

Somatisation and Dissociation: A Comparison Study In Bruxers Subgroups

Somatização e Dissociação: Um Estudo Comparativo em Subgrupos de Bruxômanos

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ABSTRACT

Objective. To assess the frequency of somatisation/dissociation in bruxers and temporomandibular disorders patients, to evaluate the frequencies of somatization and dissociation and to correlates with bruxism **Method.** We evaluated the the questionnaires for TMDs/bruxism, clinical examination, the Rief and Hiller's questionnaire, and the Bernstein and Putnam's instrument in 137 bruxers (123 female, mean age 35.3) and 31 controls (20 female, mean age 34.9) Sign and symptoms of joint noises, facial or temporomandibular joint pain, tenderness to palpation, difficulties to perform jaw movements, and joint noises were evaluated. **Results.** Mean scores in bruxism, somatisation and dissociation in bruxers /TMDs were 11.8, 9.6 and 16.3, and 2.6, 4.8 and 10.4 in the controls. Somatisation and dissociation scores in TMDs and controls were about 9.6 and 16.3 ($p=0.0001$) and 4.8 and 10.4 ($p<0.0001$). Scores in somatisation (6.2, 9.6, 10.7, and 11.8; $p<0.0001$) and dissociation (10.6, 16.4, 15.2, and 27.1; $p<0.0001$) increased with severer bruxism). Bruxism, Somatisation, and dissociation were positively correlated. The frequency of dissociation was about 16.8. **Conclusions.** Somatization and dissociation scores in TMD individuals were higher as compared to control ones. The frequencies of somatisation and dissociation increased more severe bruxism, and were positive correlated.

Keywords. Bruxism, Temporomandibular Disorders, Somatization, Dissociation.

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RESUMO

Objetivo. Verificar as frequências de somatização/dissociação em bruxômanos com Distúrbios temporomandibulares, avaliar suas as frequências estão correlacionadas com bruxismo. **Método.** Queixa principal, questionários, exame clínico, Escala de Rief e Hiller e de Bernstein e Putnam foram avaliados em 137 bruxômanos (123 mulheres, idade média de 35,3 anos) e 31 controles (20 mulheres, idade média de 34,9 anos). Sinais e sintomas de ruídos, queixa de dor, sensibilidade na palpação, dificuldades de movimentos mandibulares e dores de cabeça foram avaliados. **Resultados.** Os valores médios em bruxismo, somatização e dissociação foram de 11,8, 9,6 e 16,3 no grupo com bruxismo e Distúrbios temporomandibulares e de 2,6, 4,8, e 10,4 no controle (Somatização entre os dois grupos $p<0,0001$ e para dissociação $p<0,0001$). Os valores em somatização e dissociação foram de 9,6 e 16,3 (grupo experimental $p<0,0001$) e 4,8 e 10,4 (grupo controle $p<0,0001$). Os valores em somatização (6,2, 9,6, 10,7, e 11,8 $p=0,0001$) e dissociação (10,6, 16,4, 15,2 e 27,1 $p=0,0001$) aumentaram no bruxismo mais intensamente que no grupo experimental. Bruxismo, somatização e dissociação apresentaram correlação positiva. A prevalência de dissociação intensa foi de 16,8%. **Conclusão.** Os valores em somatização e dissociação nos pacientes com DTMS foram mais altos do que nos controles. As frequências de somatização e dissociação aumentaram no bruxismo mais intenso.

Unitermos. Bruxismo, Distúrbios Temporomandibulares, Somatização, Dissociação.

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INTRODUCTION

The term “La bruxomanie” was first introduced in the dental/psychological literature by Marie and Pietkiewicz in 1907 and was later adapted to describe the act of gnashing and grinding the teeth at daytime or night-time without a functional purpose. Jaw movements during teeth grinding are produced by rhythmic and/or sustained tonic contractions of the masseter and other jaw closing muscles and usually occur without patient’s awareness¹. Sleep bruxism is traditionally defined as a parafunctional activity that includes clenching, bracing, gnashing, and grinding of the teeth and also as an orofacial motor activity during sleep characterized by repetitive or phasic/sustained tonic contractions of the jaw closing muscles². Bruxism and other oral jaw habits are very destructive in some individuals and lead to tooth wear, inflammation, damage on the supporting structures, muscle pain and temporomandibular joint disorders (TMDs)³.

Somatisation is a condition wherein mental states and experiences are expressed as bodily symptoms and usually implies the presence of unconscious defense mechanisms and was originally described in the DSM-III as a set of bodily symptoms affecting different organs⁴. Somatisation disorders are a group of psychophysiological disturbances with origin in psychological processes that give rise to the perception or report of physical symptoms which the patient interprets as organic in nature. Most of them involve the frustrated pursuit of a medical solution to a problem that is essentially psychological in nature⁵. In some patients with preexisting psychological conditions including anxiety, hostility and somatisation, the latter may predispose the patient to develop chronic pain⁶. TMDs may be part of an interdisciplinary group of somatoform syndromes defined as functional somatic syndromes (FSS), characterized by similar etiopathogenetic factors and psychosocial impairment⁷.

The term “dissociation” is used with the connotation of a “disruption of the normal integration of experience, consciousness, memory or perception of the environment”⁸. The term has also the connotation of “compartmentalization of experience in which, elements of an experience are not integrated into an unitary whole but are stored in isolated fragments”⁸. The essential characteristic of dissociative identity disorders (DID) is the

presence of two or more distinct identities or personality states, each with its relative enduring pattern of perceiving, relating to, and thinking about the environment and the self⁹. Because one previous study¹⁰, indicated a close association between severe trauma, intra-psychic conflict, DID and somatisation and another research¹¹, indicated that TMDs, hysteria and somatisation, could be inter-related at least in some subgroups of TMD and bruxing behavior individuals, one is led to think that dissociation could be a characteristic of some individuals with both bruxism and TMDs. Because the available material about dissociation, bruxism and somatisation is very scarce and diffuse, the goals of this study are the following:

Assess the frequency of somatisation and dissociation in bruxers /TMD individuals;

Test the hypothesis that the frequencies of somatisation and dissociation increase with the severity of bruxing behavior;

Assess potential correlations between bruxism and somatisation, bruxism and dissociation and somatisation and dissociation.

METHOD

Patients

TMDs patients (N=137) in this study were those referred consecutively for diagnosis and treatment to the Department of Orofacial Pain UNIRG University, School of Dentistry in the period 2011-2012. Patients referred consecutively were included in the TMDs group if they presented three or more signs/symptoms characteristics of TMDs: A complaint of facial/temporomandibular joint (TMJ) pain, actively seeking TMDs treatment, joint noises, difficulties to perform normal jaw movements, tenderness to muscle palpation, and headache of musculoskeletal origin. It is accepted in the literature¹² that a combination of signs and symptoms better describes a TMDs patient. There were 123 females=89,8% and 14 males=10,2% (mean age=35,3 years, SD=12,2, range=14,6). Exclusion criteria for TMD patients were presence of severe psychological, psychiatric and neurological disorders, speech disorders, absence of TMDs sign and symptoms, not seeking active treatment for TMDs and the presence of cognitive inability. Controls were 31 non TMD subjects referred in the same period of time

to the same Department presenting with a specific complaint not sufficient to be characterized as TMDs patients, they were not seeking active treatment for pain and usually presented with only one sign or symptom, for instance, headache pain without signs and symptoms of TMDs, or ear stuffiness without TMDs. Patients and controls were assessed in the same place and in the same period of time. Because in the current study, the patients' charts were reviewed retrospectively to gather data and all patients signed a formal consent to participate in the study, this project was approved by the School of Dentistry CEP 005-12.

Assessment

Patients were evaluated comprehensively, establishing and obtaining a full description of the chief complaint (location, duration, intensity and quality), evaluating if the complaint was TMDs, assessing muscle tenderness and trigger points by palpation, evaluation of jaw movements, use of diagnostics tests for TMJ internal joint derangements (TMJ-IDs), assessing presence and severity of bruxing behavior and oral jaw habits using appropriate questionnaires, self-report and clinical examination to obtain additional clinical and epidemiological data. TMDs individuals were classified as mild, moderate, severe and extreme bruxers if they presented 3-5, 6-10, 11-15 and 16-25 signs/symptoms of bruxing behavior, respectively, according to a scale of severity of bruxism published previously elsewhere¹³.

Somatisation

The Rief and Hiller Questionnaire¹⁴, is a self-reported instrument used to gather information about signs and symptoms indicating somatisation. This instrument has 32 questions evaluating disorders in many organs and systems to which the patient responds as never, rarely, occasionally, frequently and always. A cut off score of 7 separates somatic from non somatic patients.

Dissociation

We used the Dissociative Experience Scale (DES)¹⁵ to gather data about dissociation. This is a 28-item self-reported questionnaire with a cut off score of 30 for severe dissociative disorders. Each item in the instrument

has a score ranging from 0% to 100%.

Statistical Analysis

Statistical tests suitable for this study included, Mann-Whitney, non parametric ANOVA (Kruskal-Wallis statistics) with Dunn Post Hoc test, Fisher's exact test and non parametric product moment correlation coefficient (Spearman rank correlation coefficient). A p value of 0.05 was accepted as a limit to separate significance from non significance in the current study.

RESULTS

There were 123 females (89,8%) in the group of bruxers and 20 females (64,5%) in the control group (Table 1). More females were present in the bruxers group than in control non TMDs group and the difference was statistically significant (Fisher's exact test $p < 0.001$), however, females are usually overrepresented in all samples of TMD patients. Because there was a lower number of females in the control group, it means that controls were in fact different from the TMDs group, which is statistically acceptable. Mean age was not different between the bruxing behavior and the control group (Mann-Whitney U statistics $p > 0.31$). See Table 1 for further details.

Table 1
Sociodemographic data in bruxers and controls

GENRE	BRUXERS		CONTROLS	
	N	%	N	%
Females	123	89.8	20	64.5*
Males	14	10.2	11	35.5
TOTAL	137	100	31	100
Mean age (All)	35.3		34.9**	
SD	12.2		11.7	
Range	14-67		17-63	

*Fisher's exact test $p < 0.001$

**Mann-Whitney – U Test $p > 0.31$

The mean scores in bruxing behavior in the TMDs and bruxing behavior group was about 11.8 and 2.6 in the control one and the difference was extremely significant (Mann-Whitney U statistics $p < 0.0001$). The mean scores in somatisation in the Bruxers/TMD group were about 9.6 and 4.8 in the control one and this difference

was very significant (Mann-Whitney non parametric test $p=0.004$) The mean scores in dissociation in the Bruxers/TMD and in the control groups were about 16,3 and 10,4 respectively, and this difference was extremely significant (Mann-Whitney Statistics $p<0.0001$, extremely significant difference). See Table 2 for further comparisons.

Table 2

Mean scores in bruxing behavior, somatisation and dissociation in CMDs/bruxers and control individuals

	Bruxers/TMDs N=137			Controls N=31		
	Mean	SD	Range	Mean	SD	Range
Bruxism	11.8	5.1	3-22	2.6	4.0	0-16
Somatisation	9.6	5	0-24	4.8	3.6	0-15
Dissociation	16.3	12.2	0-69	10.4	8.4	0-37

*Mann-Whitney test $p<0.0001$

**Mann-Whitney test $p<0.0001$

The mean scores in somatisation in those with mild, moderate, severe and extreme bruxism were about 6,2, 9,6, 10,7, and 11,8, respectively as compared to 4,8 in the control group. This difference was extremely significant (Kruskal-Wallis statistics $p<0.0001$). Dunn's multiple comparison test: Mild and moderate ($p>0.005$), mild and severe ($p<0.001$), mild and extreme ($p<0.001$), mild and controls ($p>0.05$), moderate and severe ($p>0.05$), moderate and extreme ($p>0.05$), moderate and controls ($p<0.001$), severe and extreme ($p>0.05$), severe and controls ($p<0.001$), and extreme and controls ($p<0.001$). In summary, severe bruxers presented higher and statistically significant scores when compared to the mild and control groups, the extreme group demonstrated higher and statistically significant scores when compared to the

mild and control groups and the moderate group demonstrated higher and statistically significant scores when compared to the control one.

The mean scores in dissociation in those with mild, moderate, severe, and extreme TMD/bruxers were about 10,6, 16,4, 15,2, and 27,1, respectively. This difference was extremely significant (Kruskal-Wallis statistics $p<0.0001$). Dunn's multiple comparison test: Mild and moderate $p>0.05$, mild and severe $p>0.05$, mild and extreme $p<0.001$, mild and controls $p>0.05$, moderate and severe $p>0.05$, moderate and extreme $p>0.05$, moderate and controls $p>0.05$, severe and extreme $p>0.05$, severe and controls $p>0.05$, extreme and controls $p<0.001$. Mean scores in dissociation were higher in the four groups of bruxers, but the differences were statistically significant only in the extreme group when contrasted with the mild and control groups ($p<0.001$, $p<0.01$), respectively). See Table 3, for further details.

Three pairs of variables were positively and significantly correlated using non parametric statistics: Bruxism and somatisation (Spearman $Rho=0.36$ and $p<0.0001$), bruxism and dissociation (Spearman $Rho=0.35$ and $p<0.0001$) and somatisation and dissociation (Spearman $Rho=0.23$ and $p<0.005$). All three correlations were positive and significant, however, bruxism and somatisation and bruxism and dissociation demonstrated a higher correlation as compared to somatisation and dissociation. The higher the dissociation scores, the higher the somatisation scores. Even though somatisation is a form of dissociation, the latter is more likely to occur first during individual's psychological development, thus, higher scores in dissociation correspond to higher scores in somatisation (Data in Table 1, supports this observations). See also Table 4 for further details.

Table 3

Mean scores in somatisation and dissociation by the severity of bruxism

	N=24	N=34	N=32	N=47	N=31
Somatisation	6.2 (3.8, 0-15)	9.6 (5.6, 1-22)	10.7 (4.3, 2-20)	11.8 (9.4, 5-27)	4.8* (3.6, 0-15)
Dissociation	10.6 (9.7, 0-37)	16.4 (14.3, 0.4-64)	15.2 (9.4, 1.4-42)	27.1 (39, 1-60)	10.4** (8.4, 0-36.8)

*Kruskal-Wallis test $p=0.0001$ extremely significant difference

Table 4
Spearman Rank Correlation Coefficients between variables of interest

Pairs of variables	Spearman rho	p value
Bruxism and somatisation	0.36	<0.0001*
Bruxism and dissociation	0.35	<0.0001**
Somatisation and dissociation	0.23	<0.005***

*Spearman Rho $p < 0.0001$, an extremely significant correlation

**Spearman Rho $p < 0.0001$, an extremely significant correlation

***Spearman Rho $p < 0.005$, a very significant correlation

DISCUSSION

Somatization and dissociation in bruxer and TMD individuals

Higher scores in somatisation and dissociation were found in bruxers and TMDs patients when compared to control individuals.

In some studies, TMDs have been associated with somatisation, there is a high prevalence of bruxing behavior in TMDs individuals and somatisation has been correlated with dissociation^{8,10,16,17}. Because we found higher scores in somatisation and dissociation in bruxers and TMDs individuals as compared to control ones, the results of this investigation are in accordance one study¹⁸, indicating that jaw pain and headaches may be associated with bruxing behavior which sometimes worsen at night. Headaches in individuals with severe personality disorders may be aggravated by stress-related muscular bracing in his neck and shoulders. Additional support for the results reported in this study comes from one study¹⁹, suggesting that bruxing behavior may be defined as a psychosomatic disorder which in turn, may be related with multiple complaints and with dissociation at least in some individuals. Muscle contraction headaches, combination headaches and migraine occur very frequently in TMD and bruxing behavior patients and these types of headaches present a moderate elevation on scale³, indicating a tendency towards somatisation during periods of stress. Such headache patients show a greater degree of psychosomatic symptoms as compared to controls²⁰.

Somatisation and dissociation are considered by many as severe psychiatric disorders and one research assessing a sample of 77 psychiatric patients reported significantly more signs of dental attrition, more sensitivity to palpation of the masticatory muscles and TMJs

as compared to controls²¹. Because psychological trauma has been associated with both somatisation and dissociation^{8,10}, it may be that such an adverse event causes a chain of interrelated psychophysiological disorders including rage-in, bruxing behavior, somatisation and dissociation. This assumption is supported by one study²², in a small set of female patients with history of sexual abuse indicating that bruxism could be associated with sexual abuse and severe psychiatric disorders. It may be that in some patients psychological/physical trauma causes anger-in, rage, somatisation and dissociation. In the current study we found a positive and significant correlation between bruxism and dissociation.

The scores in somatisation and dissociation increased with the severity of bruxing behavior in TMD patents

The results of this study are supported by one investigation¹¹ in TMDs and bruxing behavior individuals, in which mean scores in pain sites and more severe pain suggesting somatisation increased from the mild to the moderate, severe and extreme group of bruxers when compared to the outcome in the current study in which the mean scores in somatisation were higher in the four bruxing behavior groups than in the control one. The outcomes of the current study are supported in part by one classic research²³ in very severe cases of bruxism/TMDs patients describing such patients as very depressed, anxious, somatic and conflicted. 31/35 of such patients presented psychiatric disorders and 11/35 were psychotic or pre psychotic. More primitive defenses including somatisation, dissociation and denial are more likely to be observed in more severe psychiatric disorders. Most severe TMDs cases and bruxers demonstrate higher scores in hypochondria, depression and hysteria²⁴ and hysteria is closely related with somatisation.

As for dissociation, we found that their scores increased with the severity of bruxing behavior. Honestly, it is difficult if not impossible to find material relating bruxism with dissociation. It may be that psychological trauma give rise to some unbearable affects/disorders including intense rage, anger-inward, somatisation, depression and even dissociation. Such rage and anger-inward may lead to significant somatisation and dissociation. The more severe the psychological trauma, the higher the

scores in somatisation, rage- in and dissociation. This assumption is supported in part by many studies indicating that bruxing behavior is associated with repressed aggression, emotional tension, anger, fear and frustration²⁵. When frustration is intense, bruxers express their reactive anger and hostility in some way. They clench their teeth trying to help control their anger and it is likely that their bruxism, somatisation and dissociation is correlated with the intensity of anger and psychological/physical trauma. In this regard, one study²³, evaluated a subgroup of severe TMDs and bruxers reporting high prevalence of serious psychiatric disorders, severe orofacial pain and psychic conflict in such a subgroup. Headache is included in the MMPI questionnaire for hysteria, a disorder which is closely related with both somatisation and dissociation. In this regards, one study²⁶ reports that headache occurs very frequently in bruxers and TMDs patients and multiple pains including headaches are associated with multiple personality disorders²⁶. Musculoskeletal headache may serve as an important indicator of intrapsychic conflict experienced by patients as tension between dissenting alters²⁷.

Bruxism and somatisation were positively and significantly correlated

Because in the current study, we found that bruxism and somatisation were positively and significantly associated, the results of this study have support in one investigation evaluating frequent and non frequent bruxer¹⁶, reporting that frequent bruxers presented with many pain complaints adjacent and distant to the masticatory system. In one study¹⁹, bruxism was defined as a psychosomatic disorder which occurs very frequently in TMDs individuals. Additionally, patients affected by chronic and painful TMDs share many psychophysiological characteristics with subjects presenting other chronic painful syndromes at different body regions.

Bruxism and dissociation were also positively and significantly correlated

The literature on bruxism and dissociation is very scarce or absent, however, in the current study we found that those individuals with severe and extreme bruxing behavior (79=57.6%), demonstrated higher scores in

dissociation as compared to mild/moderate bruxers. It may be that such subgroups of bruxers use dissociation as a defense mechanism to prevent the emergence on an unbearable affect, for instance, anger. Such strong affect is channeled in the form of somatic symptoms including myofascial pain, TMDs, cervical pain, headache and other pains. This assumption though highly speculative at this time, has strong support in one study⁸ indicating that some somatic symptoms seen in conjunction with unusual pain tolerance and headaches, which come on suddenly in the midst of a therapy hour, may be associated with dissociation disorder. In some individuals and depending on the severity of physical and emotional trauma, rage and anger may be dissipated at least in part through severe or strong bruxing behavior. In such subgroups of bruxers, psychiatric disorders may be more frequent and severe as compared to mild and moderate ones. Providing additional, albeit partial support for these speculative observations, one study in five female patients with severe physical and emotional abuse reported that all patients presented with bruxism and psychiatric disorders²². Moulton²³ reported higher prevalence of psychotic and pre psychotic disorders in cases presenting severe bruxism and TMDs. Patients with the characteristics delineated by Moulton and those presenting with severe and extreme bruxing behavior may use primitive ego defenses including dissociation. Headaches occur much more frequently in severe and extreme bruxers and one study reported that one of the most common physical symptom in MPD, is severe headache which occurs in 50-60% of MPD patients²⁶.

Somatisation and dissociation were also positively and significantly correlated

Because somatisation and dissociation are traditionally considered severe psychiatric disorders and in the current study, both disorders were positively and significantly correlated, the results of this research are supported at least in part by one investigation²¹, reporting higher prevalence of TMDs signs and symptoms in psychiatric patients. Somatisation accounts for a substantial proportion of "hidden" or undetected psychiatric disorders including dissociation and borderline personality disorders²⁸. DID and conversion disorders are both historically

related to the concept of hysteria, which in turn is closely related to somatisation²⁹. Many patients with severe and extreme bruxing behavior presents chronic musculoskeletal pain in the face, neck, shoulder and back. Chronic pain and associated disability occurs in conjunction with psychiatric conditions⁶.

FINAL CONSIDERATIONS

In the current study and based on a cut off score of 30% recommended in one investigation³⁰, we found that 23/137=16.8% CMD and bruxing behavior individuals presented with significant levels of dissociation as compared to the control group. To the extent of our knowledge, this is the first time that such a finding is reported in the literature on bruxing behavior. It would be wise to replicate this study to gather further support to the findings herein reported and to improve our clinical and psychological assessment of bruxers. If the findings in this investigation are replicated, new strategies of treatment both at the clinical and psychological-psychiatric level should be implemented, at least in those presenting with severe and extreme bruxing behavior and TMDs.

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