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Bruxism. Risk factors for the stomatognathic system

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SUMMARY

Introduction: Bruxism is the parafunctional and involuntary rhythmic movement of clenching, grinding, grinding and/or chewing (in the absence of food) that can lead to dysfunction of the masticatory muscles, generating constant and chronic trauma on the structures of the stomatognathic system.

Aim: To determine the possible association between bruxism and risk factors for the stomatognathic system in patients between 30 and 50 years of age from Clinic No. 31,

Pedro Pompa.

Methods: A cross-sectional, analytical, observational study was conducted in patients aged 30 to 50 years from Clinic No. 31, Pedro Pompa. The population consisted of 563 patients aged 30 to 50 years from Clinic No. 31 in the Pedro Pompa neighborhood, part of the Dental Specialties Clinic. A sample of 294 was studied using a non-probabilistic, purposive sampling. The variables studied were: morbidity due to bruxism, sociodemographic elements, classification, and their risk factors. Summary measures used were percentages, statistical association between variables, and the odds ratio.

Results: A high morbidity rate from bruxism (85.37%) was observed, primarily among women aged 40 to 50. Nocturnal bruxism (78.49%), unconscious bruxism (77.69%), and eccentric bruxism (66.93%) predominated. Representative risk factors and effects were: smoking (75.30%), partial edentulousness (74.55%), and coffee consumption (73.31%).

Conclusions: The association of bruxism with: sociodemographic variables, biogenetic and psychosocial factors except administration of sedatives was demonstrated.

Keywords: Bruxism; Association; Risk factors.

ABSTRACT

Introduction: Bruxism is the parafunctional and involuntary rhythmic movement of clenching, grinding, crushing and/or chewing (in the absence of food) that can lead to dysfunction of the masticatory muscles, generating constant and chronic trauma to the structures of the stomatognathic system.

Objective: to determine the possible association between bruxism and risk factors for the stomatognathic apparatus in patients between 30 and 50 years old from Clinic No 31, Pedro Pompa.

Methods: A cross-sectional analytical observational study was carried out in patients between 30 and 50 years old from Clinic No 31, Pedro Pompa. The population was 563 patients between 30 and 50 years old from office number 31 in the Pedro Pompa

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neighborhood, belonging to the Stomatological Specialties Clinic. A sample of 294 was studied, through non-probabilistic, intentional sampling. The variables studied were: morbidity due to bruxism, sociodemographic elements, classification and its risk factors. The percentages and the statistical association between the variables were used as summary measures and the Odds Ratio was determined.

Results: High morbidity due to bruxism was confirmed (85.37%), mainly between 40 and 50 years old, females. Nocturnal bruxism (78.49%), unconscious (77.69%) and eccentric (66.93%) predominated. The representative risk factors and effects were: smoking (75.30%), partial edentulousness (74.55%), coffee consumption (73.31%).

Conclusions: the association of bruxism with: sociodemographic variables, biogenetic and psychosocial factors except administration of sedatives was demonstrated.

Keywords: Bruxism; Association; Risk factors.

SUMMARY

Introduction: Bruxism is the parafunctional and involuntary rhythmic movement of opening, crushing, swallowing and/or chewing (in the absence of food) that can lead to dysfunction of two mastigatory muscles, generating constant and chronic trauma to the structures of the stomatognathic system.

Aim: Determine the possible association between bruxism and risk factors for the stomatognathic system in patients between 30 and 50 years of age at Ambulatório nº 31, Pedro Pompa.

Methods: A cross-sectional analytical observational study was carried out on patients between 30 and 50 years old at the Pedro Pompa Clinic No. 31. The population was 563 patients between 30 and 50 years old at the clinic No. 31 in the Pedro Pompa district, belonging to the Stomatological Specialties Clinic. A sample of 294 was studied, by means of a non-probabilistic and intentional demonstration. As variáveis estudadas foram: morbidity due to bruxism, sociodemographic elements, classification and its risk factors.

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The percentuais, a statistical association between the variáveis and the Razão de Chances foram used as summary measures.

Results: High morbidity due to bruxism was found (85.37%), mainly between 40 and 50 years of age, of the female sex. There is a predominance of nocturnal bruxism (78.49%), unconsciousness (77.69%) and eccentricity (66.93%). The risk factors and representative effects include: tobacco use (75.30%), partial tooth loss (74.55%), coffee consumption (73.31%).

Conclusões: Demonstrate the association of bruxism with sociodemographic, biogenetic and psychosocial variations, except for the administration of sedatives.

Keywords: Bruxism; Association; Cliff factors.

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Introduction

Within the activities of the masticatory muscles there are two types: functional, which allow activities to be carried out without causing damage to the stomatognathic system (SS), and parafunctional, which correspond to a repetitive and unconscious neuromuscular hyperactivity that generates overload on the stomatognathic structures. The most common parafunctional activity is bruxism, which consists of the parafunctional and involuntary rhythmic movement of clenching, grinding, grinding and/or chewing (in the absence of food) that can lead to dysfunction of the masticatory muscles, generating constant and chronic trauma on the SS structures. (1)

Nowadays, several classification methods for bruxism are recognized; the most important and scientifically based is the one postulated by Ramfjord into centric and eccentric,

diurnal and nocturnal bruxism. (1)

Bruxism is considered multifactorial in nature and not only involves occlusal interferences and altered dental morphology, as was previously considered. It represents one of the most prevalent, complex, and destructive parafunctional disorders of the oral cavity. (2,3)

These risk factors are classified into two groups that could interact: peripheral (morphological/anatomical) and central (psychological and pathophysiological) factors.

Peripheral factors (morphological or anatomical) refer to dentoskeletal alterations. This group includes alterations in dental occlusion and in the anatomical interrelations of the craniocervicofacial bone structures. Regarding central factors (psychological and pathophysiological), bruxism during wakefulness can be attributed to emotions such as anxiety, stress, anger, frustration, or tension. It could also be a coping strategy or a habit during deep concentration. Sleep bruxism may be due to sleep-related chewing activity associated with waking up. (1)

The timely identification of risk factors in dental care is important for their correct diagnosis, so they must be investigated in each health area or dental service to develop population and individual intervention strategies that reduce their incidence, thereby making it possible to include preventive regimens within the indicated therapeutic plans. (4)

Taking into consideration all the above, it was decided to conduct this research with the objective of determining the possible association between bruxism and risk factors for the stomatognathic system in patients between 30 and 50 years of age from office No. 31, Pedro Pompa.

Methods

To achieve the intended objectives, a cross-sectional, analytical, observational study was conducted among patients aged 30 to 50 years at Clinic No. 31, Pedro Pompa. The

population consisted of 563 patients aged 30 to 50 years at Clinic No. 31 in the Pedro Pompa neighborhood, part of the Dental Specialties Clinic. A sample of 294 was studied using a non-probability, purposive sampling. The variables studied were: bruxism morbidity, sociodemographic elements, classification, and risk factors.

Inclusion criteria: patients between 30 and 50 years of age with teeth in which occlusion relationships are established with the patient's acceptance to take part in the study.

Exclusion criteria: Patients between 30 and 50 years of age who are totally or partially edentulous and in whom occlusal relationships between the arches are not established.

Theoretical, empirical, and statistical methods from quantitative research were used to analyze the results. Descriptive and univariate frequency distribution techniques were used to process the data. For inferential analysis, the existence of a significant association (not due to chance) was verified using the Chi-square test for 95% confidence intervals. For differentiation, the p-value must be less than 0.05 for an association between the variables to exist; in this case, the odds ratio was determined. When the odds ratio (OR) presents a value greater than 1, a positive association exists; that is, the risk factor is associated with the occurrence of the event, and is therefore considered a risk factor.

Results

Table 1 shows the results from the classification of bruxism. Of a total of 251 affected patients, there was a predominance of patients with nocturnal bruxism, with 197 (78.49%) presenting it; unconsciously with 77.69% and eccentrically for 66.93%.

Table 1. Characterization of bruxism according to classification.

Classification	No.	%
Day	54	21.51
Night	197	78.49

Aware	56	22.31
Unconscious	195	77.69
Central	83	33.07
Eccentric	168	66.93

Table 2 shows a comparative study in terms of age, sex and occupation of the entire study population. It was observed that there was a predominance of the 40-50 age group at 56.80%. When analyzing the p value = 0.000, there is a statistical association with bruxism, obtaining an OD = 4.777 and a CI = [2.299-9.922].

Females predominated, with the disease occurring in 155 patients (95.09%). The association between this variable and the disease was confirmed with p=0.000 and OD=7.063, with a CI=[3.145-15.865]. Therefore, demographic characteristics are considered predisposing risk factors for bruxism.

Table 2. Correlation between bruxism and sociodemographic characteristics.

Sociodemographic characteristics		Bruxism				Total	
		Yeah		No			
		No.	%	No.	%	No.	%
Groups of ages	30-39	95	74.80	32	25.20	127	43.20
	40-50	156	93.41	11	6.59	167	56.80
Sex	Male	96	73.28	35	26.72	131	44.56
	Female	155	95.09	8	4.91	163	55.44

In the biogenetic risk factors shown in Table 3, it was concluded that the risk factor with the highest incidence was partial edentulism with 241 (81.97%), followed by malocclusion with 202 (68.71%), then defective restorations with 190 (64.63%) and finally, family history with 174 (59.18%).

When analyzing the inferential results, all are considered predisposing risk factors for bruxism since the p value is less than 0.05. In this way, OD is calculated, where the

probability of the event occurring in the presence of the risk factors analyzed and the Chi2 test for 95% are observed.

Table 3. Causal association between biogenetic risk factors and bruxism morbidity.

Biogenetic risk factors	Bruxism				Total N=294	
	If N=251		No N=43			
	No.	%	No.	%	No.	%
Malocclusion	183	72.91	19	44.19	202	68.71
Partial edentulism	227	90.44	14	32.56	241	81.97
Defective restorations	177	70.52	13	30.23	190	64.63
Family history	158	62.95	16	37.21	174	59.18

When analyzing the results in Table 4, it was found that, in sick people, the risk factor with the highest incidence was smoking with 75.30%, this factor showed an association with a p value = 0.000, OD = 5.690, with a confidence interval between 2.855 and 11.341. This was followed by coffee consumption present in 73.31%, where p = 0.000, there was a significant association with the disease, OD = 20.872 with a CI = [7.885-55.248].

An association was shown with alcohol consumption with 66.53%, where p=0.000 and OD=5.136, with CI= [2.520-10.510]. When observing the inferential statistics, all are risk factors associated with bruxism in the studied population, except the administration in the treatment with sedatives, it was verified when analyzing the value of p= 0.133, where it is greater than 0.05 and Chi2 2.252.

Table 4. Causal association between psychosocial risk factors and bruxism morbidity.

Psychosocial risk factors	Bruxism				Total N=294		Chi2	p
	If N=251		No N=43					
	No.	%	No.	%	No.	%		
Harmful oral habits	141	56.18	13	30.23	154	52.38	9.905	0.001
Alcohol consumption	167	66.53	12	27.91	179	60.88	22,999	0.000
Smoking	189	75.30	15	34.88	204	69.39	28.230	0.000

Abundant coffee consumption	184	73.31	5	11.63	189	64.29	60,829	0.000
Use sedative treatment	94	37.45	11	25.58	105	35.71	2.252	0.133
Insomnia	153	60.96	14	32.56	167	56.80	12.066	0.000
Intense physical activity	148	58.96	13	30.23	161	54.77	12.233	0.000

Discussion

When conducting a literature review on the topic for this research, several papers were found that address similar studies. These authors' opinions vary, sometimes in agreement and sometimes in disagreement.

There are several researchers who address the classification, which is a subject that still continues to be very controversial. San Juan Ortiz A, Nápoles Rodríguez N in their study Effectiveness of physiotherapy as an adjuvant treatment for bruxism (3), shows a prevalence of daytime bruxism, results contrary to those shown by the present investigation. However, doctors Arias Leyva D, Suárez M and Lora Martínez RY, in their research Risk factors for bruxism in adult patients, (4) propose a significant predominance of the nocturnal type with respect to the diurnal, as well as eccentric with respect to centric, cases that coincide with the present investigation. Aúcar LJ, Díaz HG in their study Bruxism and academic stress in medical science students, (5) observed a predominance of centric bruxism.

When relating bruxism and demographic variables, several authors reflect that the sex and age most prone to suffer from bruxism are female and the age group of 40-50 respectively. Dr. Arias Leyva D, Suárez M and Lora Martínez RY in their research Risk factors for bruxism in adult patients, (4) and Lazo-Nodarse R (et al) in their study Radiographic manifestations of bruxism in adult patients, (6) agree with this group. However, Linares Chávez HF, in his research Psychological factors associated with bruxism in children, (7) raises a predominance of the disease in the child population and in the

male sex. When comparing the results of the referred authors with this work it can be observed that there are discrepancies since, in the present investigation, the sex most prone to suffer from this disease was female and the most prevalent age group, 40-50 years of age.

In relation to biogenetic risk factors, Dr. Sardiña Valdés M in her study Bruxism in the light of Bioemotional Integration. Review of the topic, (8) and Trupman Hernández Y in his research Clinical and epidemiological characterization of patients with bruxism, (9) address the close relationship between edentulism and bruxism, an aspect that agrees with the results of this research.

Regarding psychosocial factors, several authors, including Sardiña Valdés M (Bruxism in the light of Bioemotional integration), (8) Soto Goñi XA. (Psychological and psychophysiological factors involved in bruxism and temporomandibular disorders), (10) and Sigcho Romero CR (Interdisciplinary approach in the diagnosis and treatment of bruxism in individuals with permanent dentition), (11) address stress and insomnia as risk factors associated with this disease, which coincides with the results obtained in this research.

Pinos Rubalino PJ, Gonzaby Bravo EM, Cedeño Delgado MJ. in their study Bruxism, current knowledge. A review of the literature, (12) reflect the association between coffee, smoking and alcohol as risk factors for bruxism. The authors of this research believed that there are many factors that determine the onset of this disease, in addition to having a very varied etiology; that is why it is vitally important to carry out promotion and prevention activities in patients in order to avoid the onset of bruxism and therefore its consequences for the stomatognathic system. They also considered that despite bruxism being a very controversial topic and having little bibliography, it can not be ignored because it entails a series of damages to the oral complex; in order to achieve better patient care from a preventive perspective, any habit, sign or symptom or indication that this condition may exist should be taken into account.

The ongoing training of a comprehensive general dentist on this pathology will provide the necessary tools for early diagnosis and, therefore, appropriate treatment with a biopsychosocial approach to prevent or minimize the effects of this disease on the patient.

Conclusions

Bruxism morbidity was primarily classified as nocturnal, unconscious, and eccentric; it was characterized sociodemographically in patients aged 40 to 50 years, with a prevalence among women.

The most frequent predisposing risk factors for bruxism were: partial edentulism, smoking, and heavy coffee consumption.

Finally, the association of bruxism with: sociodemographic variables, biogenetic and psychosocial factors was demonstrated.

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Conflict of interest

The authors declare no conflicts of interest.

Authorship contribution

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