotion Regulation and Dysregulation: Development, Factor Structure, and Initial Validation of the Difficulties in Emotion Regulation Scale. *J Psychopathol Behav Assess.* 2004;26(1):41-54. doi: 10.1023/b:0000007455.08539.94.
19. Rugancı RN, Gençöz T. Psychometric properties of a Turkish version of the difficulties in emotion regulation scale. *J Clin Psychol.* 2010;66(4):442-455. doi: 10.1002/jclp.20665.
20. Spielberger CD, Reheiser EC. Assessment of Emotions: Anxiety, Anger, Depression, and Curiosity. *Appl Psychol Health Well-Being.* 2009;1(3):271-302. doi: 10.1111/j.1758-0854.2009.01017.x.
21. Manfredini D, Winocur E, Guarda-Nardini L, Paesani D, Lobbezoo F. Epidemiology of bruxism in adults: a systematic review of the literature. *J Orofac Pain.* 2013;27(2):99-110. doi: 10.11607/jop.921.
22. Amalia R, Arifin R, Dwinta Sari G. The relationship between anxiety and bruxism in adults. *Dentin.* 2023;7(1). doi: 10.20527/dentin.v7i1.8329.
23. Kinalski M, Cadermatori MG, Horta BL, Correa MB, Demarco FF, Pereira-Cenci T. Common mental disorders and bruxism in adults: a birth cohort study. *J Dent.* 2019;83:27-32. doi: 10.1016/j.jdent.2019.02.003.
24. Kreibig SD, Ten Brink M, Mehta A, Talmon A, Zhang JX, Brown AS, et al. The role of emotion regulation, affect, and sleep in individuals with sleep bruxism and those without: Protocol for a remote longitudinal observational study. *JMIR Res Protoc.* 2023;12(1). doi: 10.2196/41719.
25. Momeñe J, Estévez A, Herrero M, Griffiths MD, Olave L, Iruarizaga I. Emotional regulation and body dissatisfaction: the mediating role of anger in young adult women. *Front Psychiatry.* 2023;14. doi: 10.3389/fpsy.2023.1221513.
26. Ding Y, Zhao M, Li Z, Xia B, Atutova Z, Kobylkin D. Impact of education for sustainable development on cognition, emotion, and behavior in protected areas. *Int J Environ Res Public Health.* 2022;19(15):9769. doi: 10.3390/ijerph19159769.
27. Brancher LC, Cadematori MG, Jansen K, da Silva RA, Bach S, Reyes A, et al. Social, emotional, and behavioral problems and parent-reported sleep bruxism in schoolchildren. *J Am Dent Assoc.* 2020;151(5):327-333.
28. Partoiz Ziraki F, Hassan T. Investigating the effectiveness of dialectical behavior therapy in clinical symptoms, anger control and emotional regulation of bully children. *Int J Clin Med.* 2017;8(4):277-292. doi: 10.4236/ijcm.2017.84027.
29. Chin WC, Huang YS, Chou YH, Wang CH, Chen KT, Hsu JF, et al. Subjective and objective assessments of sleep problems in children with attention-deficit hyperactivity disorder and autism spectrum disorder. *Pediatrics & Neonatology.* 2023.
30. Hesser H, Axelsson S, Bäcké V, Engstrand J, Gustafsson T, Holmgren E, Jeppsson U, Pollack M, Nordén K, Rosenqvist D, Andersson G. Preventing intimate partner violence via the Internet: A randomized controlled trial of emotion-regulation and conflict-management training for individuals with aggression problems. *Clin Psychol Psychother.* 2017;24(5):1163-1177. doi: 10.1002/cpp.2082.
31. Miletic A, Lazic Z, Todorovic A, Djordjevic I, Popovic D, Lazic V. Stress assessment in patients with clinically diagnosed sleep bruxism. *Vojnosanit Pregl.* 2018;75(10):1014-1019. doi: 10.2298/vsp160902029m.
32. Martynowicz H, Gac P, Brzecka A, Poreba R, Wojakowska A, Mazur G, Smardz J, Wieckiewicz M. The relationship between sleep bruxism and obstructive sleep apnea based on polysomnographic findings. *J Clin Med.* 2019;8(10):1653. doi: 10.3390/jcm8101653.
33. Mohapatra A, Choudhury GK, Panda S, Dhar U. Current concept of bruxism and its treatment options. *Indian J Forensic Med Toxicol.* 2020;14(4):8221-8226. doi: 10.37506/ijfimt.v14i4.12960.
34. Setzer FC, Kim S. Comparison of long-term survival of implants and endodontically treated teeth. *J Dent Res.* 2014;93(1):19-26. doi: 10.1177/0022034513504782.
35. Mohapatra A, Choudhury GK, Panda S, Dhar U. Current concept of bruxism and its treatment options. *Indian J Forensic Med Toxicol.* 2020;14(4):8221-8226. doi: 10.37506/ijfimt.v14i4.12960.
36. Kardeş E, Kardeş S. Google searches for bruxism, teeth grinding, and teeth clenching during the COVID-19 pandemic. *J Orofac Orthop.* 2022;83(6):1-6. doi: 10.1007/s00056-021-00315.